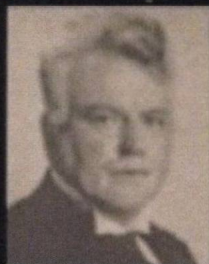


# One Hundred Authors Against Einstein

(English Translation)



Israel, Ruckhaber, Weinmann, eds.

**ONE HUNDRED  
AUTHORS AGAINST  
EINSTEIN**

Published by

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## FOREWORD

It is unique in the intellectual history of mankind that a theory is proclaimed and celebrated as a Copernican achievement which, even if the theory were valid, would not transform our view of nature and the world, and which is so abstruse and incomprehensible in its essence that its popular acceptance among the general public appears inexplicable. The suggestive power of an incessantly uttered name – the misleading and misunderstood catchphrase of “relativity” – and the snobbish admiration for half-conceived paradoxes, sway the simple perplexed minds.

Einstein's reply to Lenard's famous objections (1918) touched the main points too little or not at all. Something similar was repeated at the Nauheim Natural Scientists' Meeting in 1921. On the occasion of the Leipzig Centenary Celebration in 1922, 19 physicists, mathematicians, and philosophers were forced to protest together: “We (the undersigned, including Lenard, Gehreke, Lipsius, Fälagyi, Mohorovicic, Fricke, Vogtherr, Kremer, Lothigius) deeply deplore the misleading public opinion that relativity theory (RTH) is the solution to the riddle of the world, and is praised, keeping hidden the fact that many very respected scholars and researchers have described the RTH not only as an unproven hypothesis, but actually as a fundamentally wrong and logically untenable one, and reject it as fiction”.

All this is hardly known to the public. Magazines and newspapers, which alone would be able to bring the voice of enlightenment and criticism, or at least of doubt, to the hundreds of thousands, seem, with very few exceptions, to have conspired to present only the most flattering accounts and to disregard any objections. Unfortunately, the same applies to the attitude of publishers, and more recently the radio has also followed the same pattern. Researchers of the greatest names can tell of this.

Thus it has been withheld from the general public that the RTH, far from being a secure scientific possession, has recently been proven by irrefutable arguments to be a complex of contradicting assertions, impossible, and superfluous. It has not become known that the spiritual fathers, Einstein, Mach and Michelson, already retracted the RTH. It has not become known that the opponents are at least equal in number and importance to the followers.

Even more important is the unheard-of fact that neither Einstein himself nor his commentators have even attempted to refute the arguments of opponents. Instead an attempt is made to keep the ever more accumulating criticisms from being known.

An open letter from Prof. Kraus (Prague) to Einstein and Laue (1925), in which decisive answers to decisive questions are demanded with compelling logic, was ignored. Kraus and Gehrcke had already been prevented from voicing new concerns and exposing the opponent's weaknesses in the "Zeitschrift für Physik" and "Logos". The natural scientist congress in Innsbruck would not permit a lecture against the RTH, after Schlick had been allowed to hold one favoring Einstein the year before.

Precisely because the RTH has become or was made a matter not only for scientists but for the general public, precisely because it seeks to reshape our entire worldview, its advocates have the obligation to speak in the service of truth what it is all about, and magazines and newspapers have a duty not to sabotage the exchange of views.

The purpose of this publication is to provide an overview of the number and weight of opponents and counter-arguments against the terror of the Einsteinians. The purpose is to inform the general public and clarify the problems in question.

The editors are prepared for the opposing side to rush to criticize the weaker, vulnerable arguments presented here, and the occasional contradictions between the individual authors, and thus try to devalue the present summary. On the other hand, it should be stated in advance that a uniform and authentic presentation of the theory of relativity itself has never been provided, neither by Einstein nor by his numerous commentators. Rather, the RTH shimmers in all colors. Einstein himself made contradicting interpretations (see the ether question, clock process, validity of the absolute constancy of the speed of light), which in turn occasionally contrasts with the interpretations of Mie, Reichenbach, Thirring, Born, Freundlich, Sommerfeld, Riebesell Weyl, Schlick, Planck, Petzoldt, while these again diverge physically, mathematically and epistemologically. (More on this from Gehrcke, Kraus, Lenard, Lipsius, Linke.) This ambiguous and misleading front cannot therefore be countered by a uniform self-contained counter-front. But for every argument on the Einstein side there is certainly the corresponding revealing counter-argument. If examined impartially and fairly, the present material in its entirety will, under all circumstances, testify against Einstein and every reading of his theory.

The publishers.

**Professor Dr. WALTER DEL-NEGRO / SALZBURG**  
**THE QUESTIONABILITY OF RELATIVITY THEORY**

The questionability of the RTH arises from the attempt to explain certain test results by a mere hypothesis, which is not even the only possible one, to exchange the foundations of philosophical and physical thinking. The probability of a hypothesis is made up of the multiplicative probability of the explanatory value and the previous probability; the former may be large here, but the latter is minimal

This is particularly evident from the fact that the RTH makes the space-time continuum of a system unilaterally dependent on the relative movement: if the relative speed of a system changes, the measurement results available from it also change, which the RTH does by actually changing the space-time of this system. The space-time values of a system are thus generated by the relative movement. However, since the relative movement itself has to be defined in a space-time, which in turn would have to be conditioned by relative movement, etc., an infinite regression results. The RTH thus harbors ontological impossibilities.

If one replies that the RTH only wants to be a functional system of phenomena without ontological claims, then the conception of theory as fiction is admitted to the opponent of the RTH. There is nothing to be said against this, only the non-positivist, who believes in a physical reality, remains at liberty to rule on the finality of the RTH.

See "On the dispute about the philosophical meaning of the Einstein RTH", Arch. F. syst. Phios., N. F. XXVII, 103 ff.; "RTH and truth problem", ibid XXVIII, 126 ff.

**Professor Dr. HANS DRIESCH / LEIPZIG**  
**MY MAIN OBJECTIONS AGAINST THE RELATIVITY THEORY**

1. There is no clear term "the one empirical reality" or "nature", which is inevitably at one instant of time. It is irrelevant whether nature is understood as "appearance" or in the sense of realism <sup>1)</sup>).
2. It is overlooked that a total of absolutely binding statements ("real ontology") exist for nature.

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<sup>1)</sup> See "RTH and Weltanschauung", source & Meyer, Leipzig 1929. (Second revised edition of "RTH und Philosophie", 1924.)

3. It is overlooked that so-called metageometry is not "geometry" at all, but only a chapter from pure relational theory, which is clearly not fulfilled.
4. It is overlooked that time is essentially something fundamental other than space.
5. That there should be many "times" "simultaneously" is an incomprehensible thought.
6. The idea that movement, which should only be relative, has an absolutely real effect (scale foreshortening, clock slowing) is used in a completely inadmissible manner.
7. It is one of Einstein's merits to have shown that today there is no means of precisely determining simultaneity. But a limit of determinability is not a limit of ideal existence; and limits to the practical determinability can never be used to create logically absurd constructions.
8. The RTH only deals with the practical scientific activity of mathematical physics, which just encounters certain obstacles; but it has absolutely no ideological significance.

**Dr. S. FRIEDLAENDER / HALEN SEE**  
**ALBERT EINSTEIN'S SPECIAL RELATIVITY THEORY**  
**CONCLUSIVELY REFUTED BY ERNST MARCUS**

One quickly visualizes the fact: according to the prevailing hypothesis of the propagation of light, the movement of light is independent of all movements of the reference system, and consequently should contrast with them. Surprisingly, this is not the case. Experimental experience shows no such contrast. What does the special RTH do now? In order to be able to hold onto the hypothesis of the propagation of light, which has until now not been checked, it relativizes even time itself and all dimensions. In Einstein's dream of the independence of the movement of light, it never occurs to him to doubt it. He prefers to doubt the world, the mind itself. Thoughtlessly uncritical, he holds the traditional [conception of] light holy far and wide. But this is by no means inevitable.

One of the inviolable prerequisites of the special RTH is the following sentence: The law of the propagation of light remains the same for the moving system as it is for the system at rest. But it is precisely then that contrasts must emerge, depending on whether the light hits bodies that are moving in a different way. In fact, no contrasts whatsoever can be determined experimentally. Therefore Albert Einstein does not put the previous light into perspective, as it would seem, but rather immediately the time itself; In relation to a system at rest, different temporal relations prevailed than

in relation to a moving one. If this assertion is wrong, then with this cloak the whole Duke falls, the whole special RTH. Then this is physically impossible. And in this assertion, as Marcus strictly demonstrates, hides an error.

Two kinds of moving relationships are possible: different movements are either related to the independent classification or to the mutual dependence and subordination. In the movement of light, Einstein confuses its independent classification with subordination. His assertion that the movement of light, as independent, makes no contrast to other movements, is groundless and incomprehensible, hence the whole theory is untenable. One hears: the movement of light is independent and should therefore contrast with the others. But the experiment is by no means favoring this. Isn't that strange? Shouldn't one here, like Ernst Marcus, come up with the simple thought that this thoughtlessly assumed independence of light movement would become doubtful precisely because of this experimental experience? But no, for God's sake we have to hold on to this independence and rather the time itself has to be relativized!

The light is caused by bodies and is therefore dependent on them. Nevertheless, should it be independent in its movement? And so that the calculation is only correct, the time is put into perspective. Without any physical justification, Einstein treats time as a body moved with or by bodies. With such physically untenable means one does not solve problems.

But this wrong solution points to the real problem and its correct solution: is the movement of light independent or dependent? How do you reconcile the strange contradiction that light, caused by bodies, is nevertheless independent in its movement? Allegedly, after it has been emitted, the light should spread in spherical radii in all directions of space, like waves in water. This requirement of the special RTH is untenable. Marcus assumes that not only the emitter is involved in the light from radiation, but the emitter and receiver are mutually involved. A relationship like that of polarity between poles of light. All world-bodies would only be connected to one another by strips of light, with gaping darkness in between. Here we really have a new, wonderful conception of light. Planets would not only be hit by the sun's rays accidentally, but they, as receivers, help to create the light. The movement of light would lose its absolute character. If the transmitter and receiver keep their distance, i.e. if these light poles are at rest, the light only moves at its own speed. It has also been proven experimentally that the movement of light cannot be influenced by the movement of the earth. Here, of course, this miracle is explained without having to resort to Einstein's desperate, very problematic remedies. If you



don't want to follow Marcus, it is better to leave the problem unsolved. Protecting a problem from bogus solutions is important. Goethe already urged that the confirmation of a hypothesis by mathematical formulas is no proof of correctness. Mathematicians think they can do without intuition. That means giving up experience. In no way is natural science privileged to invent hypotheses that forego control through perception.

The most abstruse hypotheses are devised in order to prove that the movement of light, although it does not stand out from others, still proceeds independently. But the light cannot move now independently, now dependently in the same breath! The previous light propagation hypothesis can be wrong. This eventuality was ignored entirely. One can wrongly assume that the movement of light is absolute. Experiments of experience argue against this absoluteness. Why stubbornly hold on to the previous hypothesis of light propagation? It really suffices to relativize only the movement of light instead of the time and the dimensions.

See "The philosopher Ernst Marcus as the successor of Kant". Baedeker, Essen 1930.

**Dr. I. K. GEISSLER / RINGGENBERG**  
**END OF THE EINSTEIN ERROR!**

It is fundamentally wrong to couple the expression "relativity" with the name "Einstein" as inseparable, as has been done by excessive advertising among the lay public and some scholars. Newton already speaks a lot about the relative and the absolute in mathematics and physics. Modern physicists, such as E. Mach, whom Einstein knew and used very well, wrote about the concepts of relative space, relative time and motion in general terms (long before Einstein, 1865, 1901 "Mechanics in their development" and later) ; Mansion (Paris 1863) considered absolute movement is meaningless and that the Ptolemaic and Copernican systems are kinematically equivalent. I myself published a coherent general "possible" theory of relativity in space, time, etc." as early as 1900, while Einstein did not publish anything about relativity until 1905, my book ("A possible essence explanation..") but not leading. Difficulties which arise when considering the movement and the forces in physics, and with which Newton had already struggled, admittedly much more cautiously than Einstein, Einstein seeks in a thoroughly violent and illogical way (with faulty reasoning). In his writings he cites some things that are good but were said long before him. The difficulty of the different speeds, however,

he believes he can solve those in which there is time and space by forcibly allowing times, which are designated as the same, to be different, depending on the different speeds. This should even be the case in nature. In doing so, it is freshly neglected that the "concept" of speed also contains the concept of space and time. Such a concept cannot possibly be presented as the original. What Einstein continues to use was also already there. Lorentz had already set up the transformation formulas before him, which Einstein now uses in "his" relativistic sense and according to his assertion about time. Instead of assuming certain shortening of the test bodies during movement, as Lorentz did in certain subtle investigations and experiments, Einstein now makes his own "theory" in such a way that the bodies do not shorten with regard to the space that is represented everywhere, but that simply the spatial lengths are shorter (!) as soon as they are on another moving body. He does not notice that when imagining such changes he always presupposes the evenness of the time and space lines, that without these those changes are inconceivable at all, nothing at all.

He does it in a similar way to the non-Euclidean when they want to visualize a non-Euclidean space that they otherwise only defined arithmetically (e.g. by telling a wide range of 1, 2, 3 dimensions to a fourth and nth), e.g. if you want to represent a finite, returning space instead of the infinite, by using a parable which is based entirely on the actual Euclidean infinite space.

One should imagine a spherical surface on which one can go back to the beginning by circling around. It is, however, presupposed that there is a surface in space and that such a surface is only ever imagined if the expanding space is outside this spherical surface, but otherwise it is impossible in the conception, in perception. Indeed, Einstein simply relies on non-Euclidean doctrines or assertions. But in this way, through a vicious circle, one does not get rid of infinity.

Just as on a spherical surface, for example the surface of the earth, "humps" are imaginable, so the space itself should also be able to be humped, quasi-spherical. Just as the length of space can change with Einstein due to the difference in speed, the space itself should also be able to undergo small changes through the action of "masses" - - as if such humps were at all understandable and had any meaning if one did not assume that there is what is not disgusting, from which what is humpback is separated. Of course we should not notice anything of these wonderful things, which Einstein wrote about nature: "Even masses the size of a sun only have a minimal effect on the metrics of the surrounding space. So: there is this sun sitting in space - or not in space? And this sun, which as a mass probably has a "spatial extension" (or is the sun

as a mass a completely metaphysical, extra-spatial thing?), should now have an influence on the space, namely the "surrounding, albeit a minimal one, which makes this space itself hump.

Such an "RTH" no longer moves within the framework of physics, it becomes metaphysical, but unfortunately metaphysical with errors of thought, with the use of a presumption (a space with which the hump is compared, which cannot be humped without this presupposition, this move completely nullifies) - that is, using a presupposition when establishing this presupposition - to refute this presupposition. One cannot skip over into the field of philosophy if one cannot think philosophically or logically - even the most extensive advertising does not help - except for people who understand the whole question only vaguely or not at all. Whoever wants to pretend here must also be the one who agrees with Einstein and wants to venerate him as a great physicist and philosopher, he must certainly either be able to think thoroughly physically and philosophically himself or at least have heard the other side. *Audiat et altera pars* - and thoroughly, not just after a brief excerpt.

V gl. d. V. "Commonly understandable refutation of the formal relativism of Einstein and his relatives" (1921).

**ARMIN GIMMERTHAL / BONN**  
**THE RELATIVITY PRINCIPLE OF CLASSICAL MECHANICS AND**  
**ITS FORGING BY EINSTEIN**

In a work that has just been completed <sup>1)</sup>, I prove "Four sets of relations and a system of relations, a complete refutation of RTH":

- 1 That Einstein's RTH is in contradiction to irrefutable laws of thought, especially to the principle of addition and the principle of relativity of classical mechanics;
2. That Einstein's formulation of the relativity principle is a forgery of the same and that he had to undertake it in order to be able to share his assertions;
3. That all transformation equations which are supposed to support these claims are false;
4. That Einstein's views on space and time are untenable, and in particular that he lacks the appropriate ideas for the concept of simultaneity;
5. That a relativization of simultaneity is obvious nonsense.
6. That the evidence taken from Minkowski's "World" - a mathematical fantasy for it is again a forgery, and
7. Correctly understood mathematics of theory fully confirms all these accusations.

<sup>1)</sup> "Errors and fallacies in Einstein's RTH". Langendreer. 1926. (Motto: "But the laws of thought are inexorable." Dingler.)

**Professor Dr. LUDWIG GOLDSCHMIDT / JENA  
IGNORANCE AND OBSCURITY**

In my paper <sup>1)</sup>, Einstein's assertions are succinctly and scientifically examined and refuted. His so-called "RTH" understands nothing of the relativity of sensory knowledge and does not deserve the name of a "theory". Everything that can be peeled out as correct in the remarks of Einstein and his expositor Weyl is in part very old. What could be called new is an error that was predicted by me years ago and, as my writing shows, by Kant.

Einstein and Weyl operate in an area for which precise and reliable philosophical knowledge must be assumed. Their ignorance, however, is only exceeded by the grotesque inflation of a self-consciousness that can be characterized by the following words:

Everything that Einstein does not understand because he lacks the necessary expertise "is meaningless and obscure". To really understand the error of their speculations, Einstein and Weyl will have to study for several years. I take not a word back from what I said in my writing.

**Professor Dr. A. H. DE HARTOG / AMSTERDAM  
BASIC PHILOSOPHICAL FACTS**

Not to contest Einstein's great talent and importance in the field of natural science, but because many believe that his theory has made everything "relative and nothing is fixed any more", we are also sending you a contribution to this work. Therefore this contribution of ours occupies a peculiar place in the whole of this work. We do not wish to agree to the emphatic "anti" of this publication and nevertheless wish to work with it to ward off hasty conclusions and unfounded skepticism. There are five points in particular that we would like to point out.

First of all, even if, from a subjective point of view, the scale might change the orientation in time, this does not mean that time cannot therefore be a "form of existence" in objective reality (cf. Ed. Von Hartmann's transcendental Realism). The subjective orientation in the midst of the temporal event may be relative, objectively, therefore, a temporal and spatial constellation can exist at the same time, which does not necessarily stand or fall with the subjective orientation.

Secondly, even if the subjective orientation in temporal events would prove to be relative, the arithmetical and geometrical numbers in formulas, with which the

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<sup>1)</sup> "Against Einstein's metaphysics. A critical liberation." Lübeck 1923.

subjective-relative orientations are calculated, remain constant as such, as arithmetic and mathematical data, among which one relates the relative to the temporal orientation.

Thirdly, if we are talking about relativism, then this relativism, in the midst of the RTH itself, is to be understood only physically, i.e., solely in relation to natural, material occurrences. But this natural, material, physical event transcends the aesthetic, ethical, philosophical and religious values, which in no way stand or fall with a possibly physical event. Because the values mentioned show themselves as "duty", "idea", "ideal" etc. over-natural, yes against-natural. The evaluation of these values is therefore not a physical, but a metaphysical one.

Fourthly, even if these values should turn out to be relative, the human spirit nevertheless relates all, including these relative values, to the absolute, to thinking, the spirit, God or whatever word one may choose to mean that unity proves itself in the midst of diversity for science, wisdom and religion.

Fifthly, Einstein's assertion of a limited universe is very suitable for making scientific, philosophical and theological discussions about the spirit which transcends this universe.

**Dipl.-Ing. Dr. HANS ISRAEL / BERLIN**  
**MATHEMATICAL FALLACIES OF THE RELATIVITY THEORY**

Einstein carried out the mathematical calculation of the RTH so incorrectly that one can only express his astonishment at it. A few samples should suffice to prove the frivolity of his method:

1. The substitution  $x - vt = x'$  does not apply to the reflected light beam of the Michelson interferometer directed against the earth translation. The coincidence of the stationary and moving mirror is achieved in this case by the substitution  $x + vt = x'$ . After that, the principle of relativity no longer applies in general. Einstein himself calculates in his differential equation with the velocities  $c - v$  and  $c + v$ , which correspond to the above substitutions. So he refuted himself!

2. The relativistic shortening  $\sqrt{1 - v^2/c^2}$  only results from that middle interferometer mirror, while a completely different value can be calculated on the other two mirrors. But Einstein keeps asserting; After that everything has been shortened evenly!

3. The addition theorem of the velocities is obtained from Einstein only through the gross calculation error to express two velocity systems  $c$  and  $\omega$  by the same coordinates  $\xi$ ,  $\tau$ , and despite the new substitution  $\xi = \omega\tau$  the factor  $c^2$  of the Lorentz transformation constant instead of replacing  $c$  by  $\omega$ .

4. When calculating the relativity factor  $\beta$ , Einstein overlooks the rotational momentum of the earth's surface of 426 m/sec, while he silently allows the light beam to move with the solar system relative to the constellation of Hercules at 19 km/sec. The solar ether thus becomes the reference system, which results in the light beam being carried along in contrast to the relativity principle.

5. Since the aberration is a result of free aether oscillations, while the Michelson interference occurs with earthbound light, there is no V at all reason that both types of light behave identically. Rather, earth light must be internally related to earth potential.

6. By transforming Maxwell's light wave equation:  $x^2 + y^2 + z^2 - c^2 t^2 = 1$ , the t coordinate is given a certain position without any physical change or a fourth dimension.

7. The gravitational field cannot be replaced by an accelerated system, since both systems are not equivalent. The substitution  $\Gamma^{\tau}_{\mu\nu} = -\{\mu\nu;\tau\}$  therefore there is no coincidence of the gravitational field with the oppositely accelerated system.

8. Einstein finds Newton's law of gravitation only through the impermissible substitution  $ds = dx_4 = dt$ . He swaps categories of different meaning and thus confuses mathematical equality with physical equivalence.

9. Since the strongest electrical influences do not succeed in bending a ray of light, it is unheard of to try to make mankind believe that gravity can do it. Rather, we know that the solar atmosphere can bend the starlight like a gas ball.

10 Einstein only received the Mercury deviation from the erroneous view of calculating it relativistically, while determining the classic rotation using the usual method. A physical explanation is not given at all. In our opinion, however, the rotating solar electro-potential can lead to a shackling of Mercury through which it hurries faster.

11. A union of electrical and mechanical processes is impossible, because their masses behave differently in relation to inertia. This admits that the difference is of an alogical nature.

Since Einstein took note of the above errors in his work <sup>1)</sup> without being able to refute them, he thus admitted the fiasco of the RTH.

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<sup>1)</sup> Cf. "Proof why the Einstein RTH should be shelved". Hiflmanu, Leipzig. Furthermore "Dissolution of Kant's 4th theory of contradiction. Schwetschke u. Son, Berlin.

**HUGO KELLER / LÖBAU i. S.  
THE THEORY OF RELATIVITY**

The RTH asserts the constancy of the speed of light for any system that moves at will. If two celestial bodies approach each other at the speed  $v$  and one of these two bodies emits a beam of light, then, according to the RTH, for the assessment of the speed of light it is irrelevant whether the light carrier is moving and the other world body is at rest or vice versa Light bearer at rest and the other world body is moved towards him. There is no such thing as a state of absolute rest, only that of relative motion.

In order to keep the speed of light constant for any system that is moved, space and time dimensions are converted for the state of movement. Room dimensions are shortened in the direction of movement, clocks are slowing down. Let an observer B move against an observer A at the speed  $v = 100,000$  km. Then it follows from the RTH that for B (judged from A) the kilometer measure shrinks to 707 m, thus 300,000 km to 212,100 km. B does not now determine a speed of light of 212 100 km per second, but only 0.707 seconds have elapsed for him; thus B finds the speed of light at 300,000 km per second. B must therefore (always judged from A) subtract his mileage 424,300 times in order to get the distance of 300,000 km, which the light travels in one second. Exactly the same difficulty arises with the definition of  $v$  in relation to the stationary or moving system.

If the thesis of the constancy of the speed of light were to apply to any system in motion, then it would be the right thing to define the 300,000th part of the second light path as kilometers. Either the kilometer measure would then be the same for all differently moving systems, or it would be - and thus also the light path, different. In both cases, a theory of relativity would no longer make sense.

Judging from the embankment, a train should have different lengths, depending on whether it is stationary or moving. If I take a momentary photograph of a moving train, the length is different from the photograph of the stationary train, although the train can be viewed as stationary during the short duration of the exposure. A differential calculus should therefore not be possible at all, as at all the unconditional truth of our mathematics is called into question by the RTH.

If, out of two exactly identical clocks A and B, clock B makes a trip around the world, it follows clock A when they meet again. If we assume that the journey around the world takes place in 24 hours against the rotation of the earth, then the apparently moving clock B is at rest and the other, apparently stationary A is moving.

A must pursue against B, and the clocks outbid each other in the pursuit. Or else A now takes action against B, i.e. at the same speed, I need different times for a trip around the world, whether I drive around or the other way around. At the same time it follows that the earth must have a different circumference, depending on whether I measure clockwise or counterclockwise. So two different values for the same route.

In some obscure way the RTH "eliminates" this contradiction with the help of gravity. The passage of time is incomparably faster in fields of different gravity. Accordingly, two celestial bodies of different sizes, which emerged from the environment at the same time, are of different ages, because what a hundred thousand years mean for one is more or less for the other. Even the individual parts of a planet whose common hour of birth is the hour of birth of the planet have different ages because their gravitational field is different.

And why does the RTH expect us to be so unimaginable? The answer is that it wants to give us a "simple" explanation for known and well-founded phenomena, while it fails in the field of new research. Atomic research, which has to do with unimaginably high speeds and small distances (i.e. the given area for the RTH), has none of its successes to thank for the RTH.

The success of the RTH is that it has put hundreds of new problems in place of a problem in classical mechanics. But you will also understand that the RTH virtually challenges contradictions and "misunderstandings".

See "The lack of stability of the RTH and counter-evidence against the RTH ". Hillmann, Leipzig.

### **Professor Dr. O. KRAUS / PRAGUE ON RELATIVITY THEORY <sup>1)</sup>**

The optical experiment made by Michelson seemed to show that the light emitted by an earthly light source behaves exactly as if the earth was at rest, and as if the light source ejected the light like a projectile, as if thus a Projectile theory like Newton's and Poisson's would apply; or if you lay the foundation for a wave theory,

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<sup>1)</sup> See d. V 1, article: Frankfurter Zeitung, No. 163, 3, III, 1927, from which the above text is taken. - 2. "Fiction and Hypothesis in the Einsteinschen RTH", Ann. d. Phil. II, 3, 1921 (special issue on the RTH). —3, Kantstudien, XXV, 1, 1920 (21); "On the doctrine of space and time", Brentano estate. - 4. Kant studies, XXVI, 3 u. 4, 1921 (22); "The confusion of descriptive means and descriptive object in the Einsteinschen RTH." - 5. Lotos, 70, 1922, p. 333 ff. - - 6. Umschau, XXV, 1921; "The impossibility of Einstein's theory of motion". - - 7. "Open letters to Einstein and Laue". Braumüller, Vienna a. Leipzig 1925.



as if the light ether were taken from the earth like the air in a ship's cabin. Both assumptions, however, contradicted the prevailing electrodynamic theory of the static ether by H. A. Lorentz. According to this theory, our earth leaves it completely in peace on its journey through the unresisting world ether; Therefore, if Michelson in his famous experiment sent light waves back and forth in the direction of travel of the planet and in a different direction, one had to expect, according to Lorentz's theory of the resting ether, that the light waves would have to travel a longer or shorter path, and later or arrive earlier than they would arrive if the ether were carried away.

So how can one explain that the Michelson experiment turned out as if the Lorentz theory were incorrect? It was a very daring hypothesis when Lorentz, instead of changing his theory, assumed that the Michelson apparatus and every body in general changes quantitatively when it moves, in such a way that the Michelson apparatus and every body in general contract in the direction of its movement! Through this "contraction hypothesis" & Lorentz succeeded in bringing his theory into line with the contradicting results of the Michelson experiment. This hypothesis by Lorentz may seem strange, but it is an attempt to find the so-called "negative result" the Michelson's attempt to explain the cause while maintaining the hypothesis of the dormant ether.

According to Einstein, however, "the contraction is only a consequence of the way of looking at things, not a change in a physical reality" (Born), which is evident from the fact that the Einstein contraction only takes place "for the observer who is not moving" depends on the presence and the arbitrarily chosen point of view of an observer, while the Lorentz contraction as a physical process independent of any observation is thought.

According to Einstein, the result is a very strange reproducibility: for the observer everything remains unchanged on the same system; for him it is not true that any lengths of his world-body shorten as a result of movement, or that any of his clocks go slower. But the observer on the system that is not moving with it measures the lengths of the other system as being shorter and the times as being longer. Eddington, the English advocate of the RTH, expressly points out the fairytale-like nature of this reciprocal pseudo-measurement, which has nothing in common with Lorentz's hypothesis of a real abbreviation other than the mathematical formula, in his work translated by Teubner.

Suffice it to say here that Einstein's principle of relativity "postulates" that there must always be a speed difference of 300,000 km / sec when comparing the speed of light propagation ( $c$ ) with that of a linear, uniform movement ( $v$ ) of any other movable thing in favor of light

surrender; in other words: the speed of light "plays the role of an infinite speed" against which any other speed vanishes. The paradox that  $c - v = c$  should always result for the measurement comparison is sought to make understandable through that reciprocal change in the time scales (clocks) and furthermore the spatial scales <sup>1)</sup>.

The RTH makes the change (shortening) of the spatial scales quantitatively the same, but - as explained above - in a different way from the Lorentz contraction, namely only for the observer on a system that is not moving along. Of course, this is not about actual experiences, but about "postulates" and since the measure of space and time (clock) are equated with space and time in the further course, those revolutionary teachings about the relativity of simultaneity and the emerge All that common sense, like Newton's, Euler's and Kant's, holds to be evident a priori. In relation to the RTH, however, it remains with the criticism of Prof. Wieners in Leipzig, who unanimously emphasizes with my criticism: "We can never make the magnitude of a speed disappear just through the choice of the scale, as is possible with the relativity principle through the choice of one's own speed to be deducted."

**Dr. W. KUNTZ / SPANDAU**

### **EINSTEIN'S RELATIVITY LACKS ANY OBJECTIVE VALIDITY**

While human research never advances to a chimeric "absolute", its history has shown that its progress consists in replacing the subjectivity and relativity of human conceptions with objective validity. It is precisely the liberation from relativity that is the yardstick for new knowledge. In contrast to this, the RTH elevates relativity itself to an absolute principle, with which it contradicts itself.

Incidentally, it is based on optical experience and neglects the knowledge of the sense of touch, which is more primordial than the sense of sight, as can be seen from the fact that there are many blind people, but not those who are completely tactless. The word "understanding" suggests this originality of the sense of touch.

If the principles of RTH and relativism are transferred to other spiritual areas, then any general guideline for human endeavors becomes obsolete and even the difference between error and correct knowledge is no longer applicable.

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<sup>1)</sup> See v. Same: "Einstein's theories of relativity and physical reality", Barth, Leipzig, 1930.

**Dr. EMANUEL LASKER / BERLIN**  
**ANTINOMY OF RELATIVITY THEORY**

Einstein's deduction overlooks the fact that the experience of empty space does not matter. By substituting the empirical value of about 300,000 km per second for  $c$  and arguing as if the emptiness of astronomical space was indubitable, he arrived at an antinomy. In reality,  $\lim c = \infty$ , as I already explained in 1919, and that solves the antinomy. Einstein's method of deduction is thoroughly inconclusive, and the method of dispute which he follows is irrelevant.

**Professor Dr. J. LE ROUX / RENNES**  
**THE BANKRUPTCY OF RELATIVITY THEORY**

(Translated by Dr. E. Ruckhaber)

1. Einstein's RTH produced a lively intellectual movement and initiated various theoretical and experimental researches which have contributed to the advancement of science. However, the theory in itself does not stand up to thorough scrutiny. In the light of criticism it becomes clear that the given synthesis is an empty semblance that can only be preserved in a favorable, protective half-dark.

The connectedness of the arguments and the childlike nature of the hypotheses are of the same type. The conclusions sometimes have no relation to the premises, the basic components of the calculations assume a meaning that does not correspond to the definition in the underlying data.

One could perhaps excuse the methodological errors if the results brought real progress to our knowledge. Unfortunately this is not the case. One or the other of the results obtained are independent of theory and cannot in any way serve to support it.

It is known that the special RTH arose from the Michelson experiment.

But now the author himself has understood how to properly analyze the results of this attempt. He drew conclusions from them which they in fact do not imply. He then tried to explain these conclusions by means of a series of hypotheses which contradict each other and have no relation to the phenomenon!

The theory of gravity is also very strange. But here, in addition to the lack of ability, there is the immense dupery in the alleged explanation of the secular progression of the perihelion movement of Mercury. The observed secular forward motion is approximately 374". Einstein's theory gives a displacement of approximately 42". Newton's theory,

on the basis of current findings, explains up to 336" for this forward movement.

To infer from this the superiority of Einstein's doctrine is a little more necessary than the blind and most abnormal willingness. The impotence of the RTH in this regard is due to its entire composition. It takes its own principle as the starting point of itself, in that it undertakes to represent material movements through geodetic measurements in the form of quadratic differentials with four variables, through space-time with four dimensions. This hypothesis contradicts gravity.

The attempts of mathematicians who are more conscientious and lucid to reconcile logically incompatible things have necessarily failed and will continue to fail. In the fifteen years or so since the General RTH was founded, it has been impossible to derive an approximate representation of the motion of the solar system or any other system. The promises made have not been kept; this is a telling failure.

2. The Michelson experiment. The RTH concludes from the Michelson experiment that the relative speed of light propagation is the same in all directions for the observer. This conclusion is incorrect. The isotropy of the interference wave does not include that of the propagation wave <sup>1)</sup>. At most one can conclude from this that the medium in which light propagates, called ether or whatever, is only homogeneous and isotropic with respect to a given system of reference under certain conditions.

If one admits that the aether is influenced by the force of gravity, then even the law of propagation can satisfy the following conditions:

- a) There is a reference system S in such a way that the medium is homogeneous and isotropic with respect to S in every region remote from the material masses.
- b) For every light source that is invariably bound to the same reference system, the interference wave is isotropic in a specific area.
- c) For every light source bound to a material mass and carried along by it, the interference wave is also isotropic in a special area.

There are infinitely many solutions whose common properties are easy to determine. The exact analysis of the phenomenon does not permit the strange conclusions which form the basis of special relativity. The very precise results of Miller's new experiments are of the greatest interest because they can help us to exercise the influence of

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<sup>1)</sup> J. Le Roux, "Relativite restreinte et geometrie des systemes ondulatoires", p. 21 (Paris 1922). Journal de Mathematiques, p. 223 (1922).

matter on the conditions of the propagation of light.

3. The relativistic explanation of the Michelson experiment. Having drawn incorrect conclusions from the Michelson experiment, the relativistic school tries to explain it. Since the partial derivative equation for the propagation of the waves does not hold up for the analytic transformation, which is a rectilinear uniform translation, one changes the meaning of the words. The transformation by Voigt-Lorentz, which retains the analytical form of the equation in question, is baptized with the name "Translation".

This is ridiculous sleight of hand. Translation is one thing, the Voigt-Lorentz Transformation is another. There is a group of translations like there is a Voigt-Lorentz group. The two groups each have their own area and specific meaning in mathematics. Since these are matters of definition, they cannot be confused.

In order to use the Voigt-Lorentz group, Einstein assumes two reference systems; each of them is assigned an observer who is equipped with a complete set of measuring instruments and timers. Each of the two carries out the length measurements in his own system, namely by shifting the scales, according to the methods of Euclidean geometry. The observer and the objects have permanent existence and can even, it is said, pass from one system to another. Finally, the relationship between the coordinates of one and the same event point related to both systems is established by the formulas of Lorentz.

One notices immediately that these hypotheses have nothing in common with the conditions prevailing in Michelson's experiment, where there is only one observer who neither has to measure his timer nor set the numerical value of the speed of light.

4. Incompatibility of the conditions of Einstein. But even more: Einstein's hypotheses are themselves logically incompatible with one another. Let there be two systems with variables  $S(x, y, z, t)$  and  $S'(x', y', z', t')$  that correspond to each other according to the formulas of Lorentz. Should a point in the system  $S$  be fixed, then  $x', y', z'$  must be constant, while  $t'$  remains arbitrary. The equation which determines  $t'$  then plays no role.

Under these circumstances, all points connected to  $S'$  suffer rectilinear uniform translation with respect to  $S$  but the variables  $x', y', z'$  do not mean Cartesian right-angled coordinates in the sense of  $S$ . The same obviously applies if  $x, y, z$  is fixed and  $t$  is arbitrary.

Einstein did not differentiate between the fixed instantaneous values

and the variable arbitrary values of  $t$  and  $t'$  between a permanent object and a momentary event. Now, however, the observers, their yardsticks and timers must be viewed as permanent things in the system to which they are bound.

According to one of Einstein's basic hypotheses with regard to the length measures in one of the systems, two identical objects that lie in the same system are related to one another by means of a Euclidean transformation carried out on the variables of this system.

On the other hand, according to the hypotheses made, the observers, the yardsticks and the timepieces are mutually related from one system to the other. All of these prerequisites would require that the transformation of a Euclidean substitution by means of a Lorentz transformation still remains a Euclidean substitution - which is not the case.

Einstein's interpretation of the Lorentz group thus encounters a logical contradiction. The entire special RTH rests on this fragile foundation.

5. Space and spaces. In the general RTH there is a mixture of two things which mathematicians wrongly use the same name: the geometrical space and the analytical spaces.

In the cases where  $n$  variables occur, the analysts often give a system of numerical values that are shared to these variables the name "Analytical point" and all these points the name "Analytical space". The number of dimensions of the analytic space envisaged is the number of variables that make it up.

These definitions are purely analytical and independent of the concrete meanings of the given variables. The geometer's point of view is different. For him, the number of dimensions is not a property of space, but a property of the space element. This requires an explanation.

The position of a geometric point is determined by three coordinates. The totality of the positions of the geometric points would thus form an analytical three-dimensional space. But a straight line is determined by four numbers, which are also called its coordinates; the position of a solid body is determined by six coordinates, etc. If one regards the straight line as an element, the totality of the possible positions forms an analytical space of four dimensions (Plücker's ordered space). The totality of the positions of a solid body would also define a six-dimensional analytic space.

For the geometer, the location of the points is the same as that of the straight line or the solid body: it is always the same space.

The space considered as a place in the sense of the geometer does not have a certain number of dimensions.

Classical mechanics considers systems whose position depends on an arbitrary number  $n$  of parameters. The totality of the possible positions of this system forms an analytical space of  $n$  dimensions; the place of these possible positions always belongs to the same indefinite space of the geometer.

The point of an event in the relativistic sense is determined by three position coordinates that are linked to a time value. Their entirety forms a four-dimensional analytical space. But if the event is composed of the simultaneous consideration of two point positions and a time value, the whole forms an analytical space of seven dimensions.

The totality of the possible connections between two completely independent event points would form an analytical space of eight dimensions.

Further examples are superfluous. The ones given here suffice to make it clear which essential difference there is for the geometer between the local space and the total space. There are two different terms that are referred to by the same name \*

6. The relativistic spacetime and the analytic space of Newton's gravity. Relativity has only four-dimensional space-time in mind, which it examines in the form of quadratic differentials; this should play a role similar to that of the limit element of a surface in geometry. The force of gravity would then be determined by starting from this square shape. The natural movement of a material point would be represented by a geodetic line of the differential form in question. This geodesic line is his world line. A geodetic line corresponds to every movement.

Something similar can be found in classical mechanics. The principle of the smallest effect means that the representation of the movement of a system is based on a geodetic line in the form of quadratic differentials. But one has in the eye the movement of a whole system, which is viewed as a solid whole, and more that of a single element. The quadratic form then comprises as many variables as necessary to determine the value of the system and its movement it whole, which is represented by a line of the shape in question.

If you think, for example, the universe is formed by a total of  $n$  mass points, the position of the whole will depend on  $3n$  variables. The corresponding analytical space will have  $3n$  dimensions. Time is not a complementary coordinate, because the movement of a timepiece of whatever kind leads away from the entirety of the movements of the universe.

The square shape mentioned is as follows:

$$U \sum m ds^2$$

In it  $U$  denotes a function of the coordinates of the system. The calculation involves the introduction of an auxiliary variable  $t$ , which is defined by the equation

$$dt^2 = \frac{\sum m ds^2}{2U}$$

is determined. This allows the geodetic differential equations to be reduced to the usual form of the equations of mechanics. This auxiliary variable  $t$  is the canonical time of classical mechanics.

The canonical frame of reference is the one for which the kinetic energy of the observable universe is minimal. If one finally determines  $U$  according to a minimum requirement for the energy of the accelerations, one finds

$$U = f \sum \frac{m_i m_k}{r_{ik}} + h$$

where  $m_i$ ,  $m_k$  and denote the masses of two elements and  $r_{ik}$  their distance. This is Newton's first law. The equations of motion then have the form

$$m_i \frac{d^2 x_i}{dt^2} = \frac{\partial U}{\partial x_i} \quad (1)$$

These equations contain not only the coordinates of the point under consideration, but also those of all other points in the system, which gives the whole thing closed <sup>1)</sup>.

An interesting fact of relativity, which classical mechanics reveals but escaped Einstein's school, is the relative character of the principle of the equality of effect and counteraction. This principle does not express a property of matter: it is a property that comes from the choice of the frame of reference.

7. On the impossibility of representing the phenomena of gravity through Einstein's theory. It remains to be shown that it is impossible to represent the phenomena of gravity, starting from Einstein's basic hypothesis. Let  $T$  be a quadratic form of differentials of four variables  $x_1, x_2, x_3, x_4$ . The equations of the geodetic lines of this form can be written as follows:

$$\frac{d \frac{\partial T}{\partial(dx_i)} - \frac{\partial T}{\partial x_i}}{\frac{\partial T}{\partial(dx_i)}} = \frac{d \frac{\partial T}{\partial(dx_k)} - \frac{\partial T}{\partial x_k}}{\frac{\partial T}{\partial(dx_k)}} \quad (2)$$

<sup>1)</sup> J. Le Roux, „Principes mathematiques de la theory de la Gravitation”. Paris 1930.



and the variable arbitrary values of  $t$  and  $t'$  between a permanent object and a momentary event. Now, however, the observers, their yardsticks and timers must be viewed as permanent things in the system to which they are bound.

According to one of Einstein's basic hypotheses with regard to the length measures in one of the systems, two identical objects that lie in the same system are related to one another by means of a Euclidean transformation carried out on the variables of this system.

On the other hand, according to the hypotheses made, the observers, the yardsticks and the timepieces are mutually related from one system to the other. All of these prerequisites would require that the transformation of a Euclidean substitution by means of a Lorentz transformation still remains a Euclidean substitution - which is not the case.

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These definitions are purely analytical and independent of the concrete meanings of the given variables. The geometer's point of view is different. For him, the number of dimensions is not a property of space, but a property of the space element. This requires an explanation.

The position of a geometric point is determined by three coordinates. The totality of the positions of the geometric points would thus form an analytical three-dimensional space. But a straight line is determined by four numbers, which are also called its coordinates; the position of a solid body is determined by six coordinates, etc. If one regards the straight line as an element, the totality of the possible positions forms an analytical space of four dimensions (Plücker's ordered space). The totality of the positions of a solid body would also define a six-dimensional analytic space.

For the geometer, the location of the points is the same as that of the straight line or the solid body: it is always the same space.

They allow to integrate three of the coordinates as a function of the fourth and six of any to express in constants. The only difference between two solutions is the numerical values of these six constants.

Let us consider two solutions which represent the motions between any material element. Let  $y_1, y_2, y_3, y_4$  be the coordinates of the elements of the first to be understood, and let  $z_1, z_2, z_3, z_4$  be those of the second. We can, for example, assume that  $y_1, y_2, y_3$  are expressed as a function of  $y_4$ , and also  $z_1, z_2, z_3$  as a function of  $z_4$ . But there is no necessary relationship between  $y_4$  and  $z_4$ : there is generally no necessary element-to-element relationship between two geodetic lines. One could evidently manufacture such a product by, for example, setting  $y_4 = z_4 = t$ , where  $t$  denotes a time. However, this agreement is by no means essential. Nothing in the differential equations (2) would be changed if  $y_4 = t$  for the first line and  $z_4 = t + \alpha$  for the second line, where  $\alpha$  is any constant.

The lack of a regular relationship between the event points of two different geodetic lines is the main reason that Einstein's theory is unsuitable for representing the phenomena of gravity. One can derive differential equations from theory which will more or less approximate those of the motion of a single point; but one will never be able to derive the equations for the motion of any solid system from it. It is not the difficulty of the problem or the incompetence of the authors to blame for the senselessness of the experiments that have been made in this sense, but it is based on the essential contradiction between the principle of Einstein's theory and the fact that it is closed consists.

It has not even succeeded in setting up the equations for the motion of a system of two bodies which are related to a reference system that does not have one of these bodies as its starting point. The secret of this powerlessness lies in the restriction of the analytical space corresponding to the problem of gravitation to four dimensions. Analytic mechanics, which is independent of the superstition of spacetime, solves the problem neatly and precisely by introducing the necessary number of variables. Relativistic mechanics stamps in the same place, unable to get out of its four-dimensional prison.

The four-dimensional analytic space of Einstein does not contain the  $3n$ -dimensional analytic points which correspond to each position of a whole of  $n$  material elements. While for this reason relativity can only treat the elements individually, classical mechanics treats the whole of the observable universe in its totality.

8. Gravity is a property of the observable universe viewed in its entirety. One generally regards gravity as a law of acceleration or interaction. But in this way the problem is robbed of its true nature. The so-called Newtonian effect, which is inversely proportional to the square of the distance, only applies to movements related to certain reference systems. Since these systems are oriented towards the starry sky, they actually depend on the totality of the stars observed.

The wording of the law of attraction also presupposes the choice of a special point of reference for the time so that the acceleration can be determined. This canonical time is also fixed, theoretically by considering the entire universe, and in practice by the apparent rotation of the starry sky. It is always the whole of the universe that comes into its own.

The concept of two equal and directly opposite effects seems at first to be contrary to our understanding. However, we prove that: Regardless of the type of moving whole, whatever the movements of the elements that compose it - there are always systems of reference that are so exposed that the relative movement of the whole in relation to any individual is unique in it seems to occur solely on the basis of two mutual, equal and directly opposing effects.

The mutual remote effects are therefore essentially a fact of relativity, which results from the determination of the frame of reference. Einstein's method did not make it possible to uncover this important result. In order to finally express the law of mutual effect in a form that is independent of the choice of the reference variable, one would have to use the totality of the parameters which serve to determine the position of the observable universe as a whole. That too is beyond the capabilities of Einstein's method.

The results confirmed by the relativistic school are only considered satisfactory if they are admitted without criticism. This applies e.g. from the deceptive indication of 42" for Mercury instead of 374" and the inability of the method to explain the rest.

9. Conclusion. These general statements make it unnecessary to deal with various irregularities in the method and the pseudo-geometrical theories of relativity. One gets the same impression from them and finds the same lack of criticism, combined with some assertions that are downright absurdities.

My very clear conclusion is that Einstein's RTH does not belong to the field of positive science.

**Professor Dr. P. F. LINKE / JENA**  
**RELATIVITY THEORY AND PSYCHOLOGICAL TIME**

My opposition to the RTH begins as soon as it believes it can make philosophical and ideological statements.

In and of itself, no physicist can be prevented from incorporating his or her knowledge into a (wholly or at least in its essential points) positivistic-instrumentalistic system of knowledge and saying, for example: physical propositions are "true", if with their help it is possible, on the basis of the observation of certain phenomena, to calculate other phenomena and accordingly "predict" correctly.

In the building of a physics understood in this way, the RTH not only fits in without constraint, but also provides particularly impressive evidence of its feasibility. The only question is whether this feasibility cannot be achieved at the expense of that task of research which has hitherto been regarded as its most valuable, indeed as its real and, insofar as questions of world view are concerned, decisive; the establishment of the truth.

Because "truth" in the sense of positivistically understood physics is fundamentally different from what the natural man understands by truth and has a right to understand. While the real truth always refers to an existing being, the positivistic "truth" wants to be nothing but a mere instrument for calculating the phenomena and therefore tolerates a foundation based on principles that are wrong, even contradicting the real truth. can be demanding: it thus reveals itself as a - - in the broader sense a technical matter of peripheral knowledge, worldview problems are irrelevant: because in the nature of things they can only be served with genuine truth.

The fact that thinking about the categorical basis of the RTH actually leads to logical difficulties is almost an open secret. One of these difficulties, which is often overlooked precisely because it is one of the most elementary requirements of the theory in question, is briefly outlined here.

R. Weinmann pointed out that Einstein already assumed simultaneity in his physical definition of simultaneity; "Two distant light signals, A and B, are for him at the same time when they" meet "in the middle M - namely (what else could this mean?) Meet at the same time" <sup>1</sup>). One will reply: Einstein's definition of course only concerns the simultaneity of events in different places: everything is in question. The simultaneity of two events in the same

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<sup>1</sup>) The untenability of the special RTH" (Nature and Culture, Issue 4). Tyrolia, Innsbruck-Wien-Munich 1930.

locations (or at two immediately adjacent ones) are completely unproblematic.

But is that the case? Simultaneity presupposes time and since according to the RTH there are several equal times, it may be asked in the sense of which time there is simultaneity. Hugo Bergmann gives (for this as well as for similar cases) the answer to Bergson that here psychological time protrudes into physics <sup>1</sup>). Indeed, when the physicist makes time determinations, he is always obliged to determine directly experienced simultaneities (namely that of the physical event to be investigated with the pointer position of his clock) and thus to include a directly experienced time in his results.

Bergmann recognizes it as a contradiction "that physics is not able to completely exclude psychological time from its conceptual structure, but is also not able to cope with it with its concepts <sup>2</sup>). Of course, this should not say anything essential against the categorical structure of modern physics (and therefore also of RTH), because - so it goes on - "the world of physics is a world of abstraction, and we must no longer rely on physics. wait for the abstraction to be purely carried out within its conceptual means.

That is certainly correct, only that would have to be a strange abstraction that would be able to the result of the action to introduce contradictions that are not present in what is being abstracted from. If I abstract that of furniture from the concepts of tables, chairs, benches, cupboards and beds, this abstraction of mine would certainly be flawed if a contradiction could be shown in the concept of furniture.

Above all, however, there is no psychological time at all in the Bergsonian sense presupposed here (as something coordinated with physical time). The so-called psychological time is rather the experience of time as opposed to time itself; time grasped in experience and more or less modified by the conception. It behaves at the moment like the number we perceive in the immediate experience (for example a point group) relates to the actual number. To speak of a psychological time in any other than this very secondary sense is in fact just as wrong as to speak of a psychological number and say that if 125 perceived points are estimated at 60, then here is a Special psychological number of 60 points available.

If there is no particular psychological time, then it cannot be used to remove the logical inconsistency which we have uncovered above. Rather, it remains unchanged as such.

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<sup>1</sup>). "About some philosophical arguments against the RTH". Kant Studies Vol. 33, S. 387 ff.

<sup>2</sup>) a. a. O., p. 404.

By the way: from an actual one. Eliminating the inconsistency in question is also out of the question for Bergmann. What he is doing is merely to soften it, to push it onto a dead track, as it were. But it is also there for him, and it must be noted that such a staunch supporter of the RTH as Hugo Bergmann has recognized and emphasized one of its most fundamental weaknesses.

See "RTH and Relativism", Ajan. d. Phil II, 3, 1921.

**Professor Dr. STEN LOTHGXGXS / STOCKHOLM  
THE CLASSICAL PRINCIPLE OF RELATIVITY IS VALID FOR ALL  
PHYSICS INCLUDING THE OPTICAL-ELECTRICAL WORLD <sup>1)</sup>**

While physical theories are generally based on the principle of normal speed, the theory of the interference of light makes an exception. She chose the reverse speed for the cornerstone. In and of itself, that's not a mistake.

If, in calculations, one forgets the cornerstone of a theory and performs arithmetic operations that conflict with it, one will encounter stones of contention. In this case, where one relies on a theory that is correct in and of itself, a slip is very forgivable. It can happen to the best: *Nemo Omnibus horis sapit*. Such series of errors, however, are extremely annoying and difficult to detect and, once made, have a tendency to become chronic. Even after it had been found that the logical consequences were nonsensical and that this resulted in a calculation error, one could think for a long time what this inner contradiction was based on. One absolutely did not want to work out a theory which proved to be correct even after repeated testing. All that remains is to logically consider the ultimate foundation of the theory, and to ponder whether it is the only conceivable or some other possibility, and, in such a case, to make clear the correspondence between these other foundations and the scope of each.

If  $L$  denotes the path of light in water,  $c$  denotes the speed of light in a vacuum,  $w$  that in still water and  $v$  that of water, Fizeau has the speed of light in a vacuum, with  $w$  that in stationary water and the speed  $v$  of water

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<sup>1)</sup> The author takes a very mechanistic point of view on light. He believes that the rays of light and the electrons are elastic wires, the wave movements of which take place without the need for any ether (Esquisse use., Stockholm 1920).

It has been since 1922 that the author emphasizes as his view that Lorentz's transformation is flawed from the mathematical point of view.

The following lines give a short excerpt in German translation from his work, which came out in Swedish in 1929: "Achilles and the turtle".

according to his famous experiment concerning the speed of light in running water, according to the theory of interference, found as the path difference sought:

$$\Delta = L \left( \frac{c}{w-v} - \frac{c}{w+v} \right) = L \frac{2v c^2}{c w^2} = L \frac{2v}{c} \frac{16}{9}$$

After division by the wavelength, it reached a value once again as large as that which the experiment showed, and, therefore and in connection with Fresnel's theory <sup>1)</sup>, he explained that the mitigation coefficient was efficient in this special case 7 / 16.

Now to the problem of Achilles and the turtle. But now we are not concerned with the time it takes for him to reach it, but we calculate the path made by the movable one if, as we do at present, one wishes to calculate in a theoretical way the displacement of the interference which arose as a result of the different velocities of two rays of light, it is of course necessary to first know the difference in path before one can get involved with it to divide the wavelength.

If  $c$  is the speed of Achilles and  $w$  is the speed of turtles, since one turtle runs at the speed of  $w + v$  and another only runs at the speed of  $w - v$ , one will find the difference in path:

$$\Delta = L \frac{2v}{c}$$

If the expression  $L(2v/c)$  is divided by the wavelength, we get one numerically the displacement of the fringes of the interferences found by Fizeau through experimentation. This means a victory for the classical principle of relativity, because it has been proven that the speed of light is changed by  $\pm v$ , which was the speed of the water flow.

**Professor Dr. H.J. MELLIN / HELSINGFORS**  
**THE UNSUPPORTABILITY OF RELATIVITY THEORY**

For a person skilled in logical matters, the untenability of the RTH can be described very briefly and simply. Because the concept of simultaneity and the equally central existence definition - both of which belong to the indefinable ultimate givens or basic concepts,

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<sup>1)</sup> The thought of Fresnel deals with different densities. In my private sense, I assume that if you have a carafe of water on the table and then walk around the room with the carafe, the water will have the same density in both cases. Fresnel was of the opinion that part of the ether remained and another part was carried away - it is a daring and somewhat arbitrary arithmetic operation to calculate the arithmetic mean number from the struggle to pull between these two ethers.

without which no thinking is possible - are so inseparably linked that with simultaneity the existence of certain things is also thought and asserted: in Mathematics the existence of conceptual things, in physics the existence of real things. Conversely, existence without absolutely simultaneous things is also absolute nothing. Since the RTH denies absolute simultaneity, it (unconsciously) denies not only mathematics, but also empirical reality. A compelling proof of the empirical and logical untenability of this "theory" can be made fabulously short and simple.

The core point in the immense relativistic confusion of terms deserves to be explored in more detail in connection with other fundamental terms. Without the two basic concepts just mentioned, no thinking is possible, as I said. Even the indefinable concept of a set (e.g.) requires that the objects in question be thought or postulated as existing at the same time, regardless of whether they move or not. If one denies simultaneity, one obviously denies the concept of number. Without simultaneity, there can be no talk of uniformity, irregularity, speed and acceleration. Indeed, let us consider the most general case where two bodies or points P and Q meet along their resp. Simultaneously move path curves from the starting positions  $P_0, Q_0$ . The trajectories may rest in relation to one another or move as they like. In any case, we say that the movement of P is uniform with respect to that of Q, if the ratio of the simultaneously traveled distances (railways)  $P_0 P : Q_0 Q$  continuously maintains the same constant value C at every instant (point in time) ( or shorter: if any but the same distances covered by Q always correspond to the same proportional distances covered by P). C is called the speed of P if the movement of Q is regarded as normal movement or time. This is a definition in the actual or true sense that must not be confused with name explanations (nominal definitions).

Here, then, absolutely simultaneous positions of P and Q must be postulated if one wants to form and apply the concepts of uniformity and velocity at all. This definition is only an imaginary comparison, but by no means observations, let alone measurements. Thinking is comparing and establishing relations <sup>1)</sup>. The core of the relativistic confusion lies in the fundamentally wrong view that a (physical) concept could be defined by measurements and observations.

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<sup>1)</sup> In this context, we do not count the imagining on which all thinking is based as part of actual thinking.



It is worth noting here that an exact conception of this question requires only the most elementary knowledge of the theory of sizes. The relativists therefore lack the most elementary knowledge of size theory, despite the fact that they also want to be mathematicians! Indeed, one must first of all know what to measure before one can even measure. The concept (size) must therefore be present in consciousness either as an indefinable given or as an already defined concept. In other words, the concept in question is in all cases an empirical and logical presupposition of measurement: an empirical one because measurement is not realized, a logical one because it cannot be thought without first thinking of the concept as a determinacy to be measured has been. In short: empirically and logically, the concept is the primary, earlier (a priori), measuring is the secondary, later (a posteriori).

Without exception, measurements and observations always set something to be measured or observed, i.e. an already finished concept. If physics is to be called an empirically and logically exact science, it must never define a concept through measurements and observations. This inevitably creates a logical circle.

If one has made these irrefutable logical truths clear to oneself, then the empirical and logical impossibility of the RTH is immediately clear. It is empirically untenable, above all because it denies the absolute simultaneity, without which empirical reality cannot be thought at all. Because the essence of this reality is that material things exist simultaneously, however they may move. It is a logical impossibility, above all because it denies absolute simultaneity, without which the uniformly moving inertial systems which it presupposes have no meaning at all. Because without absolute simultaneity there can be no talk of uniformity.

These are the consequences of the tremendous error of RTH that it replaces logical comparison with technical measurement. She doesn't even know exactly what uniformity and speed are, because otherwise she would know that there can be no talk of these concepts without absolute simultaneity, and even less would she set herself the pointless task of, to measure simultaneity, which is an impossibility because simultaneity is not a "size"! To solve this pointless task, a "rule" is laid down! Such sensible "writings" are called "assignment definitions", and indeed they are called in the relativistic "axiomatics"! The RTH is the monstrous freak of an illogical thinking and will remain a warning example of an uncritical time for all times.

The above is evidently independent of all philosophical views on time and space. Eliminate the most elementary knowledge

the size gauge have been used above. It should therefore not present any major difficulties in giving the general public a correct understanding of the untenability of the RTH.

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Further explanations can be found in my following works: "Gravity and Aetherspannung", Annales Acad Scient Fennicae Ser "The ether and the ether tension", ibid XXXVIII (45 p.).  
Aether tension ", ibid XXX (10 p.). - "The world building in the light of the Aether", ibid XXX (36 pp.). - Separate: Academic Bookstore, Helsingfors.

### **LOTHAR MITIS / VIENNA FACTS AND EINSTEIN**

The facts incorrectly presented by Einstein can be correctly summarized as follows:

1. All normal natural phenomena, whether they are perceived energetically or materially, are without exception subject to the most powerful monisms, gravity, they are heavy. These include the sound medium air and the light medium ether.
2. For sound and light exist, apart from the baric their means of propagation, also numerous other far-reaching Analogies: Both phenomena are vibrations in which their measurement be moved by vibrating or shining bodies. Both lay all other things being equal, in the same times the same ways back, so they need a certain time to reproduce. In the same medium, their propagation takes place in a straight line. Both are reflected or distracted in some other way. Both move in waves. For the purpose of their perception, the sensitive living beings have developed their own organs. And so on. The analogy relating to the barism of the media of sound and light is therefore almost a matter of course. The same result is obtained from Planck's theorem. Wave motion always coincides with corpuscular motion, also after Broglie, who also takes corporeal worlds for light.
3. The ether gravity must therefore normally also be determined by the fact that the light beam is at least curved by attraction when it approaches a gravity field. Such a curvature was also noted by Eddington.
4. As a result of the heaviness of the air, nobody should come up with the idea of wanting to prove the earth's movement acoustically by assuming, for example, that the speed of the sound waves must be different depending on whether they are observed in the direction of the earth's movement or in another direction. Because the sound is carried along equally in all cases if the earth and air belong to the same movement system. Similarly, no one should want to optically (through earthly light rays) demonstrate the movement of the earth. Michelson, who was still unfamiliar with ether

heaviness, wanted to obtain this optical proof, but was unsuccessful. The failed attempt proved that earth and earthly ray of light belong to the same system of motion, that the light ether is heavy.

How does Einstein react to all these insights, which the sober philosopher, physicist and astronomer portray as naked truism?

He denies point 1 (heaviness of the ether). For him, light is a purely abstract, immaterial and therefore an abarian miracle.

He evades point 2 (analogy for sound and light). Nor does he draw any, or at least not the relevant, conclusions from the sentences of Planck and Broglie.

He also deals with point 3 (baric curvature of the rays of light) by eliminating gravity. This curvature should not be due to attraction but for reasons based on the fantastic concept of curved and finite space.

From his abarian attitude regarding point 4 (Michelson experiment), however, result the most adventurous wonders of the world, which immediately evaporate when the air and ether are recognized. For the purpose of clarifying the "negative" result of the Michelson experiment - the result was actually positive - Einstein sets up two "postulates" (unproven assumptions) of the most wonderful kind, namely:

Postulate 1 describes the speed of light  $c$  ( $= 300,000 \text{ km}$ ) as  $\infty$  (infinitely large) with all the mathematical privileges of this largest size. Now astronomy reckons with countless light years. But since  $c$  is only a vanishing fraction of a single light year, equating this tiny little path with  $\infty$  is an assassination act on all reason.

Einstein uses this sacrilege to set up Postulate 2 "Constancy of the speed of light" which says:  $\infty = c = 300,000 \text{ km} = c \pm n$ , that means: Compared to any other speed,  $c$  (because of  $c = \infty = \infty \pm n = c$ ) remains constant, and not approximately (in the practical sense), but in the strictest theory.

In such an unreasonable way, the relativity of time and in the transferred sphere of activity also that of space can at best result. For if the same ray of light is to have the same speed ( $c = c - m = c - n$ ) in comparison to differently moving systems, then this miracle is to be emphatically explained by a new miracle, namely by the fact that the time and The spatial units of the differently moving observers are unequal (sometimes larger, sometimes smaller).

This RTH is the sick product of a sick time.

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See "Einstein's fundamental error". Hillmann, Leipzig 1930.

**Dr. VINCENZ NACHREINER / NEUSTADT a. d. Haardt**  
**AGAINST EINSTEIN'S RELATIVITY THEORY**

Philosophy: The RTH's "space-time thing" contradicts the undoubted Kant-Schopenhauer theory of space, time and matter.

Analytical mechanics: When changing the law of gravitation, even for spherical celestial bodies, the masses cannot be taken into account as concentrated in the center.

**Dr. K. O. PETRASCHKEK / MUNICH**  
**THE SPECIAL THEORY OF RELATIVITY AS A SOLUTION TO A PSEUDO-PROBLEM**

1. The principle of the absolute constancy of the speed of light on which Einstein's special RTH is based, which consists in the prerequisite that the light always travels at the same speed for the observer, regardless of whether he flees from the incoming light beam or approaches it ( S. 2 )<sup>1)</sup>, does not include a contradiction in the formal-logical Sion (S. 53), since the assumption that a presupposed objective, i.e. the change in speed that occurs in the unconscious body world does not need to be manifested as such subjectively in the consciousness of the observer, does not contain an impossibility of thinking, but does in the material-logical or actually epistemological sense. This is to be understood.

The principle of the constancy of the speed of light is like the special RTH building up on it, a physical theory and as such primarily grasps real things and processes in the outside world (p. 54). The theory is therefore based on critical realism, according to which there is a temporal and spatial body world independent of individual consciousness (o. Oi, A). If this spatio-temporal nature of the assumed real world does not lose any explanatory value, then the objective forms of existence of space and time must be assumed to correspond to the subjective forms of perception of the same category (p. 52). The opposite assumption would be tantamount to proclaiming the contradiction as a means of cognition and thus the complete bankruptcy of all real, i.e., I mean knowledge that goes beyond the mere playful contemplation of logical possibilities and one's own level of consciousness (p. 54). Since the assertion of the immutability of the speed of light and, with it, the special RTH actually makes the opposite assumption, from the realistic point of view of knowledge both these and these should be regarded as a doctrine contradicting you, which is therefore a confirmation.

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<sup>1)</sup> "The basic contradiction in the special RTH and its consequences." Hillmann, Leipzig 1922.

It is certain that experience - and of course also a refutation - is so certainly incapable of being able to take a stand outside of his consciousness that would enable him to match the proportions seen in the mirror of his sensuality with the corresponding real proportions according to a common standard compare (p. 53).

2. The (logical or psychological) epistemological idealism can only evade the decision about the contradictory nature of the principle of constancy of the speed of light and the special RPH based primarily on it in the material-logical sense; it can by no means answer the question answer (affirmative or negative); on the other hand, he must not leave the answer to physics either (p. 51, A). But since an answer has to be demanded, the example of the theory of relativity shows particularly clearly the need to progress from an idealistic to a realistic point of view (cf. Petraschek, "The Logic of the Unconscious", Munich 1926, Vol. II, p. 542, text and note).

3. The principle of the constancy of the speed of light, as well as the relativization of spatial and temporal distances that became necessary for the special RTH as a result of the acceptance of this contradicting basic assumption - and thus also of simultaneity - (p. 69) cannot be considered to be analogous to the spatial perspective shifts Appearance or as a process that grasps the (whether subjective or objective) forms of perception of space and time itself (p. 48 f., 73 f.). The modern relativity principle, which only states the equivalence of all systems moving in a straight line and uniformly against one another for the formulation of the general laws of nature (& 20), has nothing in and of itself to do with the above-mentioned relativization (p. 29).

4. Since the principle of the absolute constancy of the speed of light can also be formulated as the principle of the independence of the speed of light to be understood with reference to the observer from a possible movement of the light source in relation to this very observer, in the interference experiment made by Michelson and Morley, however, the negative result of which the special RTH usually invokes to confirm the correctness of the principle of constancy of the speed of light on which it is based, a movement of the observer in relation to the light source is not an option, then this attempt does not constitute a possible basis for the Decision on the question of the dependency of the speed of light on the state of motion of the light source (p. 19) and therefore no possible confirmation or refutation of the special RTH.

5. Those derived from the contradicting basic presupposition of the insane immutability of the speed of light

Equations for the co-ordinate transformation of linear, uniformly moving systems against each other are wrong, in spite of their outward agreement with the transformation equations derived from the point of view of Lorentz's contraction hypothesis, because the expression of a contradicting fact; the contradiction, which they merely conceal without being able to eliminate it, emerges in its full strength only in the expanded meaning which Einstein gave them not only to the derivation, but also to the result, by incorrectly applying the modern principle of relativity (Pp. 35, 39).

6. With the Lorentz transformations in Einstein's interpretation, Einstein's addition theorem of the velocities shares the contradicting nature. The contradiction also occurs here in a form that must lead the special RTH either to the admission of its inability to determine the actual speed of a movement or to the abolition of its own basis (pp. 61, 63).

7. As a consequence of the principle of the constancy of the speed of light, the assertion of the impossibility of a speed of movement exceeding the speed of propagation of light is to be rejected, as is the basic formula, understood in the relativistic sense, for the dependence of the dimensions of a moving body on the speed its movement; this does not affect the question of the justification for assuming such a dependency as well as an insurmountable speed limit which is based on the observation of facts (p. 66).

8. The assertion that all simultaneity is to be understood only in relative terms, according to the actual content of the relevant statements by Einstein and other relativists, only states that when light signals are used to determine the simultaneity of two events, this simultaneity is not taken in the absolute sense may, as one does not know the movement of the signal receiver (and the two event locations) against the hypothetical light ether and thus the exact value of the speed of the two-sided light signals in relation to the signal receiver based on the ether theory of light. Here, contrary to the view of the special RTH, the possibility of different speeds of light is expected (p. 68 f.) And accordingly a "relativity \* 6 of simultaneity and thus of time measures in general, which is an introduction to the understanding of the special RTH actually meant relativity of temporal (and spatial) distances proves to be completely unsuitable (p. 69 f.).

9. The special RTH tries to solve a bogus problem. Therefore, with the examination of appearances, it must share the fate of the problem of being put aside (p. 76).

**Dr. WALTHER RAUSCHENBERGER / FRANKFURT  
ANTI-EINSTEIN**

1. There is no fundamental problem in Michelson's experiment. It is explained in the simplest way by the fact that the rays of light are carried along by the earth, which is without a doubt the case. The rays of light are carried along as well as the electric waves of wireless telegraphy. Nobody here is surprised that the electric waves run just as fast in the direction of the earth's motion as they do in the opposite direction.

2. The basic senselessness of the special RTH is the assumption that one and the same ray of light should have the same speed in relation to any body in motion !!! This is absolutely impossible - it is a completely insane thought.

It is only natural that this thought, if it is spun out further, should result in further meaninglessness, which it is not necessary to enumerate in detail. The following are mentioned for illustration purposes only. It makes sense that time stands still or even runs into the past, that bodies become two-dimensional beings if one moves with the speed of light or superluminal speed. This absurdity is not canceled by the fact that nobody can move at the speed of light, or that the faster than light speed is "forbidden" by the relatives. The forward direction of time is certain a priori. It is the most certain fact there is. It is set with the happening itself. Everywhere where there is movement, there is a passage of time, even if one thinks a body is moving at the speed of light. In reality there are no two-dimensional beings at all, on the other hand it is very possible that there is a faster movement than light, e.g. B. gravity. No less absurd is the assumption that time and space expand or contract. Bodies can expand or contract in space and time, never time and space itself. The height of absurdity is to want to find confirmation for the RTH in experience.

3. The measurement of a body by an observer who is firmly connected to the body, resting opposite it, has the character of correctness under all circumstances, especially since the result of the visual sense at any time through other senses, e.g. B. the sense of touch, can be confirmed or corrected. Any other observation from a moving system is, on the other hand, subjectively shifted if it comes to different results. Our perception, the way we see things can be influenced by light, never things themselves.

4. The assumption that simultaneity is relative is completely absurd.

Each point in time is identical to itself. Now there are no points in time in reality, but only processes that are extended over time. But it can be a process of reality, e.g. B. the flash of a light, as a unit at one, and all processes in reality can be mathematically related to the process mentioned. This is only not possible if there are processes even faster than the movement of light. For this reason, the fastest process is the basis of timing. So only in this respect does light have a meaning for time. Should an even faster movement, for example in gravitation, be detected in the future, then this would be the time scale for all processes in space.

5. Much more puzzling than the content of the RTH is the fact that it is widely used. Reason and logic seem too simple and self-evident to be able to satisfy people in the long run. Rather, setbacks and catastrophes (such as wars in the cultural history of mankind) must appear here from time to time so that reason can rise anew and its light can again become visible to mankind. The recognition of the RTH will remain memorable as one of the strangest aberrations of the human mind.

See "The absolute in motion", Archive f, System. Philos., Vol. 29, Issue 3/4; "To the RTH", Leipz. Daybl. 1922; "To the RTH", Frankf. Univ.-Zeitung, December 31, 1921.

**Dr. ARVID REUTERDAHL / ST. PAUL, Minn., U.S.A.  
EINSTEINISM: ITS FALLACIES AND FRAUDS**

(Translated to German by Dr. E. Ruckhaber)

Classical Relativity is true but Einsteinism is false, therefore, the term "relativity" should not be associated with Einsteinism. The modern perversion of true Relativity should be labeled "Einsteinism" in order to avoid calumny against sane scientists and sound science, which deals with facts and not with mathematical fiction.

**Its Principal Fallacies**

**1. The Absolute Velocity of Light Fallacy.**

Einstein's postulate that the velocity of light is Absolute, is utterly false. Postulating one Absolute against the relativities destroys relativity as a true generalisation. Einstein's first paper (1905) is mathematically wrong because he derives a spherical wave front instead of an ellipsoidal one from his light source.



Everything that moves, including light, has a relative, and not an absolute velocity in reference to an observer. If light is excluded from this law, then the universality of law becomes a misnomer. Facts contradict Einstein's Postulate.

## 2. The Fitzgerald-Lorentz Contraction Fallacy.

The Fitzgerald-Lorentz contraction Hypothesis is pure mathematical fiction which is not supported by any known and observable fact, it was invented to account for the alleged negative result in the Michelson-Morley interferometer Experiment.

If the time is the same for both paths in the interferometer, then this result is due to the action of external components in space and not to an alleged shrinkage in an Interferometer arm. If a real shrinkage takes place, then, according to true science, it can be measured. This alleged shrinkage has never been measured. Therefore, it is pure fiction.

If a difference exists in the time of the two paths, then relative motion between the earth and the aether is a fact.

In either case, Einstein's Postulate of the Absolute Velocity of Light crumbles into nothingness.

## 3. The principle of Equivalence Fallacy.

Einsteinism asserts the equivalence of Acceleration and Gravitation. In other words, he maintains that an Effect (Acceleration) is equivalent to its Cause (Gravitation). This contention is a gross absurdity.

## 4. The Space-Time Fallacy.

Einsteinism holds that real space-time is one, and that Space as well as Time are artificial mental products. This is a fallacy. The truth is that although Space and Time are always associated in this phenomenal world of action, nevertheless, space differs so fundamentally from Time that a Oneness cannot be established. On the contrary, a Dualism between the two is essential to the proper understanding of physical action. Space is reversible. Time is not reversible. Space is static. Time is dynamic. Together they describe Action, which involves both Position and a change of position.

Time cannot, by Einsteinian or any other form of Alchemy, be transmuted into true Space as a coordinate thereof. The fictitious mathematical device, known as the square root of minus one, is impotent to transform a reality into a different reality.

#### 5. The Curved Space Fallacy.

Matter can only affect other matter. It cannot produce changes in Principles and Laws. Space and Time are not matter. Therefore, the presence of matter in Space-Time cannot change the nature of space and Time. Space is not a material thing which can close like the walls of a box. It is not curved, because curvature pertains only to material objects existing in space. Consequently space is not limited and enveloping. Space is an Elemental-basic, like a Cosmic Principle, and unending-like a Principle, because its applications are unlimited.

#### 6. Creation of Space and Time by Observer -- A Fallacy.

Einsteinism contends that man makes Space and Time by using measuring Rods and Clocks. This is mere sophistry. That which is measured exists before the appearance of the one who measures. Space and Time do not come into being by the act of measuring. On the contrary, measurement is a quantitative appreciation of the amount of a reality. Since Space and Time are elemental realities, all normal minds can form the same conclusions concerning their nature.

#### 7. Mathematical Calculations Determine Nature of Space and Time -- A Fallacy.

Despite allegations to the contrary, Einsteinism maintains in practice that the character of Space and Time is determined by mathematical speculation. The fallacy involved in this practice is, at once, apparent. The true function of mathematics is to describe phenomena accurately and concisely. Mathematics cannot create anything - not even four or n-dimensional spaces.

#### 8. Reference-Mollusk and Unitary Field Conceptions -- Fabrications of the Imagination having no Contact with Reality.

Einstein's Gaussian reference-Mollusk, like the creature from which it was named, consists principally of a shell. Within the shell there is nothing but a vain hope that the device will function. Having no contact with reality the mollusk cannot lift, even itself, out of the bog of inconsistencies which gave it birth.

The same criticism applies to Einstein's latest speculative product -- The Unitary Field, as set forth in "Zur Einheitlichen Feldtheorie" (1929). As a generalization it generalizes away every vestige of reality and creates a mathematical dust which totally blinds the Einsteinian dupes.

## 9. Alleged observational Proofs — Either Worthless or Fundamentally Inconclusive

### (a) Deflection of Light.

The plates were chosen in order to confirm the hypothesis of Einstein. Those chosen failed to do so by a per cent, not permissible in sound and honest scientific work. Furthermore, Einstein does not include refraction due to the Sun's gaseous atmosphere.

### (b) Rotation of the Plane of the planet Mercury.

Einstein was forced to amputate his theory in order to magically unfold Gerber's Newtonian formula which he used, without acknowledgment, to make this calculation. Therefore, the motion of the plane of Mercury proves the correctness of Gerber's Newtonian computation, but not the truth of Einsteinism.

### (c) Displacement of the Spectral Lines.

Observations concerning the line shift toward the red are inconclusive. The careful work of Burns, Curtis, Meggers and others, flatly contradict the claims of Einstein. A different theory than that of Einstein may be confirmed by observation, thus invalidating its claim to uniqueness in regard to spectral lines. This also holds for the Shapley Effect.

## 10. Einsteinism -- A Speculative Network of Mutual Contradictions.

Since Einsteinism was spun out of fictitious and inconsistent fibers, the entire fabric is filled with mutual contradictions.

In 1911 Einstein's theory produced a deflection of light equal to 0.83 second of arc. In 1918 he found, that the deflection was 1.7 second of arc. The latter is practically two times the former. Einstein makes no apologies or explanations concerning these glaring mutual contradictions. Thus they remain in his work as enduring monuments of the most colossal scientific hoax of all times.

In the year 1919, Einstein boldly announced that there is no Aether. But in his Leiden Lecture (May 5, 1920) he changed his mind and tried to substitute a Mathematical Continuum for a real medium, but light waves cannot be made out of X's and Y's.

Einstein, in his Special Theory, asserts that the velocity of light is the same in all directions in Space, irrespective of the velocity of its source and the velocity of the observer. But in his General Theory he repudiates this alleged law, and boldly maintains that it does not hold in a gravitational field like that of the Sun. Mutually contradictory laws are vitally essential in Einstein's ridiculous structure.

## 11. Aesthetic claims and Assertions concerning Uniqueness — False.

In science only that which is true can justly claim to be beautiful. Therefore, since Einsteinism is false it is not beautiful.

All of Einstein's problems can be solved without recourse to his fantastic mathematical speculations. Consequently, the argument that his theories are true because they are alleged to be unique, falls to the ground.

## THE FRAUDS OF EINSTEINISM

### 1. Bombastic and Fraudulent Advertising.

When Einsteinism swept the world like a cataclysmic tidal wave, I styled Einstein as the Barnum of science, on account of the fraudulent claims and the bombastic advertising of his vagaries. Since there has been no abatement in this unscientific propaganda, the charge is still justified.

### 2. Merely a Mathematical Speculation.

His entire structure is based, not upon facts, but on mathematical speculations which outdo the quibbles and sophistries of the unbridled Schoolmen.

### 3. The Nobel Premium.

Einstein was awarded the Nobel Premium on his law dealing with the photo-electric effect. This law had previously been proved to be false by the research work of the American physicist R. A. Millikan (see his work, "The Electron", page 230, Edition of 1917).

Dr. O. E. Westin, of Sweden, exposed this fraud. By Einstein's unwarranted lecture on the subject, Relativity, which violated the rules of the Nobel Premium Directorate, the world was led to believe that the Nobel Directorate had placed its approval on Einsteinism as a sound and experimentally demonstrated theory. But the Nobel Directorate, in their reward, specifically stated that this was not the fact.

Every recipient of a Nobel Premium is required, by the Directorate, to lecture, within a specified time, on the subject which was the basis of the award. In Einstein's case, the award was not for Relativity but for his fallacious law of the photo-electric effect.

### 4. The plagiarisms of Einstein.

(a) Minkowski and Einstein adopted, but distorted, the original idea of Melchior Palagyi, the great Hungarian philosopher, concerning Time as a dimension in conjunction with Space. Palagyi also introduced the term "square root of minus one,"

in conjunction with Time. Palagyi's work was published in 1901. Einstein's first paper bears the date 1905, Minkowski's first paper appeared in 1907.

Palagyi, however, did not teach the oneness of Space and Time, nor did he ever say that the length of a measuring rod depended upon the time of its observation. It should be noted that Einstein and Palagyi were professors at the same university, that is, at the German university at Prag.

(b) Einstein's formula, of 1911, for the deflection of light, is the same, in substance, as that of Johann Georg von Soldner of 1801. Soldner's formula was based upon the Newtonian celestial mechanics of Laplace. Despite the claims of Dr. Robert Trumpler, I have shown that Soldner's use of  $2g$  instead of  $g$  is justifiable.

(c) Paul Gerber's formula of 1898 was used by Einstein in 1913 in order to determine the amount of rotation of the plane of the planet Mercury.

(d) The present writer, in the year 1903 outlined a unitary Field concept involving all types of force, in a lecture entitled, "The Atom of Electrochemistry," which was delivered before the American Electrochemical Society. In the year 1913 I coined the hyphenated expression, "Space-Time" which was copyrighted in 1915, in conjunction with my lecture (delivered at the Kansas state Agricultural College and the university of Kansas) entitled "The Space-Time potential, a New concept of Gravitation And Electricity". Einstein's "Reference-Mollusk" was built upon the plan of my potential Zone system, with this important difference, that my Reference Zone was constructed from facts and was applied to actual physical determinations, whereas Einstein's Mollusk is merely a mythical structure which has no contact with reality.

My Space-Time Kinematrix of 1923, includes all types of activity, gravitational, electrical, thermal, mechanical, etc. This also was used in definite determinations. Einstein's unitary Field of 1929 — a piece of pure mathematical fiction, reveals no actual application, for the reason that it is not based upon facts but upon fallaciously premised mathematical speculations.

**Dr. GUSTAV RICHTER / BOZEN**

**THE RELATIVATION OF THE SPATIO-TIME SCALE CAN ONLY BE DETERMINED WITH THE HELP OF AN ABSOLUTE SCALE**

The RTH of Einstein may play whatever role in science, for philosophy it is either a banality or nonsense. It is banal when given with consideration of the various judgments which make various observations about the temporal order or duration of certain

events, take the skeptical standpoint, and claim that every observation is relative; depends on the accompanying circumstances and therefore no one can say with absolute certainty that his judgment is absolutely true.

This already results from the relativity of all movements.

However, it is nonsense to claim that we have to conceive this relativity of the various possibilities of observation as the absolute, while we consider our need to clarify what is contradicting each other and to produce a unified, logically correct worldview or at least the possibility of one. To believe such unification should be thrown into the junk room as obsolete.

The relativist judges, if he is honest, as follows: I, too, strive for the unity of the world view, but I see this unity in the unity of the natural law d. H. in the problem-free functioning of the mathematical formulas found for this, or in the fact that the mathematically established equations work completely.

Since in truth they do not come up completely, but a remnant everywhere, even if only a small one remains, I am ready to sacrifice the unity of the measure of space and time to the unity of the natural law, i.e. to blame the changes in space and time with the different spatial and temporal positions or with the movement of the observer for these deviations.

This is not illogical in and of itself. Only the conclusion derived therefrom that the various measures of space and time do not have a relative but an absolute character, i.e. that they measure space and time absolutely correctly, becomes nonsensical.

Because either this difference can be determined or not. If it is not established, the theory would make no sense. Leaves but to test oneself, then one must also presuppose an absolute measure of space and time beyond the relative measures of space and time, with the help of which one can determine this difference.

And for the RTH this measure is the law of nature, the formula from the deviation of the place or the time of the event from this formula can be the exact one according to the self-made assumption calculate change in the measure of space and time compared to the absolute measure of space and time.

So even if the spatial and temporal relationships may change depending on the place and speed, we can still determine the changes and calculate with a measure that is independent of place and speed. And construct with the help of this measure

Complete space and an absolute time as we move cannot do violence to the uniform world order. Thought at the end he does not have the relativistic idea.

**Dr. ERICH RUCKHABER / BERLIN**  
**THE COMPLETE ILLOGIC OF RELATIVITY THEORY**

It was not only Einstein who discovered that every measurement is relative. Einstein confuses subjective and objective relativity. The meter measure is a relation to the circumference of the earth. It is a natural prerequisite for its general use that all people use it from the same distance, from the same distance from the body to be measured, but not one from this, the other from that distance. If a measurement is not possible by bringing the measuring stick up to the body, i.e. from a distance of zero, it must be done indirectly; the computational consideration of the distance then corrects the measurement and brings it into agreement with the only valid objective-relative measurement from distance zero.

Exactly the same applies to the time measurements as to the space measurements. But Einstein makes the joke that he gives time measurements from different distances the same objective validity, subjective status points and thus also relativizes the trans-subjective world events which are completely independent of human observation. It is not enough that, according to him, one and the same event can have two different times at the same time, man becomes an omnipotent being, a little god, because he can change things, their sizes and times, their severity etc. at will, by having nothing to do but shift his position.

The fundamental error of Einstein, like that of his predecessors Mach, Petzoldt and others, is a purely logical one and exists entirely independently of any epistemology or metaphysics. All scientific progress consists precisely in arriving at objective relativity by uncovering subjective relativity, and the great deed of Copernicus exists for the most phenomenal as well as for the idealist as for the realist, for the skeptic as for the dogmatist; for the same logic applies to all, the identity of the concepts, the unambiguous adherence to the assumptions made. For logic it is irrelevant which measure of time we choose, whether we use the moon, the earth or the sun, an hourglass or a spring clock: all that matters is that the agreement once made is clearly adhered to.

Einstein does not notice that he is simply trampling logic. The violation of the identity principle, the elevation of ambiguity to a principle, necessarily leads to violations of other laws of thought. According to Einstein, the statements "The stone falls straight" and "the stone falls crooked" are objectively equal. According to him, the same stone can strike two different paths at the same time, occupy two different spaces. Einstein contradicts himself when he speaks of a stone, since this would be precisely the trans-subjective third that he denied. Nor does Einstein ask why the stone falls straight for one point of view and crooked for another, a question of theirs.

The answer cancels the subjective relativity and gives an objective one. So Einstein also disregards the principle of contradiction like that of the reason.

It is also a serious, purely logical mistake to speak of curved space, since "Curvature" is a motor term and every movement, including every curvature, already presupposes the space.

Mur the confusion of patient mathematical formulas with reality, which cares little about them, lets understand how Einstein can make the length of a body dependent on the time in which it moves forward. Reducing time to space is the same as trying to reduce movement to rest. Here, too, there is a heavy equivocation. One can explain the statics as a special case of dynamics, but not reduce the dynamics, the primal fact, to the statics, and it is the height of absurdity to say that space has devoured ether and time.

The Michelson result can never be the occasion for a relativization of time, since numerous dynamic factors are able to explain the apparent anomaly, as well as Einstein's calculations, as Dr. Israel has proven that even after Einstein's own assumptions (not carrying the light beam) are wrong.

Einstein's request to remove the contradiction held against him between the special and the general RTH, according to which the latter the light can be influenced, was completely unsuccessful, since the comparison with the electrostatics and dynamics used for this is precisely the opposite of Einstein's. It follows that the light beam can be influenced in principle. Here, too, there is a peculiar lack of logic.

Einstein's "conclusion" that there can be no speed greater than the speed of light is not a conclusion, but an arbitrary assumption that is not justified by anything. Even if in the expression  $\sqrt{1 - v^2/c^2}$  the value under the square root is less than 1, it is anyway not imaginary. In an essay in the "Annals of Philosophy". Vol. 10 (1930), Heit 8/10, I have provided evidence that the negative numbers always represent real values, which means that there are no imaginary numbers. The expression under the root therefore corresponds to a real value, regardless of what value, in no case does it mean "size below zero". The building block's "conclusion" is, firstly, not a conclusion at all; secondly, if it were a real conclusion, the assumption on which it is based would be wrong.

The theory of relativity is a mathematical masquerade, behind which there is an almost inextricable tangle of confusion of terms, contradictions, fallacies, arbitrary assumptions and disregard for sound logic. The world becomes one of an infinite number of possible coordinates made of bundles composed of



to which all dynamics and causation, but also all actual physics, disappear. This world of relativity is a blown egg. The theory achieves its record with the relativization and reversibility of the terms before and after, cause and effect, and similar cinema jokes, which at least the benefit that they open the eyes of those who cannot find their way through all this chaos of thought.

What needs to be fought even more than this nonsensical theory itself is the audacity of a section of the press that goes to great lengths to trumpet such an unprecedented masterpiece of illogic as the worldview of the future, and to mislead the public by concealing that the opposition is far greater than the serious followers.

See "The RTH refutes through the contradiction principle and the natural explanation of the Michelson experiment (Hillmann, Leipzig) and the satire "Relativia, the novel of a prophet" (Dr. W. Kuntz, Berlin, Spandau).

**Professor Dr. STREHL / HOF**  
**RELATIVITY OF RELATIVITY THEORY**

For me, Einstein's theory is a functional transformation of reality. His frame of reference: variable space and time scale, unchangeable speed of light (despite variable refractive index) is not my taste.

See d. V. Wellenoptik (including literature; Zentr. Zeit. F. Optik, 1926/27).

**Dr. KARL VOGTHERR / KARLSRUHE**  
**DISPROOF OF THE THEORY OF RELATIVITY**

The RTH can be refuted if one of its basic requirements can be proven to be incorrect. As such, we want to single out Einstein's assertion that one can determine the simultaneity (Glz.) Of events in different places "at one's own discretion <sup>1)</sup> or, as H. Reichenbach puts it, that this gloss. (within the period of time left open by the fastest transfer of effects) "is not an object of knowledge but an arbitrary determination <sup>2)</sup>. - We first ask ourselves, what do we know with certainty about space and time before we measure? Everyone, as long as they are of sound mind, must admit that a straight line, i.e., a line with an unchanged direction, cannot be a closed line running back in itself, just as there cannot be a number of diverging straight lines through the same two

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<sup>1)</sup> About the special and general RTH 5th edition, p. 15.

<sup>2)</sup> Philosophy of spacetime theory, p. 150, 1928.

points. (If it is supposed to behave differently in the "higher" geometry, then this becomes completely inedible for the unspoiled, intuitive thinking, to a meaningless play with words which are not based on anything tangible.) These axioms are apodictic, a priori certain and everyone Correction through future refined observation and measurement withdrawn from the start. Unexceptional generality and strict necessity, d. H. the ability to imagine opposing behavior are their characteristics. The entire geometry can now be derived from theorems of this kind, in fact we only need three actually geometrical axioms: 1. Two given points completely determine one and only one direction and one and only one distance <sup>1)</sup>. 2. Lines and angles are of constant magnitude. 3. For every given segment and for every given angle there is a congruent segment and a congruent angle in any position. All other axioms required are a priori certain propositions of more general meaning. - Assuming this, the directly illuminating proposition can be proved that for every given triangle there must be a congruent one in any position <sup>2)</sup>. The fact that the sum of angles in a triangle cannot be greater than two rights can be derived, as has long been known, from the theorem of the single straight line through two points, i.e. from Axiom 1.

The fact that the sum of the angles cannot be less than two rights can be seen in the following way: We define the straight line as the line of unchanged, identical-same direction. Sections of the same straight line therefore have the same direction to one another. From this definition it follows that two straight lines or any subsections of the same can only be in one directional relationship to one another, just as z. B. an object of consistently the same color can only have one color relationship with another one (with regard to the type and degree of color difference). Two straight lines which intersect have different directions and a directional difference which corresponds to the acute angles formed. Now becomes a half-ray a, which starts from point B of a straight line c presented horizontally and forms an acute angle with it, open to the right and upwards, rotated against c in such a way that this angle becomes ever more acute and can become smaller than any given angle, however small, then the principle applies that the direction of a changes Direction of c approaching without end. In the same way becomes a half-ray b, which may go from point A of the straight line c to the left of B and with c an acute angle opened to the left and above

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<sup>1)</sup> The direction A B is also differentiated from the direction B A as being opposite to this, which, however, presupposes the idea of movement, i.e., is not strictly geometrical. However, even with this view, the following could be carried out and only the representation would have to be changed somewhat.

<sup>2)</sup> The proof can be derived from the nature of the straight line or the direction and should be presented elsewhere.

forms, rotated against c, so that this angle decreases more and more, then the proposition applies that the direction of b approaches the direction of c without end. All of this remains unchanged if, for example, the distance AB between the pivot points increases during these rotations, since this does not change the directional relationships. It follows from both propositions that with such a movement, or more correctly with the continuity of such positions, the direction of a and that of b approach the same direction without end, which is also immediately evident from a consideration of the figure. In other words: equality of direction (identical - same direction) is the limit to which the direction of a and that of b approach without end. If the straight extensions of a and b intersect somewhere, then the same must also apply to the sections immediately adjacent to this intersection, they too must approach identically and in the same direction without end, so they cannot have a constant angle and direction difference from the angle  $90^\circ$ , i.e., the maximum possible directional difference, unchanged, since two straight lines can only be in one directional relationship and since the direction of the C sections is identical to the direction of the A and B sections. The "double-asymptotic triangle" of hyperbolic geometry and thus its prerequisite that the triangle angle sum can be less than two rights has been proven to be impossible <sup>1)</sup>. Thus, only Euclidean geometry applies, all propositions of which are a priori true and apodictically certain.

In the field of mathematical time we find the following certain direct insights: 1. Time is a one-dimensional continuum. 2. The time passes monotonically, i.e., there is only a transition from earlier to later, not the other way around. 3. The points in time separate periods of time, which are mathematical variables.

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<sup>1)</sup> The logical (or relation-theoretical) framework of this proof is independent of its special content. One put z. For example, instead of directions, stretches, numbers, colors or tones, which stand in the same relationships of equality - difference and constant closeness, and one arrives in the same way at a result that is the same in form. This also shows that the movement, that is, the representation of time, is not essential for our proof, because numbers, e.g. cannot move in time. The movement is only used for simpler and shorter expression instead of the sequence of directions  $a_1 b_1, a_2 b_2, ..$  etc., between which there is a continuous transition. - The alleged proof of the unprovability of the fifth postulate of Euclid and the no contradiction! The principle of the non-Euclidean geometries is based on the basic concepts and principles that have been customary up to now (whereby, by the way, as far as the "spherical space" is concerned, the theorem of the single straight line through two points is ignored by tacit agreement). It does not apply if one takes another basic concept directly from (pure, nonsensual) intuition, which, although everyone is familiar, is not used in school geometry, namely that of direction. Likewise, the proof that non-Euclidean geometries are inconsistent by tracing them back to the inconsistency of arithmetic naturally loses all validity if one puts the former in the light of a concept which, like direction, is not a concept of size at all. The non-Euclidean geometry is thus geometry after the concept of direction has been eliminated, that is to say a type of incomplete or mutilated geometry.

4. Time (like space) is limitless. 5. There is a clear and universally valid symbol at different places. - The latter can be explained in the following way: one thinks one leg rotated at a straight angle towards the other, then they meet when both coincide, two points of the two legs protruding equidistant from the apex at the same time. Likewise, if two equal angles are moved against each other in such a way that two of the legs always coincide and the other two run parallel, then two points of the parallel legs that are equally spaced apart from the apexes meet at the same time, and the same applies to the end points two stretches of equal length that are moved towards each other on a straight line (see p. 58 above, paper 7, p. 617).

This mathematical equation is "absolute", i.e., unambiguous, a priori evident and of infinite precision. It cannot be "redefined" and arbitrarily replaced by another without coming into fatal conflict with geometrical truths. It is also important that from these simplest simultaneity theorems, which, by the way, can easily be summarized in a single axiom, the so-called theorem of the parallelogram of velocities (the addition theorem of "classical" physics) can be proven that they are in addition to the Theorems of geometry are sufficient to lay the foundations for the entire (pure) kinematics, which, like the pure theory of space and time, is a priori science of an apodictic kind.

For the physicist, however, it is a matter of determining the place and shape of real objects and the time of real events by measurement, and the question arises of what guarantee is there that the measuring instruments he uses, the compasses, measuring rods, Measure rulers, rays of light and honors "correctly"; i.e., that they are actually rigid or straight or that they delimit the same periods of time? Of course, this cannot be determined by measurements of the usual type, but it cannot be assumed without further ado. Under these circumstances, is an arbitrary definition of the measuring instruments even possible? Well, as far as space is concerned first of all, "correctly measuring" can have no other meaning here than that the physical straight lines and physical distances used as measuring instruments with regard to the coincidences of the constructions and bearings carried out with them correspond to those of the geometry correspond exactly to the required coincidences for straight lines and stretches. Because there is only one geometry that is certain a priori, and physics and physical measurement are based on the geometric conception of space and must be based on them, which they cannot contradict. In short: several diverging physical straight lines can just as little go through the same two points as straight lines of pure geometry, because they are supposed to be realized geometric straight lines and the same applies to the physical route. Experience shows that it arises

found out that the physical straight lines and lines defined in this way are distinguished at the same time in a causal relationship; it is the solid bodies under constant conditions (temperature, tension, pressure, etc.) and the rays of light in homogeneous media on which no lateral influences act (Very. 9, p. 100). However, if one thinks purely mathematically, the objection can be made that the rigid bodies and physical straight lines defined in this way could be subject to so-called "one-to-one continuous point transformations" when they are transferred to another place, thus stretching and bending without them this would ever be revealed by a change in the observed coincidences. From a physical point of view, however, such an assumption of a causeless change or causes and forces that are fundamentally forever hidden from us is a highly fantastic hypothesis and mere mathematical fiction. And if we reject such highly improbable assumptions and replace them with the most highly probable of all our other natural knowledge, then we are by no means acting arbitrarily. So our definition of spatial measuring instruments implies at best a hypothesis of very high probability, but it remains free from any arbitrariness.

As far as the definition of the "clock" is concerned, it is formally possible to classify the duration of the same processes that follow one another under the same conditions as either the same or different mathematical time periods. If we do the latter, the result is accelerations or delays in the same processes under the same conditions, and in this case we would all have to either dispense with the principle of reason with regard to the duration of physical processes or imagine that these accelerations and delays are also one There are causes and forces hidden in us. But we are by no means arbitrary if we hold on to the principle of reason and on the other hand such hidden,

Reject the world as a whole in the same way accelerating or retarding influences as fantastic and highly improbable, for which we can assert the same reasons as with the deformations in space. Thus the clock can also be defined in an arbitrary way as a mechanism that works by itself, i.e., through the course of nature, the same processes under the same conditions are lined up seamlessly by creating the initial conditions again and again.

However, measuring the time of events requires not only "clock" in the same place, but "clocks" in different places which show the same time, i.e. the synchronism. How can the Glz. determine by measurement? Assuming the movement of a body or the propagation of a signal takes place from A to B under exactly the same conditions as from B to A or from A to C or from C to D (if  $AB = AC = CD$ ), it needs to follow these paths the same time and thus determines the Glz at different places (Schr. 7, p. 4) <sup>1)</sup>.

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<sup>1)</sup> This is the Glz determined by a signal of infinitely high speed, logically equivalent.

We already know this before we measure from the causal principle and we use this knowledge to measure the Glz. A sound signal, for example, determines when there is no wind and everywhere the same conditions (temperature, air pressure etc.) at all points equally distant from the starting point.

If, although the causal conditions are the same, one way AB takes more time than the other AC, the body or the expansion process would take place at one end point (or at one of two points that are equidistant from A) have a greater instantaneous speed and thus a greater kinetic energy than the other, e.g., can close an electrical circuit here, not there. The same causes could result in unequal effects, which is impossible according to the causal principle. Since the same conditions are possible on equally long paths or an infinite approximation to them, the "absolute" and unambiguous Glz. Possible at different locations or an infinite approximation to the same, even before we measure and regardless of the type of measurement. The physical Glz. is therefore just like pure mathematical equation. necessarily unambiguous, universally valid and determined by the matter itself, therefore not arbitrarily determinable and not "redefinable" <sup>2)</sup>.

However, for practical reasons of measurement accuracy, the equation can be determined by light (or electrical) signals. We now make the assumption that there is a system (a space) at every place and only one (whether it is moved or immobile in relation to the position taken), related to which in the vacuum and after elimination of all influences emanating from the matter the light has the same conditions of reproduction and consequently the same speed on all paths, and we call it a system at rest in the ether <sup>3)</sup>. Furthermore we assume that a contraction of the rigid bodies did not occur when they moved through the ether. From both assumptions and the negative failure of the Michelson experiment as well as the space-time axioms and principles of space-time metrics developed in the previous (above all the ones required for the theory of the Michelson experiment, above led Glz. - Theorems) it follows that the ether system on the earth's surface is almost or completely at rest, at least participating in the translational movement of the earth <sup>3)</sup>. The now necessary explanation of the fixed star aberration I gave earlier (Schr. 2, 4, 5)

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<sup>2)</sup> This objective unambiguous Glz. of events, even if they could not be measured and (with probability) ascertained, the RTH already refutes, at least insofar as it claims with H. Reichenbach that the slowing down of the moving clock occurs "by itself and without human intervention". With a corresponding arrangement, this leads to the fact that perceptible things or events that are permanently present or taking place in a system no longer exist or never occur when viewed from a system in motion (cf. 3, 6, 52, 8, p. 16).

<sup>3)</sup> The assumption of the ether as the homogeneous medium of the light waves can be based on induction, namely on the generalization of the observations of other pathways as they are found in solid bodies, liquids and gases, in which we in all cases the medium of the wave motion as sensual have tangible in mind and can directly observe the constancy of the wave speed relative to the (homogeneous) medium. But induction is not an arbitrary principle.

is based on the assumption that the inertia of the light energy when the light passes into the ether is of a different state of motion and the change of direction required by the original wave theory is delayed or canceled<sup>2)</sup>. These three

Assumptions are by no means arbitrary presuppositions or determinations, and they are by no means on the same level as the assumption to the contrary. Rather, they are real hypotheses, assumptions about probable behavior, which in principle, i.e., if the observation is sufficiently advanced, it can be tested by experiment<sup>3)</sup>. Since the Michelson experiment shows that the ether rests on the earth's surface or that its relative movement to the earth has so far remained below the observation accuracy, it is necessary when determining

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<sup>1)</sup> According to the result of the experiment by Michelson and Gale one must assume that the etheric envelope of the earth does not participate in the daily rotation of the earth, which is in agreement with the assumption that the aether is frictionless and is only held on the earth's surface by gravity reading.

It does not seem impossible, with the improved test arrangement according to Trouton-Noble, to increase the observation accuracy even further and to prove the assumed relative movement of the ether to the earth's surface (at the equator 463 m / sec), which would also disprove the RTH experimentally. We would like to propose this experimentum crucis.

<sup>2)</sup> This assumption has also found the approval of a physicist of the rank of P. Lenards, who seems to have recently given up his hypothesis that a special substance, which he calls "primordial ether", is supposed to take over the guidance of light in the case of aberration. (See Sitz.-Ber. Heidelb. Ak. D. W., 1929, 8. Ahhandl., P. 21.)

<sup>3)</sup> An experiment to prove the ether system is suggested in Note I, p. 59. - As far as the Lorentz contraction (in the sense of Lorentz himself) is concerned, this can also be observed in principle as a result of the associated deformation of the earth's surface and change in the polar elevation of the earth locations, provided that it is present, as Courvoisier has shown (Astr. Nachr. 226, P. 241). However, these attempts still need to be checked and we therefore believe that we can for the time being be able to anticipate the Lorentz contraction as unlikely. However, it is theoretically of interest that even if a Lorentz contraction is present, the movement of the ether system and thus the Glz. could be determined objectively, which is mostly overlooked. - A determination of the state of motion of the etheric star and thus the objective glare, which is only possible as a thought experiment, is independent of the assumption of a Lorentz contraction can be done in the following way: Connect three rods with each other in the manner of a right-angled axis cross, attach a light source to the intersection of these, and an extremely sensitive device on each of the rods at six points equidistant from the light source, which measures the intensity of the light radiation measure allowed. It is clear that the same intensity can only exist at all six points when the apparatus is at rest in the etheric system, and one can find out by trial and error in which of the mutually moving inertial systems this takes place. This thought experiment does not presuppose any further kinematic theorem than that the movement of light in a certain system, the "etheric system", is the same in all directions, and thus refutes the claim that it is not only technically, but in principle impossible, the Glz. without an arbitrary definition of the same or any other arbitrary kinematic postulate (see H. Reichenbach, op. cit.). - About astronomical measurements, which allow the third assumption to be checked, see Schr chap. 4 and 5.

the Glz. on the earth's surface by light signals no correction which takes into account the etheric movement. And since all of our presuppositions are partly *a priori* true propositions, partly hypothetical assumptions, no arbitrariness can be contained in the inferences either and is therefore the most probable figure according to our current knowledge, determined in an arbitrary manner. But this makes the arbitrary determination of the Glz. superfluous, yes forbidden, and the first and most important requirement of the RTH is thus proven to be  $\pi\phi\omega\tau\omicron\nu$   $\psi\epsilon\upsilon\delta\omicron\zeta$ .

Or should Einstein himself not have correctly understood the relative and ambiguous Glz that he discovered, and neither did the interpreters of his teaching authorized by him? Wouldn't it be conceivable that Einstein's Glz is not arbitrary, but hypothetical or can at least be thought of as a statement about the probable physically real Glz? From everything that we have already said, it follows that this is impossible and that the discoverer of the relative Glz correctly assessed it. Since, as shown, the mathematical as well as the physical Glz preceding the measurement is unambiguous and absolute, it cannot possibly be determined with any probability as relative and ambiguous. Yes, even if the physical Glz could in fact only be set arbitrarily, which is not the case, the Einsteinian Glz would have to be rejected. Because the idea of time and Glz, which we already have before it is measured and which is the prerequisite for the measurement, cannot be canceled and eliminated by the measurement and would also require imperative consideration in the arbitrary determination of the Glz for the purposes of the measurement.

Above all, it is worth mentioning that the RTH is also incompatible with the true concept of physical movement. The movement of an object or the rest of an object (or coordinate system) is objectively and physically considered as meaningless as the above and below, right and left, and only serves the purpose of visualization. The true physical concept of movement is that of change in distance and position. Physical as well as mathematical movement is a relation between two or more objects, as is e.g. "brotherhood" is a relationship between two or more people (Sehr. 8, pp. 9 ff. And 34 ff.). The claim of the RTH that a moving clock always goes slower than a similarly constituted resting one cannot be expressed by the mere change in distance and is on the same level as the claim that an ear on the right always goes slower than an ear on the left. Such a thing would not even be allowed as an arbitrary stipulation or a consequence of such, since it has nothing physical as its object. But all the worse if the ears of the RTH are supposed to behave like this "by themselves and without human involvement".<sup>1)</sup> -- It is also incomprehensible if you

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<sup>1)</sup> See S. H. Reichenbach, *Axiomatik der Einsteinschen Raumzeitlehre*, 1924, p. 70.



conduct experiments to investigate the consequences of the supposedly arbitrary Glz. -Check the definition (e.g. the rate slowdown of the moving watch as a "transversal Doppler effect"). It is no different than when someone arbitrarily "stated" that a vessel standing in front of him contained 15,643 grains of wheat and then tried to count whether it was correct. Unfortunately, these experiments cannot be carried out because they require a measurement accuracy that has not yet been achieved.

The strange quirks the philosophy of the relativity theorists produce can also be seen from the following: The sequence of times at the same place, although something immediately given, is "defined 1" by H. Reichenbach, namely: "Is E 2 the effect from E 1 or so E 2 is called later than E 1 This is the topological assignment definition of the time sequence" (Philosophy ie der Raum-Zeitlehre, p. 161). As Reichenbach emphasizes again and again, assignment definitions are arbitrary determinations Like all definitions, it is arbitrary; the system of concepts that one obtains with the advance of knowledge depends on their choice" (ibid., p. 23). Accordingly, it would be an arbitrary stipulation that the effect is later than the associated cause and the opposite, "in principle equal!" The consequences of this type of philosophy are truly monstrous. Take the administration of justice, for example. Can it tolerate the accused on the ground of a Have been and are still being convicted of arbitrary determination? Countless lawsuits in which an acquittal was made because of a proven alibi or a conviction based on evidence relating to the temporal context should be revised as quickly as possible! Anyone convicted in this way could, citing the RTH, demand at least postponement of the sentence until the question has been scientifically clarified. What do the jurists say, what does the Imperial Court say about it? It would also be a doctoral question for budding relativity theorists how a suicide is possible with the contrary determination. Can a dead man make up his mind to kill himself and execute him?

As far as the general RTH is concerned, it should only be pointed out briefly that it is absolutely impossible to understand a gravitational field as a relative, "covariant" term". An unreal gravitational field would be nonsense, but a real one cannot be relative, because a relative reality is also nonsense <sup>1)</sup>. Furthermore, the general RTH is to be rejected for the reason that, as shown, a non-Euclidean geometry is *a priori* impossible, i.e. it cannot be a form of

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<sup>1)</sup> The same argument must also be made against the relativity and reciprocity of physical movement in the traditional male conception must be completed. In the case of physical movement, be it only kinematic or dynamic, is "invariant", d, Jbu, must be understood independently of the coordinate system or reference body, as is only the case for mutual changes in distance and position (Schr. 8).

physical reality <sup>1</sup>).

It must also be emphasized that Newtonian dynamics by no means presupposes the idea of absolute space in Newton's sense, but can be presented independently of this in an epistemologically flawless manner, so one does not feel compelled to make a decision about absolute space or RTH, as is usually claimed by followers of the latter (Schr. 8, p. 34) <sup>2</sup>).

See d. V: 1. "About the cosmic movements of the ether", Naturwissenschaftliche Wochenschrift Vol. 20, p. 393, 1921. - 2. "About questions of aberration and light propagation", *ibid.* Vol. 21, p. 20, 1922. - 3. "A new clock paradox" *ibid.* Vol. 21, p. 497, 1922. - 4. "About aberration and the Michelson experiment", astronomer. News Vol. 217, No. 5203, 1922. - 5. "Remarks on the propagation of light in moving ether", *ibid.* Vol. 222, No. 5317, 1924. - 6. "Where does the RTH lead?". Critical considerations from the physical and epistemological standpoint. Hillmann, Leipzig 1923. - 7. "Considerations on Time and Time Measurement", Physika. Zeit "Schrift, Volume 25, pp. 609 - 617, 1924. - 8. "Is gravity relative? Critical Considerations on Relativism in Latest Physics. Macklot, Karlsruhe 1926. - 9. "Theory of Relativity and Logic", Annalen der Philosophie, Vol. 7, Issue 2 a. 3, 1928.

#### **Professor Dr. W. WALTE / HAMBURG**

#### **SOME OBJECTIONS AGAINST EINSTEIN'S RELATIVITY THEORY**

1. Einstein's assumption that the speed of light in vacuum is constant contradicts the previously generally accepted theorem that if two speeds  $a$  and  $b$  are simultaneously transferred to a mass at an angle  $\alpha$ , they combine to form a resultant, its magnitude and direction is determined by the diagonal of the parallelogram formed from the two speeds. When a ray of light collides with the earth moving around the sun and is reflected in the process, two velocities adhere to the carrier of the light, the electron, that of the reflected light and that of the movement of the earth. His assumption would only be correct if this diagonal always had the same size as the component representing the vacuum velocity. This only takes place in the exceptional case if  $\cos(2R - \alpha) = b/(2a)$ , where

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<sup>1</sup>) What use are all "Gaussian coordinates" when Gauss himself says: "There is no doubt that the impossibility of triangles with an angular sum exceeding 180 0) can be most rigorously proven" (Works, Vol. 8, Pp. 186, 174, 190). Thus, according to Gauss, the impossibility of the general RTH can be proven "in all strictness"!

<sup>2</sup>) The alleged empirical confirmations of the general RTH through the observation are partly not perfect (redshift), partly they do not agree sufficiently with the empirically determined amount (perihelion precession of Mercury), partly they allow another explanation (light deflection at the Sun's edge). There can be no question of a flawless empirical confirmation (which, by the way, is excluded from the outset in the case of an epistemologically impossible theory, since there are always other possible interpretations).

b is the lower speed, i.e.  $b < a$ . Before he dared his hypothesis, he should have proven the above sentence as false. This evidence is still missing.

2. If this generally known sentence is still valid, Michelson's experiment can be explained with the previous ideas without any difficulty, as is set out in the book: Walte, "Kraft und Energie" (Otto Hillmann, Leipzig), no. 110, P. 132 ff. Then for Einstein the only reason that led him to set up his theory disappears. Lorentz's hypothesis can thus also be regarded as finished.

3. From his formula for  $t'$ , Einstein deduces that of two clocks that are exactly the same in and of themselves, one when it is set up at the North Pole goes faster than the other when it is at a point on the equator because the pole is at rest, while the equator point rotates around the earth's axis once every 24 hours. The formula for  $t'$  assumes that  $x$  and  $v$  have the same direction. If the directions are different, then only the projection of  $v$  onto the direction of  $x$  can come into question. But since  $x$ , the view of the observer at the pole towards the equator, and  $v$ , the path of the equatorial point, are perpendicular to each other, the projection of  $v$  onto  $x$  is equal to zero, i.e.  $t' = t$ . Then Einstein drew the wrong conclusion from his own formula.

4. In the formula for  $t'$ ,  $v$  and  $x$  can also have opposite directions; then  $vx$  is negative and  $-vx/c^2$  positive, then  $t'$  must be greater than  $t$ , while according to Einstein it should always be smaller.

5. Of two clocks that are exactly alike, one is again at the North Pole, the other is on the equator in a southward direction, the minute hands on both of them pointing eastward so that their tips move southward. At the pole is that  $x/t$  and at the equator  $x'/t'$ . Speed of the pointer tip. Between these there can be a difference between the two speeds, at least according to Einstein; but it must be very low, because these speeds must be proportional to the times measured by them, but according to Einstein the difference between them is so small that it cannot be determined by our most sensitive instruments. Then  $x/t \sim x'/t'$ . By substituting Einstein's values for  $x'$  and  $t'$  one obtains an equation which, after appropriate reduction in  $x/t \sim c$ . The speed of the tip of the minute hand in the clock at the North Pole is then approximately the speed of light. But that's nonsense.

Einstein derives the equation from his fundamental forms:

$$x_1' - x_2' = \frac{x_1 - x_2}{\sqrt{1 - v^2/c^2}}$$

and concludes from this that, since the denominator on the right is smaller than 1,  $x_1' - x_2'$  is greater than  $x_1 - x_2$ , so that a length in the resting system receives an increase in length in the moving system, that is, a body gains a body growth. A change in the state of nature is connected with this increase; This is not possible at all without shifting energy, at least as long as the energy principle is recognized as correct. Because if energy can neither disappear nor be newly created, a change in nature can only be brought about by changing the location of energy; and the only reason for the latter is the difference in level of the energy in neighboring places, combined with the striving of every energy to eliminate the level difference. Accordingly, the enlargement of a body derived from Einstein's formulas without the need for energy is in contradiction with the energy principle.

**Dr. RUDOLF WEINMANN / BERLIN**  
**THE SPECIAL RELATIVITY THEORY**

The insufficient cause - the wrong premise - The absurd consequences - the other possibilities.

A theory that claims to reshape our entire worldview under, admittedly!, unheard-of demands on our thinking and renouncing any clarity, has the increased obligation to demonstrate its necessity by eliminating all other, simpler possibilities, and provide a compelling reason for its acceptance. The special RTH cannot do either.

The occasion is: Michelson experiment, "Contradiction" between this and the Fizeau experiment, maintaining the classical principle of relativity in connection with the pre-relativistic law of the constancy of the speed of light. This occasion, with its concrete-optical nature in itself grotesque disproportionate to an overall transformation of the world view, does not hold up and does not lead to Einstein's absolute constancy of the speed of light, the core and actual content of the special RTH with which this, i.e., the relativization of space and time stands and falls.

1. The Michelson experiment proves, with or without the acceptance of an ether, under all circumstances the connection of the light propagation with the movement of the cosmic body (earth), but not with inner-terrestrial systems (trains etc.). A Michelson experiment for the latter is not available! - and cannot exist. Because with kinematic evidence, constancy i.e., to world bodies (= c) implies variance

to moving systems on celestial bodies ( $= c \pm v$ ). One and the same moving point cannot have the same speed relative to different moving points. An absolutely unworkable thought! (By the way: why do the physicists of the relativity theory not finally try the experimental proof of the absolute constancy of light speed by Michelson's experiment in a train or airplane?!)

2. The Fizeau experiment confirms the Michelson experiment instead of contradicting it: it also proves with the constancy i.e. to the tube (independent of the moving media water, air, etc.) the constancy of the earth system firmly connected to the tube, i.e. he speaks - even if one holds on to the ether - not for dormant, but only for dormant to earth, just like the Michelson experiment. And he makes it clear that even a Michelson experiment with reference to an inner-terrestrial movement would not deliver  $c$ .

3. The principle of relativity reads constancy of natural occurrences in relation to the respective superordinate system, but expressly the variance of the speed in relation to subordinate systems <sup>1)</sup>. In our case, the "natural occurrence" is not the speed of one and the same ray or point of light, but the speed of light. This is constant compared to the system to which the light - - dynamic! - listened to: earth, world body. (Proof: the Michelson and Fizeau experiment!) The individual light ray (point) is, depending on the situation, constant or variant. In a purely mathematical and general way, Einstein links one movement of light with any coordinate system without distinguishing between them as real - higher or secondary - body systems. (Which means that, for the sake of the mathematical approach, space and time lose their unambiguous existence; just like when one and the same sound, flying bird, moving car, etc., is constantly assigned to differently moving bodies, instead of per sound, etc., to per body.) Einstein cancels the principle of relativity, while at the same time relying on it relates.

The solution can only be: If light, also starlight, opposite to the world body - this can only be the case according to what has been said - is constant under all circumstances, then there is a split, division of light, distribution of the light rays over them at enormous distances from each other and by no means in distant translation (like embankment and train) in such a way that they enter into their movement (be it through gravitation or otherwise through dynamic connection), independent of the movement of the light source.

This assumption suffices in the simplest way that of the relative

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<sup>1)</sup> Einstein. Commonly understood, p. 8. - p. 12 the opposite is asserted, p. 13 states the "dilemma" from this and postulates the special RTH as the solution to this dilemma.

constancy required and only possible by the principle of relativity. But if there were even distance-free translation between cosmic bodies, if on the other hand really  $c$  also applies to railroad trains, etc., then here, too, either the shared light medium or a split-off light beam would have to be assumed. Without the superfluous changes in space and time, of course. (Like sound with air with guidance in each case constant, with non-entrainment variant the speed to moving bodies.)

This physical hypothesis gives, instead of a causally insubstantial, mathematical fiction, a descriptive causal arrangement <sup>1)</sup>, is compatible with every theory of light (including and especially quantum theory), leaves - in the sense of all other physics! - Our laws of thought and our view of space and time remain untouched and protect us from all absurdities (euphemistically: difficulties) of the Einstein theory; namely, time lengthening, space shortening, the clocks lagging behind, the body shrinking - "from the standpoint of the observer at rest"; furthermore the relativity of simultaneity, establishment of a limit speed. These abstruse, purely arithmetical consequences of absolute constancy, i.e., expose their presupposition, precisely this constancy, as false and impossible, therefore cannot be saved even by the possibly correct mathematical way and signify a completely groundless and senseless destruction of every natural and epistemological concept of reality. Since the change of point of view is theoretically possible at any time, there would be any number of realities according to the RTH: the earth e.g. existed once in all its abundance known to us, at the same time and just as real, with the appropriate choice of the observer coordinate system, as a thin disk, i.e. as good as not at all. Natural reality has ceased to be an imaginable, a conceivable, stable something.

"The observation point of view" contradicts the sense of physics, which aims at the supernatant point balancing all points of view, regardless of the position of the observer.

If, however, one wanted to grant the RTH a different logic, other laws of thought and intuition - an impossible undertaking in itself, because these laws are timeless and have therefore not been subject to any change - then one cancels the RTH itself, which necessarily turns its conclusions and proofs to the authority of generally valid human reason - to whom else ?!

Therefore: even if the indicated possibilities of a positive explanation were not considered and the solution of the relevant questions, including the - likewise purely optical - aberration, the Doppler effect, etc., initially openly or further more light-theoretical

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<sup>1)</sup> Mind you: The Michelson attempt, thus a real earthly process, should be explained earth, not fictitious, kinematic happening in gravitation-free space! But the RTH does not explain this either, it only states - wrongly - the result of the M.-V.

Research would have to be left to research (unless one wants to accept attempts at explanations of great simplicity that have long existed and are not based on the theory of relativity) - Einstein's solution is unacceptable under all circumstances.

Not at all can be said to have a positive understanding of the theoretical meaning of RTH. Even methodologically, there is no way from physical observation to epistemological positions. Phenomenalism and subjectivism, but also epistemological idealism of any kind, is doubly wrong to see a kind of "empirical confirmation" in the RTH: the physical observation point of view has nothing to do with the epistemological reference system of human consciousness in general - and it is precisely the idealistic epistemologist who, with the primacy of consciousness proclaimed by him, must put the laws of this consciousness before all experience. For obvious reasons, the realist will reject the RTH from the outset as ontologically and logically impossible. Finally, the phenomenologist must see Einstein's relativization of space and time as absurd, and reject the idea.

But what is the fact that gave rise to the confused and confusing claims of the RTH?

Light and light signals, included in the general cosmic play of movement, in addition in a very complicated, perhaps never entirely determinable way, do not allow absolute time and space measurements in the cosmos, which would only be possible in an absolutely still space opposite absolutely moving in it Bodies. Even the "dormant ether" in the event of a positive failure of the Michelson experiment or to explain the aberration or in the sense of Lorentz - would initially only be synonymous with a system firmly connected to the sun (instead of the earth).

The observer who moves along (with resting) alone achieves measurement results that do not require correction or that can be corrected without further ado, be it by applying a scale or by subordinated signals (whether light, sound, etc.) in his own system. In the case of light, therefore, with regard to earth (world body) or the bodies moved on them (trains etc.). Einstein's postulation of a signal subordinated to all bodies at the same time violates nature and reason and refutes itself through the abstruse consequences of the abstruse kinematic presupposition. Only the assertion of the constancy of the world body i.e., of the subordinated signals. That is why, for every observer who moves along, "the" light, his ray of light measures the speed  $c$  to the own world body system, but of course  $c - v$  to the world body system moving against it (with the same direction of movement of signal and body) - while the observer moving along with it measures his light ray  $c$ . This respective constancy of light does not lead to time-space relativity, ie. to dilation

of the clocks by movement and to shorten the distances for the resting observer, but only to a different point of the clocks by light signals from a common starting point when the systems are already moving.\* The same would of course be the case with acoustic signals, e.g. on earth, the fall - - as a result of the different, respectively inserted impulses! In the case of synchronization on the basis of mutual rest, the movement that begins afterwards can of course produce no effect, which according to the relativity principle assumed by Einstein - the influence of the uniform movement on all processes! - is impossible: The clocks remain the same and keep the same hand positions. The ghost of Einstein's paradoxes dissipates into nothing. Even in the harmless form admitted above, the possibility of clocks being set differently by light signals remains an idle thought-game. For our astronomy, which is now once oriented from earth, it cannot have any results. Even less, of course, in the Einstein form! The alleged astronomical confirmations must be accidental or arbitrarily derived - for it is in the nature of theory that it cannot make any statement about realities.

Last but not least, it speaks against the special RTH that the General RTH restricts it to the area of gravitation-free space which does not exist in the real world of the body; that the question of the constancy of the speed of light is completely forgotten in the general RTH.

Einstein did not lead science either way beyond the classical, i.e. the one and real and eternal, principle of relativity. Light and electrodynamics obey this, of course, provided that the light movement is sensibly classified into cosmic events. Understanding, intuition, nature cannot be dictated that  $c \pm v = c$ . That would only work if  $c$  is infinitely large or  $v$  is infinitely small. Practically, concretely, it's something like this. And that is why Einstein can practically do no harm. But in front of the forum of science, the theory of truth cannot hold its own,  $c = c \pm v$  destroys the meaning of the number and thus the meaning of the mathematics, to which the RTH repeatedly refers.

Without Einstein and against him, the idea of relativity and the relativity principle remain untouched, but they do not lead, as in him, via the absolute constancy of the speed of light to absolute chaos.

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See e.g. "Attempt to finally refute the special RTH" W. Hillmann, Leipzig 1926. - "Anti-Einstein- Quintessenz", Archive f. System. Philosophy, Vol. 30, Issue 3 u. 4. - "The absurdity and the superfluousness of the special RTH", Annalen L Philosophy 1929, Vol. 8, Book 1 u. 2 - "The untenability of the special RTH", nature u. Kultur 1930, 27th year, No. 4.



**GEORG WENDEL / LIERSTADT (East Prussia)**  
**35 THESES AGAINST EINSTEIN'S RELATIVITY THEORY**

1 The bases on which Einstein builds his RTH are of a highly problematic nature. He readily accepts certain errors of older physicists or mathematicians as facts and builds a theory on them without giving any sufficient reason. He's just making claims. So he accepts four-dimensional space, a thought that Riemann and Helmholtz (one must say, in their weakest hours) once had, while there can never be a four-dimensional space. He turns the fictitious possibility, which is not even that, into a fact. He also accepts the errors of non-Euclidean geometry, where it is just a matter of other nominal definitions, but Euclidean space in reality always remains the same and only three dimensions of space are possible. He accepts the doctrine of a finite space, while space can never be finite and, after all, must necessarily extend into infinity. Kant and Schopenhauer had long since recognized this clearly.

2. Einstein confuses dimensional space and real space, measured time and real time course. Space and time, which are fundamentally different (space has three dimensions, time only one and is also in us), he regards as a unit and thus sets up the wrong concept of a space-time union, which is philosophically untenable (only for physical purposes can space and time be combined in certain calculations, which is a purely mathematical matter). The philosophical concept of a space-time union would mean the same thing as if someone declared water and iron to be the same and spoke of a water-iron union.

3. Einstein confuses space and mass. For him, space sticks to objects, whereas objects are rather in space; yes, it is an object to him, so that every body has a special kind of space. To him, space is a piece of matter. He knows nothing about the way the space is viewed, about the great discoveries of Kant, whom he probably hasn't read at all. Space has absolutely nothing to do with bodies and matter per se; only that the bodies are in space.

4. The first sentence of his alleged RTH is totally wrong. Einstein states the complete relativity of movement and claims that statements about movements, e.g. whether the stone thrown from a moving train falls vertically or in the parabola are equal. He declares every subjective appearance to be equally true, according to which the stone would fall in the most varied of curves or lines, and every claim about it would be equally correct. Accordingly, every thermometer reading, whether the thermometer is read from a certain height

or from below, would be of equal importance. Of course, only one reading is correct when the eye is in the plane of the mercury mirror.

5. Einstein cancels Newton's law of mass when he claims that it is completely the same to claim that the earth revolves around the sun or the sun revolves around the earth. Newton's law of gravitation has been mathematically proven. Einstein thereby denies the concept of an acting force, he denies that there are forces in the universe and also abolishes the concept of causality.

6. Einstein teaches a curved space - an unbelievable mistake in reasoning, since the space has no design and expands into infinity in all directions. Einstein also teaches that the straight line returns in itself. He puts a curve under her and thinks of the meridians. The straight line runs perfectly straight and to infinity on both sides.

7. The most unbelievable mistake in thinking is his assertion of the relativity of simultaneity. So the current time when I write this would be e.g. on the Sirius a completely different one. The time should depend on the state of movement of the body. According to this, people would get younger or older depending on the state of movement in which they are. One can only understand this theory in a humorous way. In reality time advances continuously, every point in time is fixed, and it takes an extraordinary flatness of thinking to assert that the points in time could be relative.

8. Einstein goes even further. He even claims that cause and effect can be reversed (at one point in the "Annalen der Physik"). He therefore considers it possible that the effect could one day precede the cause. So the shot could go off before the cock is cocked! The chicken could be there before the egg!

9. Einstein declares the ether to be non-existent, while through it alone a propagation of light is possible and the entire continuity of the universe would be destroyed if no light ether is assumed between the molecules and atoms and empty nothingness between the fixed stars. Rather, the ether is a basic component of matter, and I have stated that it is the basic material from which all matter first developed <sup>2)</sup>.

10. According to Einstein, it is completely the same to say whether the observer or the environment is moving. If a train suddenly stops, according to the RTH, the ground must suddenly jerk according to the law of inertia. According to the

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1) "About the inertia of energy required by the principle of relativity", Annalen d. Physics, Vol. 23 June

2) In my as yet unpublished treatise "Nene Hypothesis on the Systematics of the Universe and the Milky Way Systems".

RTH as a result of the wrong application of relativistic thought, all houses and church towers had to collapse like decks of cards, and one should be careful not to live in such a world where everything moves relatively and only the point of view matters, what one considers that considered moving. It's downright incredible For example, to declare the appearance of a ship traveling along the bank to be the same as if the objects on the bank were moving in the opposite direction to the direction of travel, which they cannot think of. According to the RTH, it would be completely the same to say: The train is moving forward and the embankment stands still. Or: the train stands still and the embankment moves backwards.

11. According to Einstein, since all movement can be regarded as relative, the outermost fixed stars would have to have high multiples of the speed of light, which refutes the theory itself, since the formulas then become meaningless. Einstein had to do this himself and has already given up his RTH himself - while they continued to develop his disciples. - - So there is the curious case that the theory is already refuted by itself. Except that the world doesn't know or believe it!

12. Space and time, according to Einstein and Minkowski, disappear into schemes, into nothing. But anyone who wants to jump the distance from Berlin to Konigsberg or even to Sirius or who tried to imagine the period between the ancient world and the present Quaternary period will notice that they are something. From such examples you can see what to think of it when you simply declare space and time to be nothing or speak of a space-time union in reality, while space and time as completely different forms of perception can de facto never be united and can only be combined for the purpose of mathematical-physical calculations in a purely practical sense, but never in reality. Moreover, space has three dimensions, time only one and is also present in our consciousness, but space is not. Palägyi had also overlooked this in his concept of space-time union.

13. There is hardly a word to be said about the alleged change in the lengths and dimensions of the bodies. Lorentz had accepted a factual change on the basis of a misleading understanding of Michelson's experiment. Of course, I am assuming knowledge of the facts here. - - Einstein makes the fundamental mistake that he measures the length of bodies by determining the time. If the earth moved at the speed of light, according to the RTH it would become an absolute surface, that is to say, as "surface" orbiting around in space - an unbelievable idea - and their kinetic energy would still be infinite. Woe if a world body with this of infinite energy colliding on the moving surface! by the way, the length of a rod moving at the speed of light would be zero; so he would just go away. - One can call such physics a fairy tale or witchcraft.

14. The kinetic energy of the radioactive rays, which almost reach the speed of light, would have to be almost infinite and sufficient to throw the universe out of joint - which is not the case.

15. Einstein calculates the specific weight of 53,000 for the companion star of Sirius! Logically possible! But woe if this appalling mass falls to earth! The weight of a person would be monstrous on this star.

16. Einstein's well-known example of the box flying upwards in uniformly accelerated motion is false and proves nothing; for the observer would have to be very foolish if he could not easily deduce from indirect criteria what is really moving. Einstein assumes a very harmless and physically uneducated observer.

17. According to Einstein-Minkowski, time is a fourth dimension of space. I already pointed out the complete impossibility of realistically uniting space and time in this way and even adding a temporal dimension to space. With its three Euclidean dimensions, space already has enough and can never accommodate something completely different, heterogeneous just as little as he can take in iron. He doesn't digest it (pardon the joke!).

18. Einstein constructs a spherical space and teaches the finiteness of time and space. The assumption that time is finite is a gross mistake of thinking, since time necessarily runs into infinity, so it is often presented under the image of a straight, infinite line that never bends and does not run backwards. The same applies vice versa for space, which has three dimensions running into infinity, consequently has no design, and therefore can never be spherical and cannot curve (see thesis 6).

19. A person who walks or flies straight ahead from a point in the universe without changing direction would have to return to the same point after the RTH. This is only the case on earth and a completely wrong generalization of earthly conditions. Infinite space is simply viewed as a spheroid (see thesis 6).

20. Einstein confuses purely kinematic and dynamic movement. He does not know a dynamic movement at all and thus denies, as already said in thesis 5, the concept of force and thus also that of causality, since no causal relationship can take place without force. The Einsteinians go even further in this, because they do not allow any laws of nature to apply. - Certain mathematicians today also declare mathematical definitions to be arbitrary, since they mistakenly consider all definitions to be mere nominal definitions, and neo-intuitionism even denies it as a result of a misunderstanding of certain mathematical theorems, e.g. B. the infinite dual fractions, the principle of contradiction. Here one speculates wrongly with the concept of the infinite as if it is a real existing thing, while it is only the negation of the finite.

21. Einstein denies the influence of uniform collective movements on the special movements of a system. If this were correct, then the rotation of the earth could have an influence on the course of the trade winds, but this is the case. The flattening of the earth would be inexplicable or would have to be explained in a quite impossible way by gravitational forces.

22- Palägyi rightly says in his work "New Theory of Space and Time" that "all playing with the transformations is a dangerous tautology, since it gives the appearance that it contains a demonstration of the principle of relativity while it only expresses the logical-methodical principle that we represent the absolute regularity of a movement in differential equations, whereas the concrete elements thereof are represented in constants of integration".

23. Einstein defines space as the epitome of spatial experience - which is a tautology. Nothing is said or even proven with that. In reality, space is the three-dimensional form in which we must necessarily look at things. Time is not a fourth dimension of space, but rather the contemplation of the inner sense, as Kant says, better of consciousness <sup>1</sup>).

24. Einstein allows the geometric properties of space to be conditioned by matter. In reality, space is something heterogeneous to matter and, rather, determines how Kant correctly recognized the experience of the intuitive world is therefore a form of visualization a priori. So the relationship is exactly the opposite. - About the confusion of space and mass as well as the confusion of measuring space and real space, s. Theses 2 and 3.

25. E. J. Walter says in his essay "ETH and Philosophy in the "Zeitschrift der Naturforschenden Gesellschaft zu Zürich" <sup>2</sup>) rightly: "The inhomogeneous, humpbacked space of Einstein's conception already presupposes the homogeneous thought space of Euclid. This is, by the way, the case with all supposedly new spatial views of non-Euclidean geometry, which only shape other nominal definitions, but in reality always necessarily have to build on the Euclidean spatial view. All talk of the allegedly intersecting parallels in infinity is also nonsense. They never intersect and don't even think about it, just as little as the straight line thinks about returning to itself, or the space bends in honor of the RTH.

Today we are desperately looking for new things and want everything old and scientifically proven

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<sup>1</sup>) Cf. my treatises: "Critique of some basic concepts of transcendental idealism, Archive for systematic philosophy 1908, 14th BdL, 3rd issue; "Investigations on the view of space, size and time", ibid. 1913, 19th volume, 3rd Heft; "On Stumpf's theory of space and related theories", Archive for the History of Philosophy 1924. 29 Vol. 1 and 2. Booklet, as well as my work "Critique of Recognition \*", Carl Georgi, Bonn 1914 (L. Aufl. Out of print).

<sup>2</sup>) 69th year "2nd issue, 1924.

knocked over to make it look as if great new discoveries had been made.

26. According to the Einsteinians, Newton's "absolutely still space" should be dispensable. In reality, the space is always at rest and cannot move at all because it is a mere form, not a body. In reality there is only this one resting space and movements of masses in it, but not a movement of space itself, which is a *contradictio in adjecto*.

27. The assertion that all motion is only relative is fundamentally wrong. All relative motion is based on an absolute; otherwise one could not speak of "relative" at all. This is a fundamental logical mistake of the RTH. Incidentally, this presupposes absolute values everywhere; for example Einstein speaks of the alleged "constancy of the speed of light", which, incidentally, is not proven by anything.

28. The perihelion of Mercury is by no means just explainable by the RTH. Interplanetary masses are there and are most likely. The scientific crowd to use this expression once can only be lulled by such alleged "evidence" of the RTH. One does not see the serious logical errors of the RTH.

29. According to Einstein and the Einsteinians, the line is made up of points, the lines and surfaces are amalgamations of an infinite number of points - again a very serious and obvious mathematical mistake, since an infinite number of mathematical points never forms a line do not completely result in a surface or even the three-dimensional space.

Harry Schmidt, an Einsteinian, says the cylinder is a one-dimensional continuum; since it is said to be made up of equal circles, he also calls it two-dimensional. You can see that the terms "one-dimensional" and "two-dimensional" are mixed up and the basic mathematical terms are simply thrown overboard. It goes without saying that the cylinder is three-dimensional and does not consist of circles, since an infinite number of circles never results in a body.

30. Space is not composed of an infinite number of subspaces, but can only be mathematically divided into parts of space. But there are no physical parts of the room that one could handle and from which it should first be composed. Rather, the space is a uniform form of appearance, in a Kantian sense a priori, i.e. given before the experience, which runs into infinity, and there are only infinitely many bodies which occupy parts of space and therefore have certain "volumes". Everywhere one finds a complete reversal of the actual situation in the RTH. Of course, the concept of space-time is illogical.

31. Space and time should depend on the mass or be conditioned by matter. There is a mix-up of space here and mass (see theses 3 and 24).

This mistake makes Riemann flush and is one of the few serious mistakes made by this great mathematician, but one which had unexpected consequences.

32. What remains of the world after the RTH are reference mollusks. The RTH leads to a dissolution of the world, since the basic concepts of space, time, force and causality are eliminated.

33. By Einstein's RTH the causal law would be abolished, since according to it there would be no forces in the universe and no dynamic movement; even the concept of natural law would babble with it. The world would then collapse.

34. The experiments of Fizeau and Michelson do not in reality contradict each other, but can be combined, and Erich Ruckhaber was the first to show in his excellent work that the Michelson experiment is a source of error that has not yet been considered "The RTH refutes by the contradiction principle and the natural explanation of the Michelson experiment" <sup>1)</sup>, This outstanding researcher unites extensive physical knowledge with sharp logical thinking and philosophical clarity in a rare way.

35. Grebe's observations in Bonn about the Redshift

The spectral lines are broken with imperfect, outdated apparatuses made are therefore quite unreliable. The observations on the deflection of the light rays at the edge of the sun showed values that were far too small and values that corresponded to the influence of refraction and aberration. So there are quite normal physical causes here and there is no trace of the supposedly strict "evidence for the RTH". See the whole theory as a monstrous mistake of thinking, which is made up of a large number of grave errors in thinking and, in the case of a serious criticism, as I gave it in the most succinct form, like a house of cards collapses.

#### Epilogue.

I also point out the monstrous errors that can be found in the RTH are connected and are more or less consequences of the same. There the law of causality is supposed to have fluctuated because the circling electrons give up their energy in quanta. One cannot calculate with certainty the energies of the electrons ejected in advance, whereby it should be noted that everything is still a hypothesis here. That is the simple fact. From this we want to conclude that a given cause has the same or even an effect only with probability. If this were really the case and if there were not just a deficiency in the observation or in the theory, then the

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<sup>1)</sup> See p. 49.

Far necessary to have long been together; because it would then be by no means certain that the earth attracts us and all bodies continuously, and the moon would have, i.e., can fall to earth "without cause" long ago, which he does not do now, because the law of gravitation binds him. It might be expected that I would e.g. I fly to Sirius without cause, because then it is not certain that the earth will attract me continuously. These possibilities are necessary consequences of the theory that the causal law is not certain and has only a certain probability. This also relates to Reichenbach's theory, which in a similar way abolishes causality and thus the legality of nature and wants to allow a certain currency to apply to me.

Equally absurd is Hilbert's axiomatic, according to which the mathematical and logical basic principles are only agreements that can be made at will. Of course you can do everything with it and set up any definition you want. Only you will soon realize that the basic laws of thinking are not to be trifled with. One can, of course, make arbitrary definitions; but they will very soon prove to be nonsensical. The real axioms, on the other hand, have eternal validity and the mathematical theorems have apodictic certainty. It is nonsensical talk that the parallels should intersect infinitely, that the straight line should return to itself, and so on. Like. The popular demonstration:  $0.5 = 0.3$  implies  $5 = 3$  is completely wrong. There is simply a serious mathematical error here because 0 is not an actual number, but only the negation of a number. Likewise, the value  $\infty$  must not be taken realistically, since it is only the negation of the finite.

Kant has long since shown - and that is one of his main achievements - that mathematics and the mathematical natural sciences have apodictic certainty. Today, however, one sets up arbitrary "definitions" and "axioms", declares all concepts to be relative and even wants to abolish the law of causality, indeed the logical proposition of contradiction, on the absolute validity of which all our thinking is based necessarily leads to perfect nihilism, to the abolition of all science. That is the true meaning of the "RTH" and the alleged "revolution in natural knowledge that it brought about.

I finally notice that two ingenious satires have been written against the RTH so far, most of them should be unknown. It is the ingenious satire by Gilbert "The Principle of Relativity - The Recent Fad of Science" <sup>1)</sup>, and the excellent satire by E. Ruckhaber "Relativia" <sup>2)</sup>. Hopefully the time is not far off when the tremendous error of science has finally been recognized as such.

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<sup>1)</sup> See pp. 76, 86 citations, Gilbert.

<sup>2)</sup> See p. 49.



It is of course out of the question for me to include nearly all of the voices, to exhaust all the relevant literature, even to locate all occasional utterances - as much as it served the purpose of this work. The following is an overview of Einstein's other opponents and at least part of their writings <sup>1)</sup>.

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Some statements follow from the literature cited, which - of course - could be multiplied at will.

### **Dr. H. Fricke**

“Einstein's RTH caused a sensation because of its overturning of our concept of space and time and because of its alleged confirmation by the observations of the solar eclipse expedition. In recent times, however, the voices of those who reject the theory as completely absurd and logically untenable have increased. The aim here is to present the issue in the simplest and most descriptive manner possible and to discuss Einstein's fundamental error.

Einstein based his mathematical theory on two alleged “world postulates”, which he claims are the “irrefutable consequence of optical experiments. The first postulate, that of relativity, which gave the whole theory its name, is the less vulnerable, more harmless, so to speak. It asserts the equality of systems moving at different speeds, but uniformly. Even if the postulate is highly contestable from the point of view of the physicist, because it takes no account of the presence of the carrier of optical phenomena, the light ether, at least there are no logical objections to it, so that one can at least still be regarded as a valid hypothesis. It is far worse, however, with the second postulate, which asserts the constancy of the speed of light relative to any uniformly moving observer. The conflict with the usual logic begins here.

Einstein's followers mostly only speak of a "principle of the constancy of the speed of light", which sounds physically harmless and has therefore unfortunately often been safely accepted by the critics. The inner contradiction only becomes apparent when the observer's point of view is emphasized. A physical phenomenon that is generally viewed as objectively and, so to speak, tangible, the ray of light, is supposed to have the strange property, relative to all observers, even if they move uniformly in completely opposite directions. The sense of this monstrous assertion can easily be illustrated. Another person will be able to accompany a river in such a way that the river is at rest relative to him (at least approximately). Now try to imagine a river, who rests relative to two hikers moving in completely different directions! And now stand in a n, imagine a large crowd of people flowing uniformly on all sides on the bank, and a river,

which rests relative to every single person! This example seems to prove to Har that Einstein's postulate of the constancy of the speed of light relative to any uniformly moving observers is not a permissible hypothesis, but a complete conceptual analysis that must lead to the choking of all physics.

Einstein does not at all deny the contradiction between his formulation and "ordinary common sense" and the usual logic, but claims that the contradiction would disappear if an intricate dependence of time on the observer's movement were assumed. This supposedly extremely "ingenious idea" has been tried to make clear through "twins, one of whom is sent on a journey immediately after his birth, returns home as a schoolboy, and finds his brother an old man with white hair, if he has not already died is. The nonsense that comes out of the logical continuation of this idea is what Gehrcke put through in a very humorous way in his book "The RTH, a scientific mass suggestion" (Verlag Köhler, Leipzig). Since, according to Einstein, because of the relativity of all movement, each of the two twins considers himself to be at rest and his brother to be moved, each may declare the other to have remained young, but to declare himself to be aged or even already dead. Gehrcke compares the situation created by the RTH with that which Andersen describes in his fairy tale "The Emperor's New Clothes", where a garment is woven that only those who are clever enough can see, and where ultimately everyone admires and Stand in amazement in front of the empty looms.

Einstein now claims that his principle is the "unavoidable consequence of the observations. The reader can judge the basis on which such an assertion rests when he learns that measurements of the speed of light by observers on earth moving in different directions are not yet available. Wherever something has been done in this direction, as in Sagnac's experiment, the exact opposite of what one had to suspect after Einstein has emerged. In the absence of direct observations, Einstein relies on an intricate reinterpretation of cosmic experiments that prove nothing in this regard. Thus he claims that the experiments of Michelson and Fizeau and those on aberration are in insoluble contradiction to one another, although all these attempts can be easily explained if one assumes that the carrier of the light waves, the ether, behaves as follows: as if it were participating in the movement of the earth. (See Gehrcke's controversy with Einstein, *Verh. D. Phys. Ges.* 1918 and 1919; also Fricke, lecture in Jena 1921, *Phys. Zeltsehr.* Pp. 636 - 639 and "Der Fehler in Einstein's RTH ", Wolfen büttel, 1920.)

A vivid comparison from acoustics may show how phenomena like the "constancy of the speed of light" come about. An observer who hears the sound of a certain

source is examined once in the laboratory or in the open air when there is no wind, then in a closed train carriage and finally in a free balloon that is driven here and there by the wind. Despite its almost always different state of movement, we observe the constancy of the speed of sound. Nevertheless it is self-evident for every physicist that there cannot be a "universal postulate of the constancy of the speed of sound relative to arbitrarily moving observers, that rather the state of motion of the carrier of the sound waves, the air, is of decisive importance.

It is obvious that Einstein's strange ideas about the mysterious dependence of the speed of light on the observer's standpoint are incompatible with the assumption of an objectively verifiable substantial ether, which until now has formed the basis for the systematic elucidation of electrical and optical phenomena. Therefore the theorists who follow Einstein believe that any physicist who still believes in the old ether is allowed to be classified as backward. The life work of the physicists, who have set themselves the goal of an explanation of the etheric physics and its clear interpretation, is therefore belittled at every opportunity by the representatives of the Einstein doctrine. It is not Einstein who is attacked, but he himself attacked the logical foundations of science in such a terrible way that it is only self-defense when physicists unite more and more against him in order to have a contemporary fight against those in all areas, the threat of growing anarchy.

So what about the alleged experimental evidence for RTH? Einstein first gave a formula for the deflection of the Mercury perihelion, which should follow from a generalization of his RTH. How little such a special calculation formula proves for general theories is best shown by the fact that exactly the same formula was derived from the etheric physics by Gerber 18 years before Einstein. Furthermore, Einstein presented the deflection of the light beam by the force of the sun as proof of the correctness of his theory in contrast to Newton's theory. But now, more than a hundred years before Einstein, the German scholar v. Soldner calculated the same deflection of the light beam by the sun's gravity from Newton's theory!

Recently, Stjepan Mohorovicic, Zagreb, in the *Naturwiss, Wochenschrift* 1922, Heit 11, pp. 145-53, has developed an elementary theory of gravity, in which Einstein's results are derived without relativizing space and time. Einstein's theory of gravity can therefore be justified quite independently of the RTH with the impossible principle of the constancy of the speed of light. In fact, Einstein already restricted this principle in his gravity theory; it should only be valid for constant gravitational fields, but should apply on earth, for example. Straight

here, however, its validity is highly unlikely, and so far there has also been no verification. As a result of this restriction, the principle does not lose any of its internal contradictions. So there is nothing left but to drop the unfortunate idea of the connection between the speed of light and the observer's point of view and the relativization of time in general, and thus everything that contradicted the usual scientific way of thinking in Einstein's theory. Everything Einstein cites as proof of his world postulates can evidently be done much more simply and naturally without the relativization of space and time, so that not the slightest evidence remains for the overthrow of the concept of space and time and the abolition of the world ether.

### **Br. S. Friedländer <sup>1)</sup>**

"Einstein changes the concept of time without worrying about time itself. But by changing its concept, no object changes "(p. 30). "Our dear old space is drilled with all violence to logical possibilities, and this is how the curved and n-dimensional space emerges. . . . Dialecticians problematize Euclidean geometry, simultaneity itself, because certain rays of light are not perceived at the same time." (p. 31 f.).

"Is the sentence: 'Everything is relative' also only of relative validity? Is he belying his own claim ?! Or is such stupidity at least absolute?" (P. 33).

"Today we confuse the simpler mathematical formula with an over-Newton" (p. 34).

"Einstein dialectically identifies mathematics and kinetics. The physicist Einstein is untrained in transcendental logic. Empiricism and relativism, with weak judgment, conceal the strictly proven truth discovered by Kant that the power of the intellect stands above all sensuality and nature. " to do. The objective reality is pushed aside by the RTH; she is only interested in the relation to the observer and thus blurs the difference between appearance and reality. "Four-dimensional space-time" does not unhinge either Euclid or Kant. One combines the measurement of time and space in a single formula, but imagines that time and space are themselves mixed up. Without Kant's a priori elements, which are by no means relative, no RTH can be achieved "(Sk 35 f.).

"In Dingler's attack on scientific mathematism, empiricism. . . Marcus sees "a dawn of science". . . Our modern over-copemicuses and over-Newtons, the gentlemen "overcomers" Euclid and the classical mechanics he regulates properly" (p. 40).

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<sup>1)</sup> In spite of Friedländer's own contribution (p. 8), as later by Kraus and Linke, he made a few significant statements.



. . It is incidentally the fundamental flaw of modern relativistic physics that it believes that it can do without dynamics. After all, pure mathematics doesn't care whether one arithmetic in Ptolemaic or Kopernic style. But only Kopemikus dynamically brings the true solution" (p. 44).

"As a result of inadequate epistemological training, Einstein confused mathematically useful fictions with realities. He claims, for example, against all common sense, that one cannot distinguish a pseudo movement from a dynamic real movement: - is the train or the embankment moving? Why can't you set the embankment in motion like a train by pressing a lever ?!"(p. 57).

"It is easier, also more sensational, to skeptically decompose the concept of truth, and consequently also more modern" (p. 59). "Einstein is not modest enough to be just a physicist, who as such only has to deal with empirically fulfilled time. Einstein gets into philosophizing without noticing it, and in this he is no master like Kant. Without the inrelative a priori time, the empirical time would not be able to last for a moment, for the a priori time is the condition of its duration. It is not a physical object at all, and the physicist who attacks it turns into a philosopher, and a very bad one at that... If one does not assume uniformly empty time, then one can no longer compare material processes in terms of their time magnitude. If empty time were also relative, the character of all measure would be lost. With the unity of time, that of intellect, experience, and all uniform laws would be abolished. Without the uniform empty time, the relativities of the fulfilled time would be undetectable, consequently the RTH itself would be impossible. You messing around with Kant, into sound judgment means their own suicide "(p. 64 f.).

### **Professor M. Fresisen-Koehler**

"It is crucial. . that. . . the setting and recognition of a space-time system that encompasses all phenomena is indispensable. " These different reference systems presuppose a common, for them absolute reference system that encompasses them. Ex concludes from this that the time determinations of the various observers at rest in the different reference systems differ from one another, an assertion about this difference is only possible on the basis of an absolute reference system. . . "In fact, the RTH presupposes a uniform reference system in the exact sense of Newton and Kant in the space in which the movements occur." . One demands. . . an absolute freedom of projection of the world in space and time, then

if every possibility of making generally valid statements about a majority of experiences disappears, then the concept of the law of nature itself is canceled. "The requirement for a uniform understanding of the phenomena in a causal context includes the establishment of a universal reference system that encompasses them, which, if certainly not perceptible, is epistemologically indispensable. Corresponding to this is that our theoretical physics is viewed from the most varied of sides. . . strives towards an "absolute" theory... So what significance the Einstein definition of time can claim from a mathematical point of view: from a philosophical point of view, since it is only concerned with the content of time and not with time itself, it should in fact not cause a fundamental overthrow." If it is after the Natorp's explanations might seem as if the RTH provided a kind of confirmation of transcendental idealism; if, according to Petzoldt, it should mean the most perfect proof of positivism, it can now be concluded that it is indifferent to all forms of idealism and positivism. Just as a fundamentally possible positive failure of Michelson's vision of seeing absolute motion or absolute time would not have shown "existent", just as little does the negative failure prove anything against the objectivity of one time in the sense of critical realism. The decision on this cannot be made through observation and experiments."

Note Ed: It is significant that even the Einsteinian E. R. Neumann, perhaps the clearest interpreter of the RTH, comes to the result: . . . that this too Einstein see theory still based on the assumption of a preferred space-time system, i.e. the assumption of a certain distinguished space system and also a certain distinguished time calculation. We can say: Even the Einstein see special RTH is based on the idea of an absolute space and an absolute time." (Lectures for the introduction to the RTH, Fischer, Jena 1922, p. 55.)

### **Professor E. Gehrcke**

". . . Einstein has. . . had very different views in the course of time and changed his point of view several times ... The fluctuations in Einstein's view on such a fundamental question as the principle of relativity could actually have been enough to astonish the professional world and to be skeptical about it to fulfill the RTH "6 (p.8 ff.).

"The principle of relativity, which plays a role in the RTH, relates to the relativity of movement processes. Factually nothing at all has to do with this relativity of the movements that in the press and also sometimes in specialist journals otherwise with the word relativity is meant. That "everything is relative" with the theoretical RTH have such generalities. . . to create nothing. As a catchphrase that affects the masses, with which everyone believes they have heard something they are more or less familiar with and with which hardly any two think of the same thing, the "Relative" is excellently suited for the introduction and recommendation of the RTH" (p. 10f ).

"The relativization of space and time is supposed to mean an intellectual revolution and a turning point in the human way of thinking, in contrast to which the deeds of Copernicus, Kepler and Newton pale.

The relativization of space and time becomes. . . presented mathematically dressed as a fundamentally learned matter, so that in many cases the non-mathematician has got the impression that he will never be able to fathom and understand the depth of these world-destroying thoughts. And there is hardly an object in the entire RTH that can be made clear with so little effort in terms of learned expressions and formulas than this one. . . . The mathematical formulas only give us information about how large the individual effects are, but they say nothing about the point of view on which they are based "(p. 11 f.).

"If you put the "concept of time into perspective ", you destroy the idea of one, general, objective nature." The result is "the standpoint of a physical solipsism." "The RTH leads ... to an old, worn-out, skeptical standpoint is the "new revolution of modern thought"... "(p. 16 ff.).

### **L. Gilbert**

"Most of the people who think of the new relativity principle, (i.e., the RTH) know according to their own admission nothing certain about it, but they "believe" that there must be something phenomenally profound behind it, a careless pseudo-belief asserts itself, which mocks all logic and the achievements of the greatest minds the past in the field of mechanics and physics is negated and replaced by phantasms... As a result, physics in recent decades has theoretically worked its way more and more into a labyrinth, the most famous dead end in history of which is likely to be the principle of relativity (p. 9f.).

"The misunderstood has always been the greatest. . . Been a mystery to which mankind bowed. If you want to be successful, be dark! Be incomprehensible! Especially for naturalists! Especially for exact! And most of all for math! Our mathematicians have always had the urge to do theirs. . . To regard flourishes, which only get meaning, content and weight through thinkers, as sacred Kabbalah signs in which divine spells dwell. You will be in it. . . supported by their spirit, which functions in a purely formal manner and which lacks any understanding of the simple and large interrelationships of nature "(p. 68 f.).

"The simultaneity of the happening, that powerful law of control, which alone still makes it possible for us to think, to compare, to examine, to recognize - the law of the absolute simultaneity of the infinitely small differentials

of the moment, which sharply separates the past from the future, and which we call the present - a cocky professor simply cancels this iron law of reason amid the cheers of other professors! ... "The now is now (and this is here). This remains inviolable, the only one, the arch-absolute, on which we can build: the here in the moment of the now! ... The ship's captain takes a precise chronometer with him on the trip and records it (the now) all over the world. He would be an absolute ass if he used Einstein's light telegraphy instead. "Only the "simultaneity in itself" of several events is the undoubted, is the fixed point of thinking, physics, mechanics, is the only absolute, . . . is the only steel point of reference in the restlessly fermenting eddy, in the chaos of what we call the world (P. 70 £).

"Every speed of propagation, so every ray, such as that of the light, takes place in a medium. . . . the medium has a certain movement. . . and direction in space, so does the ray. . . also this with; he is, as it were, in a vehicle on which he rides. . . . So the result of the Michelson experiment is - what Hertz suspected for a long time - quite simple and natural. . . . That is precisely the greatest mistake made by the gentlemen: They ignore a matter of course in order to be able to invent an enormity (p. 84 f.). "Einstein's principle of the constancy of the speed of light (brings) the physical appearance of light into regular dependence ... to an aphysical abstract thought thing, a completely empty coordinate system that is stripped of any conceivable physical property. . . "Einstein's constancy can therefore only permanently satisfy those formulaic people who are unable to overlook a larger complex of natural phenomena and to bring the various forms of world activity into solidarity; only those for whom "coordinate system," "vectors are fetishes ... Higher mathematics becomes the fetishism of modern physics (p. 106 ff.).

"If, for the velocity  $c$ , we enter the value infinite, we get the old, classical, correct Newtonian relativity theorem. Now what does it mean if we set  $c$  to be infinite? This means that when the time was falsified, a value  $c$  was smuggled in, which apparently simulates the speed of light, but in reality simulates the speed of propagation of time. Through the formulas, unconscious of all relativists, the aphysical miracle arises, as if the moment were moving at speed  $d = c^2/f/a$  in the world would propagate space. As a result, the curiosity arises that the speed of propagation in time depends on the translational speed  $a$  of the earth, like all bodies in general (p. 113f.)

"A thing cannot be unequal to itself, that is the first sentence of logic. A beam cannot have one and the same speed relative to two bodies or coordinate systems moving against one another or even to an infinite number of them. Because then the jet would have two or many different speeds at the same time. Anyone who does not see this cannot be helped (p. 121).

"Summa Summarum: The Lorentz and Minkowski "discovery" is a mistake. It boldly and joyfully hits Newton's old, famous relativity theorem - Galileo's face. . . . means the "highly scientific" genius of absurdity (p. 123).

### **A. Kirschmann**

The "concept of relativity has always been attached to a certain misty indeterminacy, of which the latest phase of its development, of Einstein, called RTH, of which the majority of humanity is already beginning to speak as if Einstein invented relativity, which is by no means true".

"If one applies relativity to everything, if the relative cannot be opposed to anything absolute, then such a relativistic philosophy - just like that of radical skepticism - commits suicide at the moment of its birth. If everything is relative, then the concept of relativity is at least completely superfluous" (p.58f.).

"There can be no maximum sizes. The Einstein theory assumes, however, that this does not apply to the speed. It sets a maximum value for speed, the speed of light. It thus negates the principle of relativity as a general basic law that does not allow any exception. But of all quantities it is precisely the speed that relativity needs most. The idea of a maximum speed is incompatible with that of the relativity of motion" (p. 72).

### **Professor O. Kraus**

"The Einstein special RTH is not a physical theory, it is a calculation method, solved with the help of absurdities (mathematical fictions)" (5, p. 341).

"You (Einstein) demand that when comparing one speed with any other speed of any size, the result is always the same size, always the same comparison result, always the same speed difference, namely 300,000 km / sec! What you are saying is not only not a law of nature, but is fundamentally absurd, i.e., a priori impossible demand that you make of nature. When I say that your postulate of invariance is logically unsatisfiable, I mean that nothing in reality corresponds to it and everything that is logically inferred from it can only be fixed in thought or on paper, as a consequence of an absurd premise. "The building of the special

RTH is nothing other than the structure of all mathematical deductions that from the - in itself absurd - invariance postulate of the speed of light... it is and remains a deduction from impossible premises, a mathematical conceptual fiction:

"The immutability of the basis of comparison applies... generally as a matter of course for the fixation of the concept of measurement. It is part of the definition of measurement that the unit of measurement is thought to be unchangeable".

The "mental absurdities... begin with the first words of the RTH and increase with each of its levels... The RTH is at best a perfectly solved arithmetic problem: how must the "measurement", i.e., calculation, the unit of measurement of time and space, in order to give the speed of light as invariant? ... The thing boils down to a modification of the concept of the unit of measurement. . . . "

"It is . . . the arrogance coupled with a lack of philosophical understanding that lies in the philosophical utterances of most relativists, which outrages me. It is the behavior of a large part of the daily and specialist press, which goes beyond the usual level of advertising, that confuses the minds. ... It is the fact that every quark that seems to be in favor of the theory is greeted with friendly gestures by the relativists and receives prefaces from Mr. Einstein !!!, while serious criticism is mistreated."

"The collapse of the theory is inevitable" {7, p. 91 ff.}.

### **Dr. J. Kremer**

"Time relativity surpasses everything that has gone before. With the concept of simultaneity, the concept of the present is shaken, the ubiquity of the infinite world sinks and splinters into nothing but individual, subjective moments without a common bond. It is the - albeit unintentional - merit of the "RTH" for having exaggerated the absurdity of absolute relativism to the point of self-refutation (1, p. 57).

"Even today none of Einstein's supporters knows what the reliable result of the Einstein- see RTH actually consists of. According to the one it is a physical theory, according to others (eg the Einsteinian H, Reichenbach) a philosophical theory, according to Einstein it is neither of the two, but purely phenomenological".

"I do not know if in history of the sciences a similar case of mass suggestion and misleading serious scholars has occurred on a scale that can hardly be considered possible. It seems incomprehensible how mathematicians, physicists, philosophers, yes sensible ones.

People at all could only be persuaded of such a thing temporarily." (From 2).

"There are so many theories of relativity as different attempts to understand the one-time theory, because nonsense cannot be understood. That is also the secret underlying the mutual accusations of "incomprehension" of the Einstein theory among physicists and philosophers."

"It is improper to differentiate between "physical" and "philosophical" truth in order to secure the Einstein theory a place within the "physical" truth reserved for specialist physicists. No philosophy is required to recognize and reject a nonsense as such, but only a healthy change ... " That "all measurements are relative" means that every measured length is a multiple an arbitrarily selectable, but unchangeable unit of measurement, i.e. something completely different from Einstein's view of the change in the chosen unit of measurement as the "consequence" of an arbitrary, mental choice of the reference system by the physicist, through which the entire maturity order is at the mercy of the positivistic physicist becomes. . . (from 3).

#### **Professor P. Lenard and F. Schmidt**

"Let the imaginary train train make a clearly irregular movement. If everything goes to pieces in the train due to inertia, while everything outside remains undamaged, then, I believe, no common sense will want to draw any other conclusion than that it was the train that suddenly started movement has changed, and not the environment.

"Because we as naturalists do not want to investigate the mathematical admissibility or usefulness of the choice of coordinates, but rather we want to arrive at a consistent representation of reality, and here are two coordinate systems, one of which leads to faster than light speeds of material bodies [- Earth rotation - ], but not the other, by no means equivalent" (1, p. 15).

. . . one will have to admit that taste for difficulties in thinking, which are not dictated by the nature of things, can be taken to be unnatural" (1, p. 21).

"We assume a meta-ether that is everywhere and that does not take part in the movement of the earth, while the earth, like every piece of matter, has its own ether, which surrounds it with a blurred boundary and moves with it. . . . The light propagation always takes place at a speed of  $3 \cdot 10^{10}$  cm/sec and always relative to the ether in which the light runs. (Based on this hypothesis, an informal explanation of the Michelson experiment - - also with fixed star light, the aberration, the curvature of the light path, C. Miller see experiments at great altitude.) (2, p. 81 ff.)

### **Professor P. F. Linke**

"That this (the "worldview") side (of the RTH) is exposed to objections to be taken very seriously, admits nowadays everyone who honestly tries to take a different attitude than the - unfortunately very widespread - mere uncritical admiration" (p. 399). "Nothing is more wrong than addressing Einstein's so-called relativization of the concept of time as an epistemological achievement (p. 407). "In truth, physical and philosophical time are as closely related as possible: the idea is that both are the same. . . . No empirical period of time can "flow" as a period of time other than ideal time. ... In all of this lies the impossibility of speaking of a different speed of movement with regard to time. That leads to absurdity in every respect. Because how do you want to determine the speed differently than again with the help of time? So one is led on a vicious circle. This of course makes the relativity of simultaneity impossible. Because if time is always the same everywhere and there are consequently no different "system times", all time distances must remain the same in all reference systems: what is simultaneous with regard to the one cannot be temporally torn apart with regard to the other. Of course, what is simultaneous for A can be measured by B as not being simultaneous. But then only one of these determinations is correct, the other necessarily wrong. The possibility of a diversity in the passage of time itself has nothing to do with it. It must be rejected on the basis of the doctrine of the homogeneity of time" (pp. 436 ff.).

### **Professor F. Lipsius**

"It is the task of philosophy... to bring the concept back to the point of perception. The abstract, objective view cannot be the final solution to the world riddle; reality is more than a general term or a mathematical formula. All objective knowledge is therefore relative; But even natural science must not forget that the absolute always remains the presupposition of the relative. . . . "The radical relativism... proves to be a double-edged weapon. He either demands of us that we should consider opposites to be true at the same time, thus overturning the principle of contradiction, or he explains. . . war against the principle of reason!" (1, pp. 444 f.).

"Even the friend of the RTH would actually have to admit that a calculation can be carried out completely correctly, while the approach on which it is based is wrong. And the contradictions that Kraus and others find in Einstein's teaching are only contained in the prerequisites. . . . The "beauty of a formula system is never a proof of its validity in reality. Of course, some mathematicians seem to forget that their equations must have a meaning that is independent of the symbolism of tensor analysis in words should be indicative. If this also does not apply to the



entire path that the calculation takes, it does necessarily apply to its starting point and destination. . . . An absurd result. . . becomes . . . even the most elegant formula does not make it tastier (2, pp. 5f.).

“Einstein's basic idea (is) contradicting itself and therefore impossible. For the alien system undoubtedly belongs to my own space and time world, because otherwise I would not be able to relate its change in position to my world at all, and the assertion is absurd that in my space and in my time another space and another time are their essence float. . . . The shortening of the scale is neither an optical nor a sensual phenomenon at all, but the result of a mere correction calculation (p. 13).

“Here [in the principle of the constancy of the speed of light] we have the famous witches' formula of the relativists: the speed of light less system speed is the same as the speed of light! According to the same logic, the speed of sound must obviously be the same everywhere, or one could say that the speed of the crane's flight is always the same. . . . After all, birds have an average flight speed that differs according to species, the size of which is determined by natural law. But all these speed determinations only make sense according to the true law of relativity if the reference system is given. Einstein, on the other hand - a strange confusion of thought - turns a relative speed into a “law of nature” and thus misuses the concept of law, while at the same time, instead of improving and completing it, as he thinks, he falsifies and derives from the classical principle of relativity Reason from spoils (p. 16 £).

Einstein's “teaching is revealed. . . as a purely mathematical-formal theory which, far from giving us the prospect of a new natural-philosophical worldview, is merely an expression of the present unsatisfactory state of science. It is an internally contradicting mediation hypothesis without the strength for real new creation (p. 18).

“The . . . internal logical contradiction in the presuppositions of the theory is concealed and, so to speak, made mathematically harmless by the relativization of space and time. . . . The contradiction contained in the relativization of space and time. . . consists in the proposition that space and time depend on the state of motion of the observer. But now it is without a doubt the movement that presupposes space and time! . . . This doctrine of the shortening of space and the elongation of the course of time is really an epistemological monstrosity. For it is not the empty form of time or space that can stretch or contract, but only the content of space and time can such a thing happen ”(p. 19 £).

“What cannot be measured, according to Einstein, is not there either. . . . But there is a risk that there too, [this principle] makes use where only the actual limitation of our aids, i.e. not a theoretical but

only a technical obstacle blocks the way to knowledge. The RTH cannot be spared the accusation that it is guilty of such a mix-up". (p. £ 24).

. . The special [RTH] is absolutely wrong. "It is really not always easy for someone who has grasped the meaning of the theory, because of the unnatural thought contortions that it expects us, to express its meaning unmistakably (p. 27). "Simultaneity cannot be defined at all, because it is a fact directly posited with our time consciousness."... "The world in which we live and work is only one, the events of which we must therefore also mentally classify a single course of time" (p. 30 f.).

"... also the dispute over the experimental basis. . . has not yet been finally settled. . . . The previous experimental basis is far too narrow to be able to erect a natural-philosophical building on it like Einstein's vision!" (p. 36).

"Inertia and gravity can only be exchanged as long as homogeneous gravitational fields are taken into account. But an absolutely homogeneous gravitational field is a mere thought. . . . The man in the box owns. . . In principle, it is very possible to use appropriately designed experiments to determine whether one's observation space is freely suspended in a gravitational field or, in the opposite direction to the apparent direction of fall, is being drawn away by an unknown force" (p. 115).

"Science has. . . not only the task of computationally coping with the phenomena, it should also offer us a satisfactory overall view of the reality spread out in space and time. The RTH, on the other hand, gives us countless worldviews that seem to have equal rights ". . . The general RTH. . . of no importance for our natural scientific view of the world. . . has only the value of an interesting mathematical speculation and is therefore, from a physical point of view, beyond true and false" (p. 117).

"The gradual dissolution of the complex of phenomena [moving train - earth] requires that we first relate the rest or movement of the train to the earth and not to another carefully chosen coordinate system. That is the completely unambiguous state of affairs in a dynamic relationship, which we can at most falsify by no arbitrary "change of position". "Einstein's amalgamation of gravity and inertia offers us a new unit for this, but the loss in this case should be greater than the expected profit" (p. 120).

"So [contradictions between the interpreters of Einstein: Wintemitz, Schlick, Thirring] the builders of the RTH are already fighting with each other over the issue of building the first foundations of their Babylonian tower."

"Furthermore, from what has been said [about the rotating disk] arises the compelling conclusion that the special and the general

RTH are based on assumptions that are absolutely incompatible, because the first makes its statements from the standpoint of the system that is not moving in the moving system, the second makes its own from the standpoint of the observer who is moved" (p. 127).

"The non-Euclidean space is a fiction (p. 129). "In reality there are only flat and curved surfaces, not one type of space or another." (p. 131).

"It is true that laypeople who shy away from jumping into the non-Euclidean cauldron because they are rightly afraid of losing their feet here are gladly consoled by pointing out that the structures of super-mathematics are unimaginable, but are conceivable - of course only for a professionally trained thinking! But since the perception of space is a fact of consciousness of a qualitative kind, an unimaginable space also becomes unthinkable... The term ... can never demand something that contradicts the laws of our imagination, that is, unite two concepts that cancel each other out, as would be the case with the self-contradictory terms of the square circle, the crooked space, or the intersecting parallels. If, therefore, recently a supporter of the RTH, perhaps a little too optimistically, said that the new conception of space and time had become naturalized surprisingly quickly, it remains to be seen whether there is some reverence for the priests of the new faith and their esoteric language Kopfe imposed a sacrificium intellectus (p. 136). "In reality ... there is no Riemann space... there is also no space per se, so we cannot avoid an objective order of things or events. . . to have to assume as their adequate representative. . . only Euclidean space can hold" (p. 141).

### **Professor St. Mohorovicic**

"Mohorovicic has the merit of having shown in a series of mathematical treatises that if one is already starting to devise an RTH, one can divide up a whole lot, namely an infinite number of special theories of relativity; as in other cases, the one world of nature can be opposed to an infinite number of possibilities of mathematically formulated worlds and physics. With his extremely simple formula for the so-called redshift of the spectral lines M. opened the eyes of the physicists to the fact that the RTH is not necessary to theoretically derive a redshift of the spectral lines" (p. 5, preface by Gehrecke).

"I have recently succeeded in tracing the Lorentz transformation equations in a very elementary way back to Galileo, where Newton's law of addition of velocities applies. I also showed that. . . the two observers, who move towards each other, actually measure Newton's absolute time.

I have emphasized that all the conclusions to be drawn from Einstein's special theory are only a fiction "(p. 26, note 25).

"... that there can be no question of the experimental confirmation of the general RTH, all the more so as other theories also arrive at the same results." [reference to Gerber, Seeliger, Reichenbächer, Wiechert] (p. 42).

"Einstein's RTH is. . . only one link in the series of purely speculative mathematical-metaphysical theories "(p. 45).

"The hypothesis of the constancy of the speed of light for all observers who move against each other with a constant relative speed  $v$ , in the case that there is no gravitational field (or in a homogeneous part of such a field!) is the darkest point of the whole special RTH" ( P. 62).

"The majority of relativists are victims of mass suggestion; nobody wanted to run the risk of possibly showing their own ignorance, and one of them pulled the other with him." [Reference to Gehrcke] (p. 63).

"The RTH is content only with the mathematical description of natural phenomena, and it dispenses with any physical explanation. The character of this theory is purely formalistic-phenomenalistic. . . , without taking any account of reality. H. Dingler rightly says: 'Confusion only arises when the mathematician thinks he can do physics in this way.'" (p. 67).

"The axiom of Einstein's theory that there are no distinguished coordinate systems and that all coordinate systems are equivalent when describing natural phenomena is untenable. . . . In physics, some coordinate systems have advantage over others; when we others. . . we run into unnecessary math complications. This is best seen in the rotation "Einstein is. . . inconsistent, since he introduced an excellent inertial system [with the finite world], and he uses space ... in the Newtonian sense" (p. 68 f.).

"Einstein's RTH leads us to conclusions which a serious natural scientist cannot accept under any condition! ... Einstein sees theory... is just a passing theory... Also Weinberg has ... come to the conclusion that the theory is slowly disappearing on the horizon. . . . The relativistic ship is sinking, and many, including excellent relativists, are already jumping into the lifeboats; many, including the first physicists, are already singing her funeral song" ... "J. H. Ziegler writes to me that there is nothing better, ... than to make the world aware of the great truth that every great new truth must be something simple and generally understandable. The difficulty of understanding a thing is almost a criterion for its inaccuracy. Every truth is necessarily also a clarity and therefore not an obscurity, like the twisted relativity theory (p. 71 ff.).

### **A. Nyman**

"In our time there are hardly two systems of thought that stand in greater opposition to one another than the doctrine of relativity and Bergson's philosophy." Bergson's "work: Duree et simultaneite. Speaking of the theory of Einstein ... is of interest not only because it puts certain basic requirements of the theory of relativity under heavy pressure.

Significant correspondence with the theory of fiction and Hans Vaihinger's "as if" doctrine in the interpretation of the theory of relativity... With that return "to the more careful interpretation... that Lorentz had given... Both equations ( $c + v = c$  and  $c - v = c$ ) "are algebraically equally offensive. Nevertheless, if one does not want to forego any of the above-mentioned principles" (mechanical relativity principle and postulate of constant speed), the tension is evened out by changing the common terms time and space instead" (p. 178 ft, 180 , 182).

"How do the multiple Einstein times behave? Are they really to be understood as real in the same sense as "Fundamental Time", "la duree"? Bergson replies: no. They are artificial, mathematical time fictions and, in fact, the Einstein theory confirms the common assumption of a time common to all and universally valid better than any previous one." And he strongly warned against seeing realities in these perspective, mathematical expressions" (pp. 190, 194).

### **Professor M. Palägyi**

"Union of space and time. . . This thought by Palägyi, developed in its full scope and with a brilliant presentation. . . , has become the basis of the later RTH. One would think that Palägyi, as the philosophical founder of the RTH, would have become a follower of this doctrine that fascinates everyone, but this is not the case. Palägyi's keen understanding was clear about the impracticability and fundamental failure of the RTH, and early on he moved into an opposing position to it, although he was actually the spiritual father of the theory. He has repeatedly expressed his displeasure to me that his thoughts about space and time have been dealt with by the relativity theorists... so distorted, and he was able to mock the naivety of the computers, which tried to blur the disparate character of time and space. "Mathematics does not protect against foolishness," he once told his listeners... to... If the idea of evolution has established itself again in science, then perhaps the question will become topical whether there were people back then who, in spite of all suggestive fads. . . had retained their calm judgment and clear vision for the great line of progress. One such was Melchior Palägyi "(S. Vf., Preface by Gehrcke).

In my view, the independent and polarly different character of time and space

must be emphasized all the more sharply, the more we feel compelled to synthetically combine them both into a unified dual order of the world of appearances. Because only the polar difference of time and space compels our understanding to regard them as absolutely belonging together. ... But if you let space and time sink into indistinguishable shadows, you will, unnoticed, confuse the two concepts of order with one another, i. H. to identify two fundamentally different conceptual contents with one another, which obviously involves a logical contradiction "(p. 35 f.).

"Strangely goes... Einstein see RTH directly on banning the concept of ether from theoretical physics and thereby destroying their most beautiful achievement. "

"There is, of course, a type of philosopher, the "phenomenalists", who cannot tolerate the concept of substance at all and who want to refer the ether and matter out of physics, but this type of thinker never gets beyond a sterile, skeptical verbal argument . For it is absolutely impossible to imagine a movement without having to assume something that moves, because it is this something that occupies different places at different times."

"The unified doctrine of space and time exists. . . not in that we deny the differences between the two orders, but rather their independence." "Monistic thinkers usually consider themselves obliged to trace back the basic differences that exist in nature and in our conceptual contents to one another" and thus to completely reverse the fundamental distinctions that they are forced to fix themselves in the beginning do... They annihilate the basic differences existing in nature and thereby also annul human discernment, the human understanding. ... On the other hand, the main task of human thinking seems to be to research the existing and irreversible basic differences and to gain as deep an insight as possible into their mutual conditioning or correlation, i.e. their actual unity" (p. 77 ff.).

"Never before has a doctrine appearing in mystical-mathematical guise caused such a sensation, of course aroused so much enthusiasm and enthusiasm in those who don't understand a word about it. But there is also an increasing number of critical voices, especially in the circles of the most prudent experimental physicists, who seriously question the alleged importance of the theory of relativity. They believe that the so-called relativity concept is far from unifying the physical structure of teaching; on the contrary, this concept carries the spirit of uncertainty and doubt into exact natural research, indeed it decomposes the basic concepts of the same without forming useful ones in their place" (p. 84).

## **Dr. L. Ripke-Kühn**

“Einstein's RTH, right or their individual constellations and particular physical research results may be wrong, is untenable as an overall form of thinking, because it destroys the concept of theoretical reality through a relativism that has to bury it itself under its ruins ”. . But that is not the beginning of a new way of thinking, it is the end of all thinking! ”... I claim that three quarters of the difficulties and errors would have been avoided if our physical researchers had made certain basic concepts, differences between category and space-time form, between phenomenal and real, between kinematic and dynamic, really clear. The sphere of the purely phenomenal, which knows and cannot know any truth in the strict sense. . . eats up the sphere of the real. In this way our science is either thrown back onto a primitive standpoint, despite learned detours, or, what comes out in effect, is broken down again into a standpoint where the question of truth becomes meaningless. If Einstein overthrew 'absolutism', he overthrew scientific truth, smashed the theoretical concept of reality in its necessary clarity." We have to assume that what is to be ascertained is also solid, independent of a point of view, that is, absolute. Otherwise we will pour water into a sieve and can give up our thinking altogether. If something can not only appear different, but also in itself different, itself, is relative, i.e. depending on the point of view and the state of the viewer, - not only, for example, in the conditions of measurement, but in the measured itself, all thinking ceases. The rest is skepticism, confusion, relativism” (p. 4 ff.).

(Man) “the physical theorist zealously sifts off the branch on which he himself is sitting, i.e. ... the researcher who is bound to the basic conditions of theoretical thought destroy the basis of all theoretical determination in general: it is the a priori presupposition of uniqueness, more precisely: the identity of the intended natural processes, which the interpretation seeks. It is about... about the abandonment of the last principle, which cannot be detached from the theoretical, that what is on the basis, in reality, can only behave in a certain way. Einstein's principle of equivalence [the General RTH] is the slap in the face of the theoretically necessary and a priori given concept of truth. (P. 8).

“Above all, Einstein fails to recognize the fundamental difference between the brazen kinematic and the dynamic, as already exemplified by Kant,... the real basic evil of the arguments. The equivalence and interchangeability of two processes can only be understood as something phenomenal, purely

phoronomic, its application to the dynamic is the typical offspring of this confusion of concepts. So back to Kant and his clear distinction between the kinematic and the dynamic, between pure movement and the forces (energies, causes) of movement, that is of, visual and categorical forms, of phenomenality and reality in a strictly valid sense! "Einstein's RTH can neither theoretically nor empirically be regarded as perfect. Theoretically not, because it leads to the self-annulment of a theory at all. . . . Not empirically, because, as he himself admits in most cases, his assumptions cannot really be checked against the actually given empirical conditions, be it that the speed in question cannot be raised, or that the necessary masses cannot be raised, which are supposed to show the effect he theoretically predicted. "A reality that is not only relatively interpretable, but also, depending on the point of view, relatively "behaving, in which the processes can behave in one way or another...., is just as absurd in itself as a truth that is relative (relative in itself)" (p. 11 ff).

"Wrestling relativity into concepts such as gravitation, etc., is called the entire experience in phoronomy. . . transform. . . . The dynamic (presupposes) material movement, original forces." [The author aims primarily at the general RTH.] "This limit to the real movement, which then also has a real cause and effect, i.e. has theoretical real valid consequences must not be exceeded by the RTH "(p. 15 f.)

"The limit of the RTH is therefore the force." "The theoretically real must. . . be clearly determined. . . . Anyone who renounces this unambiguity renounces the essence of science "(p. 18f.).

"The mere appearance can result from two indeed opposite reasons; knowledge can only assume one reason (P. 21).

". . . we are not interested at all ...

Observer can think - but what he can. . . may think .... But it should be said seriously: The (real) cause can be one or the other. Einstein thus leads the fatal blow against the basic law of all thought, that something can have one and only one cause that does not change depending on the place of observation (p. 23 f.).

That the observer is not easy... can differentiate (gravitation or acceleration), of course, but with another he must be able to decide and distinguish, otherwise he will not get out of the phenomenal area at all (p. 37).



### **Dr. JE. Thedinga**

“If the measurement of the speed of light on earth always results in the same quantity, that can mean nothing other than that the process of light propagation belongs to the earth system, that is, that the optical process must have some dependence of the speed of light on the earth's movement. Experience has shown that this dependency cannot lie with the light source, so it must be sought in the body that receives light. . . . From the moment when a ray of light rushing to earth leaves the sun, it belongs to the earth system, yes, without the hirde, that ray of light would not have been set in motion at all, so that their speed goes into that of the light beam ... Attraction theory. This theory is in accordance with the principle of relativity, according to which the propagation of light, like any other process of motion, is only dependent on bodies. . can be . . ., while the RTH Einstein has to change the norms of our thinking itself in order to achieve this harmony. With such a procedure, however, the theory undermines the very soil on which it stands; for only under the precondition of the validity of these norms could the theory furnish proof of their correctness; H. deduce from a chain of conclusions that conforms to the norms of our thinking that their path is the right one. The RTH therefore uses a means for this proof, the suitability of which it itself questions (pp. 20, 36 f.).

### **Professor B. Weinstein**

“Since in all determinations only rays are mentioned and the determination of simultaneity by rays, nothing can be inferred from this theory that relates to anything other than rays and time control by rays. Therefore, if one of Einstein's conclusions says that if a clock is absolutely synchronous with a second clock in a different place, the simultaneity is lost as soon as one has moved this clock to the second clock, then that cannot be mean that the clock has actually changed its course as a result of the movement, it only means that the relative simultaneity, controlled with rays, does not exist after the movement of the clock to the second clock, the absolute has remained”, also a rod viewed in relative terms (is) not different from a rod viewed absolutely. . In short, there are no physical conclusions attached to this theory at all, only formal-geometric ones. . . (1, p. 156 f.).

“For an observer at rest, a sphere in the relative system changes into an ellipsoid of revolution whose flattening and position are constantly changing. Inferring from this that such behavior also affects real bodies is inadmissible... it's a mathematical transformation that only for rays wins value when one

resting observer is forced to calculate the time and length for the moving rays as assumed. So all such statements as that moving bodies can even appear to the resting observer infinitely flattened and stretched to infinity, namely when the bodies move with the speed of light, are quite idle, it does not affect the bodies at all... It is similar with a corresponding inference about time... The clock as a mechanism is not left behind, only the controls. . . show by means of rays. ". lagging behind. Returning to the starting point, synchronism is found again through the same control (2, pp. 286f.).

"You serve these (relativity) theories and science much better if you limit them to what they can be. It has not occurred to any natural scientist before to see in the fact that the solution of a differential equation contains arbitrary constants something other than a mathematical result which must follow from the way in which we have just set up differential calculus. But what does this particular mathematical institution have to do with world views?"(2, p. 309).

### **H. Wittig**

"In summary, about the validity the special RTH briefly said that it was derived from physical analysis as a theory of dragging observations. . . emerges as a consequence of the discovery of the finite energy velocity  $c$ , which according to natural processes in the own system are perceived differently in time than they happen in the foreign system. ... As before, however, the fact remains that abstract kinematic, i.e., geometrical observations cannot result in any really material, i.e. material processes. Observational shifts of events are not physical changes in the shape of things in the outside world, neither in terms of time, space nor material. "

"There is only one physically real time" (p. 37 f.).

"The observer in the box example of the general RTH] could. . . actually [using an "accelerometer"  $j$  to determine within its own system that its movement [upwards] is not a gravitational movement." The general RTH therefore does not lead to a general physical relativization of systems that are moving against each other at will "( P. 51).

"The gravitational ether resting in its generating field thus meets all the requirements that physics must place on it based on the results of the various optical experiments. And what is most important, it is sufficient for them without the need to relate time and space in the various systems

would. "The classical relativity principle has general validity for all physical processes."

"The only attempt that led to the establishment of the light constancy principle was carried out in a moving field of force and not in a sluggish void system, as the abstract example of a train showed.

"There is no reason for physics to dispense with the assumption of aether. If natural science were to cancel the ether entirely on the basis of purely formal developments, it would have to resort to another auxiliary hypothesis for material reasons in order to be able to explain the near effect which it introduced in place of Newton's remote effects "(P. 59 f.).

### **Professor Th. Zeihen**

"What... as far as the actual foundations of the Einstein see theory are concerned, these are originally limited to the Michelson experiment and a few other experimental observations. It is very doubtful, and many respected physicists, too, whether these scanty attempts, which allow a great many explanations, are sufficient to support Einstein's hypothesis. . . "But even if you assume that everyone. . . Facts in further observations provide numbers that completely agree with Einstein's theory, this is by no means proven.

The history of physics in particular urges the greatest caution in this regard. . . . Mathematically correct development of the formulas and confirmation through individual observations is therefore not always sufficient to finally prove the correctness of a theory. In particular, one must always think of the possibility that the theory in question contains individual correct assumptions, and that this content of correct assumptions helps it to obtain many, even numerous, confirmations, but that in its totality it is due to numerous additional false ones Assumptions and conclusions are incorrect. This possibility can be expected to a high degree, especially with the instein theory, in which many assumptions are grafted onto one another. For the time being, one should therefore always strictly distinguish between the individual Einstein assumptions and speak only very carefully of the theory as a whole.

In the last few years the conviction that the question of relativity is not just a physical or even a mathematical problem, but ultimately belongs to the forum of epistemology and thus of natural philosophy, has rightly taken hold. It is most remarkable that precisely such an excellent physicist as Lorentz has only recently emphasized this epistemological character and has provisionally rejected the other Einstein hypotheses. "

[On the box experiment:] "We wanted the falling movements of the body

on earth can be traced back to an accelerated upward movement of the observer, or if an observer from outside the earth wanted to do this, then since such falling movements are observed everywhere on earth, the assumption must be made that the earth is following through mysterious forces of the fixed star sky being torn apart on all sides, which is actually not the case. So, in the overall complex of our findings, there is only that the observer in the box, according to which the fall occurs through an attraction of some kind on the part of the earth, but - despite the lack of differences in the measurement results - not due to accelerated movement of the box. . . upwards."

"For knowledge theory, it will always be important to arrive at a minimum of relativity. We consider it a step forward if, instead of the relative movement of the landscape which I observe from the moving train, I substitute the less relative movement of my train; We regard it as a new step forward when I find that the train is simultaneously the rotation of the earth around itself. . . (etc.). . . participate. I get there. . . never to a final absolute movement, but from the epistemological standpoint it is clear in which direction the cognitive advance lies. From this point of view, too, we come to the conviction that there can be no talk of an equivalence of the various relative perspectives. "

"Against the meta-geometrical character of physical space it is particularly objectionable that the metageometric structures and sentences are initially only logical-algebraic fictions that may offer great interest for "pure" mathematics, their spatial meaning and their meaning for the natural reality, however, is by all means doubtful."

"Be it. . . In conclusion, I would just like to point out that more and more well-known physicists have recently been questioning or directly rejecting Einstein's arguments" (pp. 87-91).

## The Theory of Relativity – A Scientific Mass Suggestion

by Ernst Gehrcke, 1920

What is Einstein's theory of relativity? Today this question is not only discussed in learned circles, but it occupies very many to whom academic and learned things are otherwise remote. The topic of the theory of relativity, the scrutiny about its meaning and correctness, has now found its way into the daily press of all kinds. But what it's actually about is probably only clear to very few, despite all the newspaper articles and popular brochures that are springing up like mushrooms. This is to be remedied in the following.

It will be important to note that the theory of relativity did not suddenly appear like a *deus ex machina* one day, but that, like all intellectual currents, it had a longer development and grew step by step and gradually. Nobody can doubt that the theory of relativity represents an intellectual current, but one can differ on whether this current is a healthy one, full of promise, whether, in short, it represents progress, or whether the opposite is the case, whether it is unhealthy, sterile, and wrong, in other words, a will-o-the-wisp of spiritual development. Opinions on this are very divided. The community of believers in relativity faces a crowd of doubters and critics, with recognized authorities on both sides, and as things stand, not only scientific, but also political and other points of view are brought into the debate. The aim here is to shed light on this chaos of jumbled assertions and interests. But only from the point of view of development will it be possible to understand the muddle and form an opinion about the confusion of opinions. In the following we do not ask what is the theory of relativity? but: how did it develop? and begin with the point that gave the theory of relativity its name, the principle of relativity.

According to the above we will not ask: what is the principle of relativity? but: how did the principle of relativity develop? Only the presentation of this development will lead us to a point of view regarding the principle of relativity that is free from the current judgment of the day.

Indeed, the principle of relativity is not a principle newly established in our day, but has a long history, dating back to ancient Greece and possibly even further. The complete presentation of its career would be an extensive, historically critical study that cannot be given here in a short space and does not need to be dealt with here. It will suffice if we state clearly that the principle of relativity is very simple, based on everyday experiences that many have had.

Let's imagine that we are on a train that stops at the station. There should also be a train on the other side of the platform. We are impatiently waiting for departure. Finally it starts, the train is in motion, and we see through the

window, as we move past the train on the other side. But all of a sudden we discover that we made a mistake: we're still stopping at the station, but the other train is running! This unpleasant experience in its ordinariness and simplicity is suitable for bringing us closer to the principle of relativity: we could not determine whether we were moving or the other train, whether we were standing still or the other train, the only thing we could observe was that the two trains were moving relative to each other. This is called the relativity of movements. All movement is relative, i.e. related to something outside of what is being moved. All natural bodies in our environment, on earth, all the stars in the sky move relative to each other. One also expresses oneself by saying that the concept of movement is a relational concept, i.e. a concept that cannot be thought of without reference to something in relation to which the thing in motion moves. But the relativity of movements is not yet the principle of relativity. Here is another everyday example.

A stick of wood is to be sawn through with a saw. This can be done in two ways: first, by holding the piece of wood, for example by placing it on a sawhorse and moving the saw back and forth, second, by holding the saw firmly, for example between your knees, and now the piece of wood is moved back and forth across the saw. In both cases, the same result is achieved: the wood is sawn through. So whether I move the saw and hold the wood, or hold the saw and move the wood, comes to the same thing. The two movements: wood fixed, saw moved and: saw fixed, wood moved, are, however, relatively the same; in both cases the one relates to the other in the same way.

This special case can be generalized at once if one asserts that any two motion processes that are the same relative to one another always produce the same result. In this way one is set up which is suggested by observation and which in its generality is tentatively extended to all movement processes in nature. The assertion, if correct, becomes a general principle of nature, and such a principle of nature is called the principle of relativity.

So far the matter is not at all difficult, and anyone who has made observations on bodies moving relative to one another or who has sawed wood can understand what is meant by the principle of relativity. One will also understand that the trains of thought that led to the principle of relativity were not first adopted by mankind in the 20th century, but are considerably older.

The principle that gave the theory of relativity its name is therefore not particularly original. But the question immediately arises: Is the principle correct at all? Answering this question is much more complicated than explaining it. What is meant by the principle of relativity? In so-called classical mechanics, founded by Galileo and Newton, the principle of relativity is

regarded as strictly valid for certain movements of natural bodies, namely those which are such that the relative movements are in a straight line and take place with constant speed, provided that no other than purely mechanical phenomena emerge.

Whether the relativity principle is actually valid beyond this narrow range within the framework of the old classical mechanics, scholars are not unanimous even today. Renowned researchers assume that all movements in classical mechanics in which the speeds do not remain the same, i.e. in which so-called accelerations occur, break through the principle of relativity, others assume that the principle of relativity also remains valid for non-uniform motion processes, provided that rotary movements (rotations) are excluded.

In any case, the relativity principle of classical mechanics does not apply to rotational movements. Those who are more interested in this subject may look it up in the specialist literature (cf. E Gehrcke. Negotiations of the German Physical Society 15, p. 260. 1913.), in which are considered not only in terms of their movement (e.g. like two railway trains moving relative to each other) or mechanically, like sawing wood, but whether it also remains valid for electrical, magnetic, optical and other phenomena.

There is no consensus among researchers on this either. In particular, the parties differ here according to the point of view of whether the electrical, magnetic, optical, etc. phenomena take place in an invisible, impalpable, imponderable, but actually existing medium, called the world ether, or not. Those researchers who believe in the ether - and among these are the most important scholars of the past and present - must generally reject the principle of relativity, as it was introduced above for weighable natural bodies, even for completely straight-line movements with completely uniform speed (so-called uniform translations). But those who do not believe in the ether are free to accept the validity of the principle of relativity in the most varied extensions. Which area of validity do the adherents of the so-called theories of relativity assume for the principle of relativity?

This question is not easy to answer either, because opinions are very divided. The inventor of the theory of relativity, Einstein, has had very different views on this over the course of time and has changed his point of view several times. He first claimed that the principle was also valid for optical, electrical, etc. phenomena on weighable bodies, whereby it was tacitly assumed that the condition of linear, constant velocity (uniform translation) permitted above by classical mechanics for mechanical phenomena applies; then, two years later, he strangely remarked that the principle of relativity had only been applied to acceleration-free (relative) movements, and wondered whether the principle also applied to accelerated movements. He comes to the conclusion that this is so and

believes he can extend the principle to the special case of uniform acceleration. Later, in a paper that appeared several months after my objections, Einstein again restricted the principle of relativity to uniform translations. Furthermore, Einstein has said the relativity principle can be extended in general to all translations, including non-uniform ones, and even to rotations. He called the theory based on this view "the general theory of relativity". Finally, Einstein took a slightly different point of view, namely he replaced the principle of relativity with a modified principle, the so-called "principle of equivalence", and we are faced with the remarkable result that the principle which gave the theory of relativity its name has given way to another principle in Einstein's more recent theory. Incidentally, Einstein was not happy in defending the principle of relativity; this applies particularly to his polemics with Lenard 3), that he can't refute factually, and he simply ignores the arguments against his theory.

1) A. Einstein, *Annalen der Physik* 17, p. 891, 1905. Cf. also the compilation by Gehrcke: *Die Naturwissenschaften* 1, p. 62, 170, 338, 1913; *ibid.* 1919, p. 147.

2) A. Einstein, *Annalen der Physik*, Vol. 35, p. 898, 1911.

3) P. Lenard, on the principle of relativity, ether, gravitation. Verlag von Hirzel, Leipzig 1920. Here you can find many related references.

The fluctuations in Einstein's view of such a fundamental question as the principle of relativity could actually have been enough to make the professional world dubious and fill them with skepticism about the theory of relativity. If this skepticism has not been expressed to the degree that might have been expected under ordinary circumstances, there will be reasons for it. Something will be said about this later in connection with other things. The following should also be noted about the principle of relativity:

The principle of relativity, which plays a role in the theory of relativity, concerns the relativity of motion processes. Everything else that is meant by the word relativity in the press and sometimes in specialist journals has nothing to do with this relativity of movements. The fact that "everything is relative", which one can think of in the most varied ways, depending on one's individual level of education, may also play an important role for the adherents of the theory of relativity, possibly only at times subconsciously, but with the theoretical theory of relativity as such there are such things, generally speaking, nothing can be done objectively. As a catchphrase that has an effect on the masses, where everyone believes they are hearing something that is somewhat familiar to them, and where hardly anyone else thinks of the same thing, the "relative" is excellent for introducing and recommending the theory of relativity. The "principle of equivalence" will never be as popular as the "principle of relativity". There is a certain tragedy in the fact that in its gradual development the theory of relativity has pushed its main catchphrase into the background:



instead, the longer it goes the more the main emphasis is placed on another area of the theory of relativity: on the so-called relativization of space and time.

The "relativization of space and time" is today the proudest achievement of the theory of relativity, the mention of which makes the breast of the relativist tremble and through which the philosophical-epistemological revolution of our entire conception of the world should be given. The relativization of space and time is said to signify a spiritual renewal and a turning point in human thought, compared to which the deeds of Copernicus, Kepler and Newton pale in comparison. The relativization of space and time is presented in the well-known representations of the theory of relativity as a fundamentally learned matter, clothed in mathematics, so that the non-mathematician often got the impression that he would never be able to measure and understand the depth of these world-destroying thoughts. And there is hardly another object of the entire theory of relativity that can be made clear with so little expenditure of learned expressions and formulas as this one. That is actually clear from the outset. For things as basic as space and time, on which so much is built, mathematical and non-mathematical, must be made clear to the mind with a minimum of artificial, mathematical hand tools, if it is capable of doing so at all. The mathematical formulas only give us information about how large the calculated effects are in detail, but they say nothing about the point of view on which they are based. But the supporters of the theory of relativity have a different opinion. For them, the mathematical structure is apparently indissolubly linked to the general, epistemological basic concepts that amaze them. At no point, however, is the root of the theory of relativity clearer than in its own conception of space and time, and at no point is the situation for the future of the relativity theory more dubious than with space and time.

Einstein tried, if not to explain his basic conception, then to explain his conclusions regarding the events in space and time by means of generally understandable pictures. Here's just a sample. Einstein occasionally discussed a preliminary question in Zurich (A. Einstein, Quarterly Journal of the Natural Research Society Zurich 56, p.11 and following 12) the events, which, according to his theory, are supposed to take place in a reciprocating clock.

According to Einstein, such a reciprocating clock should lag behind a stationary clock. He then expresses himself in order to be quite explicit and clear as follows: "For example, if we put a living organism in a box and let it make the same reciprocating motion as the clock did before it, since this organism returns to its original place after an arbitrarily long flight with arbitrarily little change, while organisms of a similar nature, which have remained dormant in the original place, have long since made new generations. For the organism in motion, the long journey was only a moment if the movement took place at

approximately the speed of light! This is an inescapable consequence of the principles we have taken as a basis, which experience imposes on us".

To put it briefly: According to Einstein's theory, the time sequence of all events on a natural body should depend on the state of motion of the body in such a way that the movement of the natural body slows down all the processes taking place on it, e.g., a living organism can be kept young by shaking, because of the resulting delay in all processes taking place on and in it. Einstein and his followers told this story to an astonished audience as an "irresistible" consequence of the theory of relativity! It has been varied and expanded on in many ways by the relativists: one of two twins is sent on a long journey immediately after his birth, from which he returns as a schoolboy; he then finds his brother as an old man with white hair! Such and similar considerations are, to emphasize it once again, not fairy tales or speculations, but "irrefutable consequences" of the theory of relativity! One has to go along with the consequences mentioned if one believes in the theory of relativity.

Instead of going into mathematical formulas, we can grasp the nature of the epistemological foundations of the theory from the images mentioned. We want to ask ourselves: 1. What basic view of time underlies these considerations? 2. What follows from this?

Let us, then, consider any one of the conclusions, which characterize the relativistic course of time, e.g. the above Einsteinian example of organisms moving against each other. In fact, we want to assume that it has been found experimentally that the organism in motion has remained younger than the one at rest; We want to ignore the improbability and the technical difficulties of such a finding. Then everything would be understandable, no matter how strange it might be, if movement as such would have the property of bringing about a slowing down of all chemical and physical processes occurring on the moving body. Movement as such, also called "absolute movement", is denied by Einstein, and he therefore has to reject the given explanation for the strange youthfulness of the moving organism.

Instead, he assumes a "relativization of time": that means that the moving organism is younger only from the point of view of the resting organism. On the other hand, from the point of view of the other organism, the first organism is the one that is in motion and is therefore the younger one. According to the theory of relativity, every point of view should be equal to the other, no one should be preferred over the other. But such a way out leads to extremely dubious conclusions. This is easy to see if we let the two organisms talk to each other after the journey is complete and they are both again at rest relative to each other. One organism asserts: I have white hair and you have stayed young; the other organism will also assert: I have white hair and you have remained young,

because from my point of view I am the one at rest and you the one in motion! So the two organisms will declare each other young and each themselves old!

So the two contradict each other. One might get the idea that the contradiction would be eliminated if one of the conversations always heard the opposite of what the other said, but even that does not solve the problem. Because if the journey of the moving organism has lasted long enough, the dormant organism is dead (cf. Einstein's words above). But then it is an "irresistible consequence" when the organism that has remained young speaks to the dead: You are not dead, but I! Because from the point of view of the young organism, it was the one at rest, the other the one in motion.

The empirical objection that a dead person cannot speak. does not belong to the relativist, who himself has no other justification for his assertions about time and space than that nothing can be said against them "a priori".

We regret that the theorists of relativity did not thoroughly think through Einstein's example of an organism. Perhaps then they would have had some doubts as to whether the interchangeability of the standpoints that they introduced with regard to temporal events under the designation "relativization of time" can be carried out.

There is only one obvious way of getting out of the contradictions to which the "relativization of time" leads, namely if one proceeds to allocate a separate world to each point of view, organism, observer, subject or "monad", and moving monads have nothing to do with the worlds of others. In this way, a "relativization of being" is added to the "relativization of time". In other words: the unambiguity of natural events for all moving monads is eliminated. One can also say: the point of view of a physical solipsism is taken. There is no indication that the relativity theorists, who are very unclear in the epistemological questions, intended such a way out or even considered it. Even Minkowski, who speaks of his own "audacity in mathematical culture", does not seem to have had this audacity in the relativization of being, to which he is urged when he consistently adheres to the path he has trodden. His mind is aimed at the mathematical development and the formalistic structure of the theory, and not at the epistemological deepening and clarification.

Nevertheless, some of Einstein's statements, especially in his so-called "generally understandable" explanations, indicate that the inner difficulties of his teaching were not entirely alien to him. If, for example, he occasionally claimed that the concept of the simultaneity of two events made no sense, and this initially mystical mode of expression suggests that Einstein felt he had to invent something special in order to avoid inner contradictions. When clarifying the epistemological point of view of the theory of relativity as a solipsism, however, the senselessness of the simultaneity appears as a permissible matter of

course. But it is no art, avoiding a contradiction by implicitly introducing the basic principle: a statement that contradicts a second statement refers to a completely different world than the second into the point of view indicated above, which can be called physical solipsism. This point of view is that of a person who is pushed to the extreme, who fights his cause to the death, and finally, in order to save himself, makes the declaration: I am right, because you are also right, because we are in two different worlds belong and therefore our statements cannot be compared with each other! If one "relativizes" the concept of time, one destroys the idea of a one, general, objective nature; if one monad has its own time, called  $t$  by the relativists, and the other has its own time, called  $t'$ , then every monad must also have their own world or nature entirely of their own, and just as little as the times  $t$  and  $t'$  are allowed "simultaneous" instants, neither are one and the same things present in the worlds of the two monads, at most the two worlds can exhibit certain similarities. So the theory of relativity only leads to an old, worn-out, skeptical point of view. This is the "new revolution in modern thought" that brought about the theory of relativity!

After the above, we shall be able to refrain from discussing the relativization of space in the theory of relativity in more detail. When Minkowski says of himself that he completed Einstein's "walking across time" by "walking across space," he drew a conclusion that he found admirable only because he himself was so unclear in principle.

### *Theory of Relativity and Gravity*

Einstein's first theory of relativity, which he later called the "special" theory, was invented by him with a second "general" theory of relativity, which should not have the original shortcomings of the first theory. Now, however, the relationship between the two theories is only formally that of the specific to the general, while in fundamental questions there is a considerable difference, increasing to the point of contradiction. The general theory of relativity is characterized by the fact that gravity plays a special role in it. Furthermore, a general principle of relativity is particularly characteristic of it, i.e. the assertion of the relativity of all movements, including that of rotations.

Apart from the above-mentioned difficulties associated with the "relativization of time and space", there are also concerns of a more empirical nature which make the general form of Einstein's theory of relativity appear impracticable. An example will make this clear. Suppose we are here If we are on the apparatus that is very popular in some places of entertainment, called the turntable, or if we are on one of the old-fashioned merry-go-rounds, then according to the theory of relativity it should be just as possible to state that the merry-go-round is moving as the merry-go-round and the whole outside world are standing still

The relativist's assertion that the whole world is going in circles around the stationary carousel should therefore be equivalent to the view of ordinary people: the carousel is moving: the relativist does not only arrive at his own theoretical point of view from disturbing inference, because to objects at great distances from the carousel, such as all fixed stars, he has to ascribe enormous speeds, which considerably exceed the speed of light, which is the highest permissible speed according to theory. He also has to add special, strange natural phenomena in order to describe the course of the phenomena as it takes place, e.g. he must assume that the centrifugal forces occurring during the rotation of the world are compensated by a gravitational force which increases proportionally to the distance from the axis of rotation of the carousel and which reverses its sign in the space of the carousel itself.

However, no reason for such a gravitational field can be seen, apart from the fact that no mass arrangement can be devised mathematically that could produce a gravitational field that could satisfy the mathematical conditions of the problem. In fact, the procedure of the relativist, who makes the whole world rotate around a carousel and who for this purpose presupposes a physically impossible gravitational field, is purely fictitious, physically impermissible. The relativist's point of view is like that of a person who has had a coin stolen and who claims: I can either assume that the thief stole the coin, or I can assume that the thief stole the whole world and not the coin. The second "possibility of thinking" is ruled out for reasons of experience, "a posteriori", and it is therefore not possible to assume a "relativity" of the standpoints here. It is exactly the same with the standpoint of the relativity theorist towards the rotation of a carousel, it contradicts all experience. Anyone who wants to find out more about this side of the opposition to the theory of relativity is strongly recommended to read the writings of Lenard, especially the brochure: *About Relativity Principle, Aether, Gravitation*. Verlag von S. Hirzel, Leipzig 1920; starting from this one can also find the way to the rest of the literature on the subject.

The basis of general relativity also suffers from the deficiency of internal reason for assuming a gravitational field for the acceleration fields required to carry out the theory. One cannot see why gravitation is called upon to be the cause of accelerations, when other causes of accelerations are also conceivable, such as forces in the ether, capillarity forces, etc. The introduction of gravitation, i.e. an empirical, physical phenomenon into the basic equations of the theory of relativity, lays the foundation for the pure, mathematical construction left and drawn in a physical, empirical element. The relativist can therefore no longer behave only in the role of the abstract mathematician, but must put up with the fact that the physicist objectively tests the theory as one that is supposed to be empirically correct. If this test turns out to be unfavorable for the relativist, he has to give up his theory and can possibly devise a new one. But it is not

acceptable for the relativist to stick to his theory because he finds it mathematically beautiful. Apart from all logical and epistemological considerations, experience remains the main touchstone of any physical theory, and so too for the theory of relativity.

#### *The experimental testing of the theory*

Anyone who is active in practical life or as a natural scientist will have little confidence in the theoretical undertaking of giving up an objective nature that is the same for all observers in their one time and space. He will therefore not be particularly surprised if it turns out that individual practical conclusions of such a theory contradict experience. On the one hand, as little as the confirmation of a conclusion would prove the correctness of the theory, on the other hand one can often come to the same conclusion, which proves it to be correct, from completely different bases. On the other hand, being able to say that the foundations are correct proves so surely that a conclusion which turns out to be false proves that the basis from which it was derived must also be false. The theory of relativity has not fared well in the test of experience. This is to be presented briefly below.

First of all, it should be noted that all the conclusions of the theory of relativity always lead to such minute effects that it is not easy to carry out experimental verification. In a certain sense this has been fortunate for the theory, which is in a position to point out the difficulty of the experiment and the inaccuracy of the observations when a predicted effect is not found. However, there are now observations that are so precise that this conclusion can no longer be drawn.

First and foremost, the so-called red shift of the spectral lines should be mentioned here. A spectral line is produced by certain vibrations in a gas that is glowing. Spectral lines are also observed on our sun, which according to the results of astronomy and astrophysics is a very hot gas ball. Now, according to the theory of relativity, the duration of any process should depend on the gravitational field, so the oscillation processes of all spectral lines on the sun should also depend on the gravitational field of the sun. However, this latter is considerably stronger than the earth's gravitational field, so that the spectral lines of a gas on the sun should show a difference compared to the spectral lines of the same type of gas on earth - claims the theory of relativity.

Formulas have been set up for the magnitude of this difference and its sign. They state that the spectral lines of the sun must undergo a small shift towards the red side of the spectrum, in the amount of 0.01 so-called angstrom units. The smallness of this amount is obvious to anyone when expressed in millimeters: it is one hundred millionth of a millimeter. This small effect, the existence of

which was prophesied and demanded by the theory of relativity, can be sought today with the highly developed measuring devices and would not escape the modern instruments if it were there. The effect was carefully searched for, but could not be found: First, the relativistic redshift on the sun's nitrogen lines was searched for at the Astrophysical Institute in Potsdam; Schwarzschild, 1) the late director of the institute, published the result in 1914; he finds no redshift. Then the well-known American astrophysicist St. John looked for the redshift and didn't find it either. St. John says in his 1917 report of the result of his experiments 2): "The general result of the investigation is that within the range of observation the measurements give no indication of an effect of the order of magnitude deduced from the principle of relativity." Observational errors of St. John's were only a fraction of the claimed, non-existent Einstein effect. Hale, the well-known sun researcher and director of the Mount Wilson Observatory, has spoken out in favor of the correctness of St. John's observations. 3) These investigations on Mount Wilson, with the best instruments, among the finest that any other astrophysical institute on earth can boast of, should have detected the Einstein effect unequivocally if it existed.

Working and observation conditions that are currently not 1) Training report of the Berlin Academy d. know 1914, pp. 1201-1213. 2) St. John, Carnegie Institution of Washington, Mount Wilson Solar Observatory Communications to the National Academy of Sciences No. 46th vol. 3, 450-452, July 1917. 3) E.g. in the Annual Report of the Director of the Mount Wilson Solar-Observatory, Yearbook, No. 16, p. 200, 1917.

On the other hand, it means little when one of Einstein's employees, Herr Freundlich, recently asserted that the Americans had a source of error in their measurements; the compilation and critical appraisal of this will be given in a publication that will soon be published by experts, to which reference is made here (L. Glaser. About experiments to confirm the theory of relativity based on observation. Verlag der FC Glaser. Berlin SW 68; also appears in Glasers Annalen for industry and construction).

The red shift of the spectral lines on the sun has so far represented the main effect of the theory of relativity, it is definitely the most important conclusion, because it is the one that has to be examined most precisely, and the absence of which is to be regarded as an experimental refutation of the theory of relativity — if such a conclusion was still needed at all.

Other consequences of the theory of relativity are less characteristic of the theory because various other explanations immediately present themselves. There is, for example, the so-called perihelion disturbance of the planet Mercury. According to astronomers' observations, Mercury's orbital ellipse rotates a very small amount of 43 arc seconds in 100 years. This is also an

immensely small quantity, but it is detectable thanks to the subtlety of astronomical observation methods. Explanations for this orbital disturbance of Mercury have been given for many years, in particular the formula of the senior teacher Gerber from the year 1898 must be mentioned here (Gerber's publication, which is difficult to access, was reprinted in the *Annalen der Physik* Vol. 52, p. 415, 1917), which he set up when there was no theory of relativity and which completely corresponds to that from the formula derived from Einstein's theory of relativity. Here the theory of relativity could only be regarded as a certain, namely the last possible, possibility of explanation for a thing that is known per se if it were otherwise unobjectionable.

Finally, another effect that has recently been treated with particular breadth in the daily press should be mentioned: the deflection of the stellar locations near the sun. Here, too, the matter is by no means as new as it appears at first glance, because astronomy has long known certain systematic deviations in the positions of the stars, depending on the position of the star in relation to the sun. This phenomenon, termed annual refraction, has not yet been explained, although there is considerable factual material on the subject dating back to the middle of the last century; one can learn about this, for example, from a paper by L. Courvoisier, *Observational Results of the Royal Berlin Observatory* No. 15 from 1913. Einstein also concluded from his theory of relativity that the positions of the stars depended on the sun, and measurements were taken by English expeditions on the occasion of the solar eclipse of 1919.

It is difficult to assess these observations, since the original reports are not all available in print and the information given by the various investigators at the English Academy in London is not uniform. In any case, it is certain that German experts and the press have been informed in a one-sided manner that is too favorable for Einstein's theory. This is evident, for example, from statements made by the London astronomer Silberstein, who draws attention to the fact that the report given in the physical society in Berlin contained errors in essential points, the correction of which shifts the result of the measurements to the disadvantage of Einstein's theory. Nothing definite can be said at present about the effect of the stellar locations near the sun. But it is not at all that important for the theory, since even if the shift of the stellar positions indicated by Einstein by 1.75 arc seconds at the edge of the sun were actually observed with certainty, there are still a whole series of other attempts at explanation that are physically much more understandable than the interpretation by the theory of relativity. Incidentally, the small amount of only 1.75 seconds of arc here is a considerable obstacle to the experiment; In order to give an idea of this amount, it should be mentioned that the small angle 1.75 arc seconds has the size under which a cherry appears to the eye at a distance of 2 kilometers.

1 ) Printed in: *Die Naturwissenschaften* 8, p. 390, 1920.



What judgment will one have to form about the theory of relativity? That is the question to be answered now.

Einstein's theory of relativity originates from a theory by the Dutch physicist Lorentz. The agreement with Lorentz's theory goes so far that the mathematical form of Einstein's first theory of 1905 is essentially the same as that of Lorentz, the equations of this Einstein's theory are Lorentz's equations. The difference is just in the interpretation of the theory, i.e., the interpretation of the basic concepts of time and space. Einstein did something with this interpretation that his admirers said eclipsed everything that had gone before. But Einstein's interpretation was also far less new than it appeared. As early as 1901, the Hungarian philosopher Melchior Palégyi had a German-language publication published by Engelmanns Verlag in Leipzig ("New theory of space and time", from Dr. Melchior Palagyi), which anticipated the essential thoughts of Einstein and Minkowski, the enthusiastic, mathematical follower of Einstein: especially the idea of the "union between time and Space". The conception of the "world" in 4 coordinates, one of which, time, appears multiplied by the imaginary unit  $\sqrt{-1}$ , etc. These works were unknown to physicists - some of them are still today - they took Palégyi's ideas from Einstein's theory of relativity, while Palégyi partly shaking his head, partly waiting.

However, when recognized authorities enthusiastically campaigned for the theory of relativity, enthusiasm also arose in the public, and development now took its unstoppable course. In the linking of mathematical, physical and philosophical thoughts in the theory of relativity, it was very difficult for the experts in our time of high scientific specialization to reach an independent judgment about the theory, especially since Einstein knew how to defend his work with skill and the physicists dispelled their misgivings about mathematics and philosophy, the mathematicians their misgivings about physics and philosophy, the philosophers their misgivings about mathematical and physical counter-arguments: every specialist bowed to the authority of his colleague in the other subject, everyone believed what he believed according to other specialist authorities supposed to be proven to hold. No one wanted to blame themselves for not understanding the subject! and so a situation was created similar to that described by Andersen in his fairy tale "The Emperor's New Clothes": here an emperor with his ministers and subjects watches the weaving of a robe which has the peculiarity of not being seen by those people who are not clever enough for this, and finally everyone stands in amazement in front of the empty looms, because no one dares to admit that he sees nothing.

The theory of relativity has also captivated the spirits, it has become mass suggestion. But mass suggestion is in itself nothing reprehensible, the elimination of the clear mind need not be proof that the striving of the masses is

foolish. Everything in the theory of relativity depended on whether it could be guided into an epistemologically acceptable channel.

Einstein often tried to improve the weaknesses of his theory and to avoid objections. he e.g. tossed the relativity principle back and forth (see above) he finally believed to have reached safe haven and in 1915 declared (Training reports of the Berlin Academy 1915. p.847) that the theory of relativity was finally complete as a logical edifice. One point in all these changes is particularly important to emphasize: as little new as the mathematical form of Einstein's first theory of relativity is, which agrees with the older Lorentzian theory, the change that Einstein made in the further course of development of the mathematical guise of the theory was particularly novel: the mathematician Varicak was the first to show that the theory of relativity leads into the formulas of non-Euclidean geometry; that the mathematical complication of the non-Euclidean continua had long been formally solved by mathematicians, as recognized even by Einstein. It is not really clear to what extent Einstein is still going along with the latest relativity-theoretical direction taken by Weyl and others. In any case, followers of Einstein spread news unfavorable for Weyl's work.

If it is certain that Einstein did not discover any mathematically unusual forms in his theory of relativity, if the philosophical-epistemological basis of the whole edifice is unsatisfactory, if finally the experiments of the physicists and astronomers cannot prove the theory, then one will ask what remains at all of the claim to see in the theory of relativity a work which goes beyond the deeds of Copernicus, Kepler and Newton. Today's supporters and opponents of the theory will answer this question differently, depending on their personal feelings. An answer that satisfies everyone can only be achieved when the suggestion of advertising and printer's ink, with which the "revolutionary theory of relativity" works, recognized as such by all. The lines above may help to contribute to this enlightenment.

## Lodge Explains Einstein Theory - Man and His Earth Will Turn to Ether, According to Relativity Theory

Sir Oliver Lodge, November 15 1921

“WE LIVE in a full-blooded universe, containing intelligence and emotion and will. What the influence of life and mind may be, in modifying still further the laws of physics, some of us are only beginning to suspect.” So writes Sir Oliver Lodge in the *Fortnightly Review*, discussing Professor Einstein’s modern method for studying the universe and the parts the suns and planets, including our own sun and earth, play in the march of time toward dissolution and eternity.

What is the riddle of the ether? Will we and our earth and all material things in the universe eventually dissolve into ether? Are we gradually being “etherized” – becoming less earthy and more ethereal? Neither Sir Oliver Lodge nor Professor Einstein, whose theory the former discusses, touch on that definite point, but they lead right up to it. Sir Oliver says that all moving bodies gradually exhaust themselves through the light and electrical properties they throw off, the effect of these thrown off charges on other moving bodies in the universe being what is scientifically known as “relativity.” No moving thing in the whole universe may change its position without setting up an effect in other moving bodies in the universe. Ether, which conducts the sound-waves in wireless telegraphy, is the carrying agent of these influences which produce the effect called relativity.

Space outside the air envelopes of the world is now considered to be ether. There is no such thing in the whole universe as “nothingness” – the kind of space we formerly conceived lay beyond the borders of the air-jacket of our earth. Sir Oliver points out that, contrary to former conceptions, the planets and suns and other moving bodies are not spinning about in empty space isolated from one another. They are one and all really moving through something which affects them and which they affect. That something is the substance more apparent in outer space and known as ether.

What keeps all the heavenly bodies moving? What drives the earth around its orbit and keeps it spinning so that we have night and day? Sir Oliver and Einstein introduce the theory of relativity in explanation. There is an “outside force” that makes the universe move and keeps our earth spinning. Says Sir Oliver: “There is a tendency to abolish the idea of ‘force’, and to replace gravitation by a modified geometry – as if the earth sailed along, not so much obedient to all the forces acting on it as it is free of any compulsion whatever. But I contend that to ignore, or deny or supersede the gravitational stress, merely because we do not understand the particular configuration of the ether which is

responsible for it and which renders it possible, is to blind our eyes dangerously to dynamic reality." Such an attitude, he contends, is on a par with "resting satisfied with a mere geometrical specification of the motion as if it were a peculiarity of space." Moreover: "To deny gravitation and ether forces, and yet retain the apparently simpler and more obvious pressure forces due to contact of matter, leads to absurdity."

What then is force? Sir Oliver makes it clear that there are two influences that keep moving bodies in motion. One is this mysterious "force" and the other is "acceleration." "Force," he explains, "is essentially a human conception derived from our muscular sense, and, psychologically, is as basic as motion, and more directly apprehended than matter." Acceleration, on the other hand, is not a random diversion of empty space, he insists. Acceleration is always the result of pressure exerted upon one unit in the universe by other units – or, as Sir Oliver puts it, "by the circumambient medium." The original text of Sir Oliver's interpretation of the Einstein theory makes very slow reading for the layman, for the reason that it is couched pretty much in the vocabulary of the scientist, and scientific terms have definite applications all their own. He points out that to geometrize physics—that is, to bring the science of measuring magnitudes to bear on the phenomena of matter—is certain to complicate it. Once an operation becomes complicated it becomes worse than useless; it is better discarded, for it resolves itself into an obstruction. In regard to ether he continues: "The new facts can be accepted, and the relativity equations can be used, but a physical explanation can still be looked for, and our knowledge of the universe will not be complete until it is found. We cannot be forever satisfied with a blindfold mathematical method of arriving at results. We can utilize the clues so given, and admire the ingenuity which has provided them, but that is not the end—it is only the beginning. The explanation (of the forces mentioned) is still to seek; and when we really know the properties of ether we shall perceive why it is that things happen as they do." Progress necessarily, in the scientific angle of view, is toward dissolution— and, apparently, in Sir Oliver's viewpoint, toward the etherization of all matter. So, therefore, when he speaks of "the inertia of an electric charge being liable to increase if the charge were in rapid motion" he means that all bodies in motion are gradually throwing off or dissipating the forces that animate them and hold them together. Our progress then must be toward a final transformation into ether, and "this increase of inertia due to motion must apply to all matter, if matter is electrically constituted. And," continues Sir Oliver, "all material inertia is self-inductively explained by the electrical theory of matter. Not ultimately: it is thrown one step back and is relegated to the fundamental properties of an ether."

Scientists can no longer profitably take into consideration a relation between two celestial bodies alone. To be accurate, they must in future take into account the influence of a third element on both of them, and that is the substance through which they are moving—ether. That is where the much discussed thing called "relativity" comes in. Geometry is no longer considered sufficient to

make accurate scientific calculations. In fact, Sir Oliver at one point almost characterizes geometry as a menace to future observations; it was all right for use so far, but with the knowledge now acquired, relativity will carry on much more effectively. He concludes:—

“The simple principle of relativity, so far mainly referred to, deals with the ether of space on the assumption that it remains uniform and unaffected, and therefore negligible; and that the masses of matter in it, though they may perturb it electromagnetically, have not modified its properties in any other way.

“But we know that that is not strictly true; it is found observationally that each piece of matter attracts every other. Consequently we perceive that all bodies must somehow modify the structure of the medium in which they exist, and that this modification must extend in all directions, diminishing as the inverse distance, to practical or real infinity.

“The generalised Einstein equations afford a consistent scheme, and enable us to calculate the refined results which are consequently to be expected. The modified calculations have been intensely interesting; and, as Larmor has said, the verifications of them, both by the planet Mercury and by the deviation of starlight near the sun, were really what was necessary to justify such a formulation and show that the modification required was not limited to express distance defined on a piece of matter, like Michelson and Morley’s stone or wood block, but was equally related also to the depths of space between the worlds.

“Fortunately this is not the end; and I anticipate that before long there will be a revolt in favor of more physical conceptions and greater simplicity of expression. For there is probably no need to strain after such ingenuity, and express everything in this complicated fashion; there is no compulsion to merge everything in higher geometry. The wonder is that it can be done. Many are at work on the task; their skill is amazing. But, after all, what are really modified are only our measures of things; and the minute peculiarities now detected in our measuring operations may yet be expressed, physically and naturally enough, in terms of the medium in which they occur.

“Finally, I must repeat, it is unwise to load the new discoveries with an implication that the historical principles of geometry have broken down or been detected as untrue. Those modes of special representation remain as they were, applicable to the free conception of empty space. But space is not empty, it is full of a medium with definite properties, to which observed discrepancies can be referred; and it also contains centres of force—the atoms of matter—which modify the properties of the medium in their neighbourhood. Hence when we make physical observations we must adapt ourselves to actual circumstances, and be cautious about applying abstract principles to correlate our observation of

concrete things. The universe contains much which at first sight we did wisely to ignore, or we should have been overwhelmed with complexity; but now the time has come when some more of these complications can fruitfully be taken notice of. Accuracy of observation has been so much improved that outstanding minutiae are beginning to have a barely perceptible, yet fundamental and instructive, effect."

## From "Gravitation versus Relativity"

by Charles Lane Poor, 1922

For some years now the entire world has been in a state of unrest; mental as well as physical. The physical aspects of this unrest, the strikes, the socialistic uprisings, the war, are vivid memories; the deep mental disturbances are evidenced by the widespread interest in social problems, by the futuristic movements in art, by the light and easy way in which many cast aside the well tested theories of finance and government in favor of radical and untried experiments. Can it be that the same spirit of unrest has invaded science? The Relativity Theory, as announced by Einstein, shatters our fundamental ideas in regard to space and time, destroys the basis upon which has been built the entire edifice of modern science, and substitutes a nebulous conception of varying standards and shifting unrealities. And this radical, this destroying theory has been accepted as lightly and as easily as one accepts a correction to the estimated height of a mountain in Asia, or to the source of a river in equatorial Africa.

This work is an attempt to submit the so-called astronomical proofs of the Relativity Theory to a critical examination and discussion. In the way in which this evidence has been presented and accepted, there has been apparently a complete reversal of ordinary scientific methods. As a new theory, as an hypothesis seeking acceptance, it would seem that the burden of proof should rest upon Relativity; that its advocates should conclusively prove the necessity and the sufficiency of their hypothesis. Such, at least, has been the accepted scientific method in the past. In 1665 Isaac Newton developed his law of gravitation and put it to test in the motion of the moon. He found a minute discrepancy between his theory and the actual motion of the moon, a trifle less than one one-hundred-and-thirtieth ( $1/130$ th) of an inch in a second of time; a difference of about 15% of the observed motion. This small discordance caused Newton to consider his theory as not proved, and he laid aside his work. Nearly twenty years later new measurements of the earth were made, and, urged on by Halley, Newton corrected his older calculations and showed that his law of gravitation was substantially correct. Then, and then only, did he announce his theories. It was some twenty years after Charles Darwin first conceived his theory of evolution before he made it public in his classic work.

The theory of relativity, on the contrary, was announced without any confirmation. Tests were proposed, selected by its author, and these tests failed of confirmation by 20%, by 50% even, and yet such results are called thoroughly satisfactory. The merest indication of a result, favorable to relativity, becomes conclusive proof; and observations and experiments, which can be explained by the new hypothesis almost as well as by the older methods, become crucial tests in favor of relativity. And the theory has been accepted, and is accepted by mathematicians, by physicists, by many of the most prominent

astronomers of the world, and the burden of proof has been shifted, until it seems that relativity is an established scientific fact, unless it can be completely disproved.

#### THE MICHELSON-MORLEY EXPERIMENT ON ETHER-DRIFT

The Michelson-Morley experiment forms the basis of the relativity theory : Einstein calls it decisive. If it should be shown that this experiment is not decisive, that the negative results obtained were due to instrumental errors or to some peculiar conditions under which the experiments were conducted; if it should develop that there is a measurable ether-drift, then the entire fabric of the relativity theory would collapse like a house of cards. For this reason the repetitions of the Michelson-Morley experiment recently made at Cleveland and at Mount Wilson are of especial importance: they indicate that the original experiment was not decisive, and that there may be a measurable ether-drift.

Many years ago it was suggested that the negative result of the Michelson-Morley experiment might be due to the earth dragging the ether, in its immediate vicinity, along with it: that the ether in the room, in which the experiment was made, was entrapped and moved with the room. A motor-boat, a steamship, moving through still water drags the particles of water, in immediate contact with its sides, along with it. If one looks directly down from the deck of a moving vessel, one will see the particles of water apparently cling to the sides of the boat and move forward with the boat; particles an inch or two from the surface cling less tenaciously and are slowly passed; particles a foot or two from the sides show no frictional effect and are left at rest by the passing vessel. To measure the true speed of the vessel through the water, one would have to consider the motion of the hull relative to water particles some considerable distance away from the sides of the boat. This effect of dragging water is the well known phenomenon of "skin friction," which plays such an important part in the design of all vessels.

The attempts of Michelson and Morley to measure, in the basement of buildings and at low altitudes, the motion of the earth through the ether might, not inaptly, be compared to the attempts of some minute beings, living in a small rust-pit on the side of the LeTnathan, to measure the speed of that immense vessel through the waters by experiments in the thin film of water, contained entirely within the hollow in which they lived.

In the years 1891 -1897, Sir Oliver Lodge tested this idea of skin friction between moving bodies and the ether, and attempted to measure the amount of such friction, if any there be. He devised an elaborate apparatus, by which he could test whether the ether contained between two parallel steel plates was dragged along by the plates, when they were whirled at high speed. His



experiments showed that the ether between such discs, or plates was not dragged sufficiently to change the velocity of light by so much as the 1/1000th part of the velocity of the plates. And he concluded from this experiment that the viscosity, or fluid friction of the ether is zero. In considering this result it must be remembered that the discs, or plates were only some three feet in diameter, and were placed about one inch apart. The earth is some forty-two million feet in diameter. Thus this attempt of Sir Oliver Lodge to detect possible skin friction of the earth is not radically different from an attempt of a naval architect to find the skin friction of the Leviathan, after several months in service, from tests made on a plate of highly polished metal one inch in diameter.

Now the possibility of skin friction between the earth and the ether can be tested by repeating the Michelson-Morley experiment at different distances above the earth's surface. An accurate test, of course, can only be made in the higher regions of the atmosphere, clear above the tops of the highest mountains. This is impossible, but it is possible to utilize high altitude stations and compare the results with those obtained at ordinary levels. This has been done by Professor Dayton C. Miller at the Mount Wilson Observatory, at an altitude of some 6,000 feet. He there made the experiment with the original apparatus used by Morley and Miller, and repeated it with improved instruments. He summarized his findings in the following words:

"The suggestion was then made that the earth drags the ether, and while there is no 'drift' at the surface of the earth, it might be perceptible at an elevation above the general surface. The experiment was again performed by the present author at the Mount Wilson Observatory in March and April, 1921, where the elevation is nearly 6,000 feet. The results indicated an effect such as would be produced by a true ether-drift, of about one tenth of the expected amount, but there was also present a periodic effect of half the frequency which could not be explained. The interferometer had been mounted on a steel base and in order to eliminate the possibility of magnetic disturbance, a new apparatus with concrete base and aluminum supports for the mirrors was constructed. Observations were made in November and December, 1921, the results being substantially the same as in April. Before any conclusions can be drawn, it is necessary to determine the cause of the unexplained disturbance."

These experiments of Professor Miller are not conclusive, but they appear to indicate that the ether is dragged along by the rough surface of the earth, and that the true drift might be measured if one could attain a sufficient height above the surface of the earth. If there be an ether-drift, as these experiments indicate, then the entire structure of the relativity theory is rendered worthless. But, whether there ultimately prove to be a measurable ether-drift at high altitudes or not, this cautious statement of Professor Miller embodies the true scientific spirit, and is in marked contrast to the statements and assertions of the relativitists.

## EINSTEIN AND THE FIZEAU EXPERIMENT

The treatment of the Fizeau experiment by Einstein requires a few words of explanation. He gives two equations as follows:

$$W = v + w \quad \dots \quad (A)$$

$$W = \frac{v + w}{1 + \frac{vw}{c^2}} \quad \dots \quad (B)$$

in which  $v$  is the velocity of the water in the tube,  $w$  the velocity of light in a motionless fluid, and  $W$  the velocity of light relative to the tube. He states that equations A and B represent the relations between these quantities, A according to the ordinary theories of classical mechanics and B according to the relativity theory. He then shows that the relativity equation B more nearly represents the results of Fizeau's observations: "Experiments decides in favor of equation (B) derived from the theory of relativity, and the agreement is, indeed, very exact".

Equation (A), however, is not an equation of classical optics; it is found nowhere, except in Einstein; it has nothing whatsoever to do with Fizeau's experiment. As it stands it is a mere statement that the velocity of light in the moving water is equal to the sum of the velocities of light in air and of the water in the tube. This has never been claimed. Every formula, heretofore used, has involved a quantity that Einstein omits, namely, the index of refraction of water.

Further, the results obtained from equation (B) are not identical with the observational results of Fizeau. In order to bring equation (B) into accord with the results of Fizeau, Einstein is obliged to make approximations, or to neglect certain terms of his own formula. By means of such approximations, he finally puts his equation (B) in the form:

$$W = w + v \left( 1 - \frac{1}{n^2} \right)$$

where  $n$  is the index of refraction of water, equal to the ratio  $c/w$ . And this equation is identical with Fizeau's. Thus in applying his "crucial test," Einstein sets up and knocks down an equation never before heard of, an equation having no relevancy to the observations discussed, and then adjusts his own equation, by a system of approximations, to fit the observations.

## THE MATHEMATICS OF RELATIVITY

The entire relativity theory is based upon certain assumptions, or postulates, from which were derived mathematically all the complicated formulas and conclusions of Einstein. It has always been taken for granted that the mathematics of relativity were correct; that the conclusions followed logically and inevitably from the fundamental premises or assumptions. Now this very point has lately been investigated by eminent French mathematicians, especially by Painleve, who has shown that a number of different formulas can be derived in the manner of Einstein, that many different and inconsistent conclusions can be drawn from the fundamental premises of relativity.

From his formulas Einstein drew certain conclusions regarding the behavior of clocks and of measuring rods, when in motion. Painleve has shown that the Einstein formulas are not the only formulas to be derived from the premises, that there is an infinity of other possible formulas. One of these other possible formulas leads to the ordinary results of Euclidean space and to the constancy of rigid bodies. Other possible formulas lead to the conclusion that bodies expand instead of contracting, still others that they expand at right angles to the direction of motion.

The conclusions of Einstein appear to Painleve to be audacious conjectures and not the inevitable consequences of the premises: he concludes that it is pure imagination to pretend to draw conclusions such as Einstein does. He believes that a number of Einstein's formulas will blend with classical science, but that some of the more startling consequences of the theory will not finally survive.

## THE DISPLACEMENT OF SOLAR LINES AND RELATIVITY

Einstein has claimed that the observations of Grebe and Bachem at Bonn on the cyanogen lines in the solar spectrum place the reality of the relativity displacement almost beyond doubt, and in these observations he sees clear experimental confirmation of his entire theory. It has been noted, however, that the bands or lines of the solar spectrum are subject to displacements due to other causes, to motions of the earth and sun, to motions of the solar atmosphere, and to differences of pressure. These displacements may be much larger than the predicted Einstein effect. Thus, the relativity, or Einstein, shift is not a clear-cut effect which can be directly measured; it must be disentangled, if it exists, from several similar, overlapping, and even larger effects.

In the Annual Report of the Director of the Mount Wilson Observatory of California is to be found a summary of the observations upon the cyanogen lines, made by various observers, each of whom claims to have proved the existence of the Einstein effect. From this summary, the following facts appear:

PEROT applied corrections for downward movement of the solar atmosphere and for negative pressure shift (approximately equal to the Einstein shift), and when thus corrected, his results agreed with the Einstein prediction.

BIRGE applied a correction for an upward movement of the atmosphere, but no pressure shift, and when thus corrected, his results agreed with the Einstein prediction.

GREBE and BACHEM assumed neither upward nor downward movement of the atmosphere and no pressure shift, but applied a correction for a supposed asymmetry of the arc-lines, and, when thus corrected, their results agreed with the Einstein prediction.

Had these three observers applied the same corrections, in the same way, it is perfectly clear that their final results would have been very discordant, and that two sets of results, at least, would have differed radically from the predicted Einstein effect. As a matter of fact, these three sets of observations, taken together, do not show the slightest trace of the relativity effect; they are radically discordant and can only be made to show the desired result by arbitrary and contradictory corrections.

## CONCLUSIONS

The astronomical evidence, cited by Einstein as complete and satisfactory proof of the relativity theory, fails to support his hypothesis. His hypotheses and formulas are neither necessary nor sufficient to explain the observed phenomena. They are not sufficient, for they account for only one of the numerous discordances in planetary motions, for only a portion of the supposed light deflections; they are not necessary, for all the discordances in the motions of the planets, including that of Mercury, can readily be accounted for by simple gravitational methods, and the light deflections, if real, can be equally well explained on other grounds.

A motion of the perihelion of Mercury, similar and approximately equal to that actually observed, can be explained by the Einstein hypothesis. But this hypothesis fails completely to explain other motions of Mercury and similar motions in other planets, it causes new and inexplicable discordances in the motion of Venus. On the other hand, all the observed motions of both Mercury and Venus can readily be explained by the action, under the Newtonian law of gravitation, of masses of matter, known to exist. And such explanation is based upon formulas and methods, known and used for well over a century to account for similar motions in other portions of the solar system.

Deflections of light rays, similar to those reported at Sobral, can be explained by the relativity theory. This hypothesis can account, very approximately, for the

amount of the supposed deflections, but it fails completely to account for the directions in which such deflections occurred. Refraction by the cosmic matter, through which the rays are known to have passed, will account fairly well for the observed directions, but encounters very serious difficulties, in accounting for the amounts of the deflections, as reported.

But for the true relativist the pathway through all the difficulties of conflicting evidence is smooth and clear; for does not everything depend upon the observer? Nothing is absolute, everything is relative; the statue is golden for one observer and silver to the other. To the relativist the motion of the perihelion of Mercury, of course, is real and is exactly the 43" required by the Einstein hypothesis, but the other motions do not exist, they are mere accidental errors. It makes no difference that all these various motions result from the same investigations, that both Leverrier and Newcomb show that the motion of the perihelion is not independent, that it must be accompanied by and depend upon other motions. These other motions cannot be explained by relativity, and, therefore, they do not exist, they have not been "sufficiently attested." Thirty-three photographic plates, taken during the eclipse of 1919, show star images; of these thirty-three, seven only give results even approximating towards the Einstein predictions. And to make even these seven fit the hypothesis, the relativist is forced to invoke the aid of the sun to distort the camera in a particular way and by just the right amount !

The explanation of the old fashioned astronomer, that the motion of Mercury may be due to masses of matter, which have been seen and photographed many times, is dismissed by the relativist as having little probability, and as having been devised solely for the purpose. The corona of the sun has been known from pre-historic times, the zodiacal light for many years, and meteors have fallen to the earth in all ages. That an elliptical shaped central body would cause a perihelion motion, was shown by Walmsley in 1758, and by him used to explain the motions of Jupiter's satellites. Was this devised solely to explain the motion of Mercury? Did Walmsley devise a method for the sole purpose of explaining something of which he was entirely ignorant, and which was not discovered until nearly a century after his death? The corona, the zodiacal light, meteors, are these fictions of the imagination? Were these devised by the deluded followers of Newton solely to explain the motions of Mercury?

The relativity theory may be true, but no substantial experimental proofs have yet been submitted by any of its adherents.

**ONE HUNDRED  
AUTHORS AGAINST  
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