

current-element. This is a dipole involving the conduction electron and the lattice ion. It is pivoted at the lattice site and free to rotate about the pivot. Through the agency of the atomic current-elements the Ampere-Neumann electrodynamics gives rise to diamagnetic currents (absolute diamagnetism) in metals. The diamagnetic current does not represent charge transport but generates the same kind of magnetic effect which we normally associate with a transport current. There exists no experimental evidence which would preclude persistent supercurrents from being diamagnetic currents.

The analysis presented within the framework of the Ampere-Neumann electrodynamics requires the induction of steady diamagnetic currents in superconductors when a steady external current is present and the thermal agitation of the pivoted atomic current-elements ceases. This phenomenon should be observed whenever the magnetic vector potential can produce closed diamagnetic currents, regardless of the superconductor being singly connected or not. Hence it should be observed in a superconducting ring surrounding a long solenoid and situated in the center plane where the magnetic field is virtually zero.

The old electrodynamics also permits the calculation of the strength of the diamagnetic or persistent supercurrents. For a closely coupled turn surrounding the long solenoid the predicted diamagnetic current has been found to be of the same order of magnitude as the solenoid current. It should be possible to test these theoretical predictions by experiment.

¹ P. Graneau, "Electromagnetic jet-propulsion in the direction of current flow", *Nature* **295**, 311 (1982).

² P. Graneau, "First indication of Ampere tension in solid electric conductors", *Phys. Lett.* **97A**, 253 (1983).

³ P. Graneau, "Ampere tension in electric conductors", *IEEE Transactions on Magnetism* (in press).

⁴ P. Graneau, "Application of Ampere's force law to railgun accelerators", *J. Appl. Phys.* **53**, 6648 (1982).

⁵ F. E. Neumann, *Vorlesungen ueber elektrische Stroeme* (Teubner, Leipzig, 1884).

⁶ F. London, *Superfluids*, Vol. 1 (Dover, New York, 1961).

⁷ Y. Aharonov and D. Bohm, "Significance of electromagnetic potentials in quantum theory", *Phys. Rev.* **115**, 485 (1959).

⁸ T. Neugebauer, *Acta Physica Hungaria* **17**, 203 (1964).

BOOK REVIEW

Einstein's Relativity the Greatest Fallacy in the Twentieth Century

by Sharad D. Tipnis

Madhav Publications, 40/1, Dattakrupa Adarshnagar, Pune-Satara Road, Pune-411 037, India,

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Every year books, such as this one by Tipnis, are published by medical doctors, dentists, mechanics, surveyors, lawyers, street sweepers, and scrub women pointing out the obvious absurdities of the special theory of relativity. Perhaps it is only appropriate that such a never ending horde of amateurs should appoint themselves to be the executioners of a theory which was itself established by amateurs, men such as Lorentz, Poincaré, Einstein, and Minkowski, who never saw the inside of a physics laboratory.

It is actually of some value for the trained physicist to read such a book so that he may have the opportunity to reflect upon which is worse the ignorance of the original amateur founders of relativity or the ignorance of the current horde of amateur detractors of relativity.

The best review of this book is perhaps simply provided by the author himself. He writes to readers of his book: Please give your opinion on the following statements only after reading the related chapters in the book.

Chp. I: 1) Only one experiment capable of detecting the speed of the Earth is quite enough to obliterate relativity.

Chp. II: 1) The details of the Michelson-Morley experiment and Lorentz's paper of 1904 were known to Einstein before he set forth the theory of relativity in 1905.

2) Enormous velocity of light is a common factor of each and every relativistic experiment.

Chp. III: 1) From Galileo to till the date velocity of light is measured for return trip only.

2) The fact that the velocity of light is independent of the velocity of its source inspired physicists to measure the speed of the Earth by optical experiment.

3) Velocity of light could be measured from known speed of the Earth hence, theoretically, speed of the Earth can be measured from the

know velocity of light.

4) Failure of the Michelson-Morley experiment does not nullify statement 3) immediately above.

Chp. IV: 1) The determination of finite velocity of light from astronomical observations obviously proves that the celestial frame of stars is the proper frame of reference in which velocity of light is invariant and isotropic.

Chp. V: 1) The success of Fizeau's rotating wheel experiment lies in the fact that time taken by only one beam of light was measured.

Chp. VI: 1) From Michelson's mathematical notation it is quite evident that he employed the interferometer only to measure the ultimate change in distance due to the speed of the Earth.

2) The interferometer is neither capable of measuring the velocity of light nor the distance but it is only capable of measuring either a change in the velocity of light or a change in the distance.

3) To measure a change in distance by using an interferometer it is essential to assume that the velocity of light is absolutely invariant.

4) To measure a change in the velocity of light by using an interferometer it is essential to assume that the distance is absolutely invariant.

5) Relativistic concepts (such as "time dilation" and "length contraction") totally failed to give a satisfactory explanation for the negative result of the Kennedy-Thorndike experiment. This fact explicitly proves that the relativistic explanation given for the negative result of the Michelson-Morley experiment is not valid.

Chp. VII: 1) The observed 'Doppler shift effect', acoustic or optical, is an outcome of relative motion only.

2) The asymmetry of the Doppler shift formula, acoustic or optical, is not related to any physical property of a medium but it is only related to the characteristic property of wave propagation; i.e., the velocity of waves is independent of the velocity of their source.

Chp. VIII: 1) The annual shift in the spectra of stars confirms the existence of optical Doppler effects.

2) The motion of the source of light and the motion of an observer are entirely different phenomena. The former has external physical effects while the latter has no external physical effects.

3) The conclusions deduced from the negative result of the Michelson-

Morley experiment roots out the basic assumptions of the experiment.

Chp. IX: 1) The relativistic Doppler shift formula is neither empirical nor theoretical. Einstein constructed it only to maintain the principle of the constancy of the velocity of light.

2) Relativistic time dilation is independent of direction of motion whereas the relativistic Doppler shift depends upon the direction of motion.

3) While deducing the relativistic Doppler shift formula by radar signals method, relativists consider the clock of out-going astronauts shall run slower than the clock at rest. But then they do not consider that when the astronauts start on their return journey their clocks should then run faster than the clocks at rest.

Chp. X: 1) Einstein introduced a new definition for time and simultaneity only to accommodate the negative result of the Michelson-Morley experiment.

Chp. XI: 1) In the hypothetical example given to emphasize the relativity of simultaneity Einstein has employed an unscientific definition for the concept of simultaneity.

2) Colinearity of motions of a train and the velocity of light is the main basis for relativity of simultaneity.

3) The concept of simultaneity (relativistic) is not affected by the motion when the motion is perpendicular to the direction of light signals.

Chp. XII: 1) Time is a physical abstract; it has no physical existence.

2) It is not possible to understand 'time' without motion and 'motion' without the concept of 'time'.

3) Astronauts tried to isolate the effects of only one motion to determine the unit of the time interval; whereas Einstein intruded the motion of the inertial frame to dilate the unit of the time interval.

Chp. XIII: 1) The realistic Doppler shift formula proposed in this chapter is analogous to the acoustic Doppler shift formula only because sound and light waves have an identical characteristic property, i.e., their velocity of propagation of waves is independent of the velocity of their sources.

Chp. XIV: 1) In Fizeau's drag coefficient measuring experiment: a) the wavelength of light is considered invariant, and b) the shift in interference pattern is not enough to deduce any definite conclusion.

Chp. XV: 1) In Bradley's aberration experiment:- The composite ray of light travels along the axis of a telescope, i.e., it enters perpendicularly in the objective of the telescope tube. There should be no effect on the direction of propagation of this ray of light when the telescope is filled with water.

Chp. XVI: 1) For deducing expected shift in the fringe pattern Michelson and Morley assumed that the wavelength of light is invariant.

2) The shift in interference pattern does not depend upon the variation in the velocity of light nor on variation in distances. It depends entirely on the change in phase difference of the two waves at the spot of observation.

Chp. XVII: 1) The equation $E = mc^2$ is not empirical but is formulated only to endow universality to the velocity of light.

2) Increase in inertial mass due to velocity is not measured directly by any experiment so far.

3) Relativists and mathematicians have adopted mathematically inconsistent methods to deduce the $E = mc^2$ equation.

Chp. XVIII: 1) The wavelength of light waves travelling through a water filled tube shall not be affected by its velocity.

2) The proposed experiment will detect any uniform velocity of the inertial body (space-shuttle, any other planet, etc.) moving in the void space by giving visual fringe shifts.

3) If the proposed experiment (which is to be performed shortly) gives the expected results, then it will establish the views expressed by the author in this monograph.

The experiment proposed by Tipnis is to separate a light beam into two beams, one which passes through a tube of water and the other which passes through air, and to then allow the two beams to interfere. The differential action of the absolute velocity of the earth for light travelling in water as compared with light travelling in air is then suppose to produce a fringe shift when the apparatus is rotated through 180° . This trivial experiment is suggested from time to time; but, as far as I know, no-one has ever reported a positive result.

The worst of Tipnis' many errors is the assumption that non-Newtonian mechanics, where the momentum is $mv/\sqrt{1 - v^2/c^2}$ and $E = mc^2$, is a part of relativity and therefore cannot fit the experimental facts. The converse is true: Non-Newtonian mechanics is firmly based upon countless

accurate experiments. And non-Newtonian mechanics stems from these experiments and not from the relativity theory. The relativists claim non-Newtonian mechanics as their own; as though they invented the fact that two plus two equals four. The space-time absurdities of relativity should not be confused with the legitimate non-Newtonian mechanics.

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