

## Expanding Universe or Expanding Light?

The three observational pillars of evidence supporting the Big Bang hypothesis are the expanding universe, the cosmic background radiation and the hydrogen-helium density of the observed universe. The observed cosmic background radiation can be reconciled with the antimatter-matter balance of the plasma universe, and consequently the Big Bang is not necessary to explain it (Love 1992). The hydrogen-helium balance can be explained in other cosmological models (Lerner 1991). This leaves only the “expanding universe” as uniquely Big-Bang. In reality, we do not observe the universe expanding, we observe a redshift in the spectrum of light from distant objects. At the time this redshift was first observed, there were only two theoretical explanations for it. A redshift can occur via the Doppler effect due to a receding source. In the general theory of relativity, there is also a redshift due to gravitational effects. But the gravitational redshift is a local effect and cannot explain the overall pattern that the redshift increases with distance (unless we would assume that the more distant objects are, the more massive they are).

The observation due to Hubble is that the greater the distance, the greater the redshift. Superimposed on the overall pattern, there are other observed so-called discordant redshifts which may be due to the Wolf effect, magnetic fields or electric fields in cosmic plasmas.

There is something very bothersome about the idea of an expanding universe. If the redshift were due entirely to the Doppler effect, objects far from us would be moving at speeds very close to the speed of light. The energy required to accelerate a star to near light speed is unbelievably large. Thus, there must be an alternative way to obtain the observed redshift.

A basic rule within physics has been violated in the standard interpretation of the redshift. A phenomenon must be interpreted within an appropriate paradigm. No one would attempt to interpret a purely quantum phenomenon within the framework of Newtonian mechanics. No one would attempt to interpret a purely relativistic phenomenon within the framework of Newtonian mechanics. Yet that is exactly what has happened in the case of the redshift. The redshift has been interpreted in terms of the Doppler shift, a purely classical interpretation originally applied to sound waves in air. In dealing with light, we are looking at photons, a purely quantum phenomena. In dealing with the vast extent of space between us and the stars, we are dealing with cosmology, which must be consistent with a theory of gravity. Thus, to obtain a coherent view of the photon traveling across many light-years of space-time, we need a quantum theory of gravitation, which does not exist yet. But we have enough hints as to the final form of such a theory, that we can draw some conclusions without a detailed model (Love 1993).

The basic lesson learned from quantum mechanics is that “particles” are lumps of energy and exhibit wave-like characteristics. The standard “Copenhagen Interpretation” of quantum mechanics takes the intensity of the wave function to be a probability distribution. The new theory of quantum gravity takes the wave function as a measure of the curvature of space-time (Love 1993).

The prime characteristic of a wave (as opposed to a “particle”) description of matter is that a wave spreads out over time. If we assume that the wave function of a photon spreads out as the photon travels through time, it must do so longitudinally, since we observe a sharp image of even distant objects. We assume that energy is conserved, but since the wave function spreads out, the energy density,  $r$ , decreases. Define  $r$  by  $rl = E$ ,

where  $l$  is the wavelength of the light and  $E$  is its energy. Both  $r$  and  $l$  are functions of time.

Now, if this expanded photon interacts with an atom, we cannot expect the atom to absorb the entire photon. Since there is a characteristic time  $t$  involved with the interaction, we would expect that only the energy within a distance  $ct$  from the atom could be absorbed. The energy available for the interaction,  $E_A$  would be the energy within a sphere of diameter  $d = 2ct$ . Thus  $E_A = r(t)d = E_0 d/l$ .

Since we have no theory, we cannot say more about the specific form of the function, except that we know, from the second law of thermodynamics, that  $l(t)$  must be a monotone increasing function of time so that  $E_A$  is monotone decreasing.

If this new explanation of the redshift is valid, we should expect to soon be able to see objects whose spectrum is shifted by too much to be due entirely to the Doppler effect; *i.e.*, we should expect to see objects far from us whose redshift would require that the objects be moving at speeds in excess of the speed of light.

In the so-called tired-light mechanisms, the light loses energy due to some process in empty space. In this picture, the light loses no energy, the energy disperses and becomes unavailable.

This picture of expanding light is consistent with the “Transactional Interpretation of Quantum Mechanics” of John Cramer (1986) and the suggestion by I.E. Segal (1976) that a new definition of energy is required.

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## Empirical Status of Einstein's Relativity Theory

Qualitative analyses are necessary prerequisite to quantitative analyses. One must know *what* one is talking about before trying to say *how much*.

A. A. Michelson, in his 1881 paper, *The Relative Motion of the Earth and the Luminiferous Ether*,<sup>1</sup> had computed that the back and forth light path, over the arm of his 90 Degree interferometer that was parallel to the motion of the Earth through the aether, presumed stationary, would be 4/100th wavelength of yellow light greater than it would have been were the Earth at rest. The other ray of light, being at a right angle to that motion, would not be affected. Then when his interferometer was rotated through 90 degrees, the second ray of light, over the other arm, was brought into the direction of the Earth's motion through the aether, and its light path would have lengthened 4/100th wavelength of yellow light.

He wrote, "The total change in the position of the interference bands would be 8/100th of the distance between bands, a quantity easily measurable." This was his error. He failed to realize that as the interferometer was rotated through 90 degrees, the light path over the other arm was reduced from an extra 4/100th to 0/100th wavelength of yellow light, as all the various experiments with his type interferometers gave.

The simultaneous changes of light path lengths, from zero to 4/100th and from 4/100th to zero, gave a zero change of the interference pattern. (Except for small shifts due to other causes.)

Michelson examined his tables of experimentally derived data and wrote, "The interpretation of these results is that there is no displacement of the interference bands. . . . The result of the hypothesis of a stationary ether is thus shown to be incorrect, and the necessary

conclusion follows that the hypothesis is erroneous."

Since, in my view, the aether is a gas comprised of true-solid particles, then from the kinetic theory of gases, its particles are in continuous motions. Even on a calm day when no perceptible motion of a wind can be detected, the gaseous air molecules and the gaseous aether photons partake of the rotational motion of the Earth and its orbital motion around the Sun.

The Michelson-Gale aether drift experiments of 1925 showed that the velocity of propagation of pulses of light through the aether in the gas vacuums in the pipes was  $c$ , while the bulk velocity of the aether had a velocity  $V_a$ . The rays sent in opposite directions were found to have different speeds.<sup>2</sup> While the impulses of light were being propagated across their free-paths  $v_f$  and collision transferred from photon to photon at collision-velocity  $v_c$ , the aether photons themselves were moving in bulk at velocity  $V_a$  which produced an anisotropy in the speeds of light.

This phenomenon was the same as an airplane flying through Hurricane Andrew. The plane's airspeed was a constant velocity of 350 mile per hour. The maximum air speed of the gas molecules around the eye of the storm was estimated to be about 150 miles per hour. Therefore, the ground speed of the airplane was about 500 miles per hour at one point, and about 200 miles per hour at an opposite point.

Since the aether is obviously neither a solid nor a liquid, then it is a hyperfine gas comprised of photon particles. Because gases do not support transverse waves, then the impulses of radiations  $mv$ , are propagated as linear or longitudinal waves through the aether at about velocity  $c$ . This propagation velocity is comprised of two variable velocities: (1) the flight-velocities  $v_f$  of the impulse carrying photons across their free-paths and (2) the collision-velocities  $v_c$  of the impulses as they are transferred from photon to photon. All real waves are comprised of particles moving in unisons or in harmonic motions.

Since there is no such things as a *velocity* without a finite body, then the true-solid mass of a photon, about  $10^{-32}$  gram each, must be included in the propagation equation.

Since the sum of these two variable velocities is nearly a constant  $2c$ , at STP near the Earth, then they are inversely proportional. The variable momenta  $mv$ , or energies  $mv^2$ , are currently given in the parameters of frequency times a constant of proportionality  $h$ .

Since the radiation impulses collision-velocity is normally less than  $c$ , then where the aether gas density is greater than normal (more photons per cubic centimeter) as it is in transparent mediums, then more photon-photon collisions occur per second. Hence, in transparent mediums—gases, liquids, and solids—radiation propagation velocity is less than  $c$ , as is shown by their indices of refraction. A plane beam of light, perpendicularly passed through a plate of clear glass, had the same flight-velocity inside that glass that it had before entering that medium; and it had the same flight-velocity after leaving that glass—except for the inevitable losses due to collision spins and scatterings. Conversely, where the aether gas density is less than normal (fewer photons per cubic centimeter) the propagation velocity is greater than  $c$ , as had been observed by astronomers but not accepted.

The absolute constant velocity of light  $c$ , as postulated by Poincaré, is then not an absolute velocity of propagation because it varies with the aether gas density and its bulk motions. The apparent gravitational bending of light rays passing near the Sun is just the average bulk motion of the aether photons there.

There is nothing more absurd than a dimensionless dimension in physics produced by cancellations of like physical terms, as mathematicians do with numbers. Only mathematicians would assign physical properties to empty space or nothing. Numbers are quantitative adjectives, not things in themselves.

In 1905, Einstein wrote that he did not need the concept of an aether in his work. In 1920, in his lecture in the University of Leyden, Einstein said, "Recapitulating, we may say that according to the general theory of relativity, space is endowed with physical qualities. In this sense therefore there exists an aether. According to the general theory of relativity space without aether is unthinkable, for in such space there not only would be no propagation of light but also no possibility for existence of standards of space and time, that is,

measuring rods and clocks, nor therefore any space-time intervals in the physical sense. But this aether may not be thought of as being endowed with the quality characteristic of ponderable media, of consisting of parts which may be traced through time. The idea of motion may not be applied to it."

Einstein did not know what he was talking about. Photons are ponderable; hence, the aether is ponderable. Photons in laser beams bore holes in diamonds. Einstein said, "As far as the laws of mathematics refer to reality, they are not certain. As far as they are certain, they do not refer to reality." Absolute constants exist only in mathematics. They do not exist in physics.

In 1904, Poincaré, from the failures of the various Michelson-type aether drift experiments wrote, "According to the Principle of Relativity, the laws of physical phenomena must be the same for a fixed observer as for an observer who has a uniform motion of translation relative to him. . . . There must arise a new kind of dynamics which will be characterized above all by the rule that no velocity can exceed the velocity of light."<sup>3</sup> Astronomers had observed bodies moving at about two to five times the speed of light. It has been shown above that the flight-velocity of a photon carrying an impulse of light is greater than the propagation velocity  $c$ .

In 1900, Poincaré postulated that electromagnetic energy might possess mass density equal to the energy density times a constant  $c^{-2}$ , or  $E = mc^2$ . In 1905, Einstein usurped that concept and added that the mass of a body is a measure of its energy content.<sup>4</sup> That is, because velocity  $c$  was deemed an absolute constant, then the mass had to vary as the energy varied; which is elegant nonsense. The existence of the aether gas shows that the increase of mass of a body with increase of velocity is the mass of the aether photons that the body collides with.

The mass of a jet aircraft increases in the same manner. The leading parts of the aircraft collide with more and more air molecules as its velocity increases and it hits them with greater force. The mass of air that the plane pushes increases exponentially. The air molecules, whose impacts produce the atmospheric pressure on its trailing surfaces, hit those surfaces with lower and lower velocities as the forward speed of that craft increases. *Ergo*,

the apparent increase of mass of the air-plane is actually the mass of the air that it pushes as its velocity increases.

The vague absorption-reemission of light concept must be replaced by the specific mechanisms of radiations. The propagation mechanism of radiations is: Their impulses are collision-transferred from photon to photon, with losses of momenta due to collision spins and scatterings of photons. In photon-particle collisions, the impulse-carrying photons rebound from the much more massive electrons and nuclei of atoms of cosmic dust and bodies, with small losses of momenta, in agreement with Newton's third-law and Hooke's law of elasticity of solids. In double rebounds, the impulse-carrying photons return to their original direction of motion, with a little less momenta, as is shown by the redshifts of their spectra, compared to the spectra produced on Earth.

Despite the assertions of Relativists, space and time are different concepts. All events take place in three-dimensional space. The variations in the masses of nuclei are treated in my *Mechanisms of the Unified Fields* as due to the geometric formulas for the areas and volumes of spheres, since the aether impulses are collision-transferred to the surface areas, while the volume of matter is proportionate to the cube of the radius. *Mass defect* then is a physical attribute of matter and not due to an absurd equation that says mass equals energy.

Professor P. Beckmann showed in his book<sup>5</sup> that Paul Gerber had, in 1898, derived the advance of the perihelion of Mercury with purely classical principles. That was 17 years before Einstein's explanation.

Duration, or time itself, does not vary with the motions of the Earth, Sun, Galaxy, or any other bodies. Man can do nothing that will change duration. The mechanical or electronic clocks built by man vary with the aether forces acting upon them. The Hafele-Keating round-the-world flights of clocks proved that; which is why the relativists deny the existence of the finite aether.

Recently, Dr. P.E. Rowe inadvertently showed, in his repeats of the experiments of earlier scientists, that there is no such thing as a charge on the nucleus of the hydrogen atom, nor an opposite charge on its orbital electron. This supports Maxwell's

claim that there are no such entities on molecules.<sup>6</sup> Therefore the concept of a change in the half-life of a charged muon in a universal gravitational field cannot give any support to the theories of relativity.

Einstein, on his seventieth birthday, wrote that he believed none of his works would long endure.

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3. E. T. Whittaker, *History of the Theories of Aether and Electricity*, (Harper Torchbooks: New York, 1960).
4. *Ibid.*
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6. Dr. Rowe's papers provide material for another letter.

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## AAAS Regional Sessions on Criticisms of Special Relativity

On 19-23 June, 1994, in San Francisco, California, there will most likely be an opportunity for critics of Einstein's special theory of relativity to express their views at the Pacific Division meeting of the American Association for the Advancement of Science. This communication is intended to solicit contributors to a symposium that may be allowed on the program of that meeting; and if a formal symposium is not allowed, sessions of individual papers probably will be. More will be said below about how to apply for inclusion in such presentations. But first, let me give some background information relating to this unusual situation.

Three times in the late 1980s and early 1990s, Lee Coe of Berkeley, California delivered an individual paper at the annual Pacific Division AAAS meeting, each time criticizing special relativity or other dogmas of modern physics. It seems amazing that his disagreements with current orthodoxy were tolerated by the meeting organizers, since for many years views of

this type have not been represented at AAAS national meetings (See Chappell, 1979 and 1980).

Coe's principal career was that of a journalist; he is now retired and in his mid-80s. He has been a critic of special relativity for over 60 years, and is best known for placing in one of the major U.S. physics journals an article about time, which he worded so cleverly that most readers did not suspect his unorthodox stance (Coe 1969); from 1988 to 1991 he also published several short articles in the journal *Physics Essays*.

For the 1992 Pacific Division AAAS meetings, held in late June in Santa Barbara, California, Coe planned a larger undertaking: a formal debate between himself and a physicist who supports special relativity, Lewis Carroll Epstein, and then a long audience-participation discussion following the debate. Just before the planning deadline, I joined his effort by submitting an individual paper critical of special relativity. The organizers were kind enough to group our contributions as close together as possible, so that my paper was read just before lunch, and the Coe-Epstein debate and discussion occupied the entire afternoon.

For much of the morning, Coe stood by at a poster board containing two papers critical of current orthodoxy contributed *in absentia* by three Russian physicists, Pavel F. Parshin, V. F. Fateev, and Lev A. Pobedonostsev. These three belong to a large group of such dissidents, centered mainly in the St. Petersburg area, who have hosted several international meetings since 1989 (Chappell 1993a is a contribution to their 1991 meeting). (Their next meeting will occur on 23-28 May, 1994; if you are interested, write for details to Dr. Mikhail Varin, Pulkovskoe shosse 65-9-1, St. Petersburg 196140, Russia (or fax to 7-812-291-8135).

My paper questioned the validity of the alleged evidence confirming special relativity, especially that involving time dilation. My central point was that the chains of logic between the collected data and the announced results in these reports are in all cases flawed, usually by some circular reasoning, such as introducing one part of the theory (e.g., mass increase, itself never truly confirmed by experiment: an unproven assumption is made in order to yield the alleged effect) to prove another (e.g., time dilation). Then in the debate, Coe

dwelt largely on the issue of the non-mutability of time, while Epstein offered several puzzles and illustrations from his recent popular book on special relativity (Epstein 1991).

For the discussion, Coe and I were joined by Adolphe Martin, from the Montreal area in Canada, who took a prominent part in the discussion; and Nolen Harter, from nearby Santa Margarita, California, who took a minor part. Other prominent contributors to the discussion included an engineering professor from the Univ. of California at Berkeley, and a high school physics teacher (location unknown), Physicists from major universities were missing, although many had been invited; and in fact, those attending these Pacific regional AAAS meetings regularly include very few physicists, but instead mainly scholars in biological and related sciences. Despite our small and non-specialist audience, the discussion was extraordinarily lively and went on for nearly two hours after the formal debate.

With very few exceptions we heard none of the bitter acrimony usually directed against any criticisms of special relativity. But at one point Epstein did become somewhat sarcastic, complaining about having to deal with ideas allegedly on the level of those of Ptolemy. I reminded him that it was Einstein himself who had led us back in the direction of Ptolemy, by promoting a belief in relative motion that in effect calls into question the Copernican idea that the earth rather than the sun is moving (my answer to this charge is developed further in Chappell 1993b).

Among various challenges that Epstein failed to answer adequately was one asking him what medium light waves occur in, if the ether has been banned from contemporary physics? "What waves?" asked Martin in his French-Canadian accent, his second word intended as a verb, as he emphasized this problem. Naturally we are still waiting for an adequate answer; it is of course impossible for a true wave to exist without a medium to carry it.

(Evidently most anti-Einsteinian theoreticians working today do postulate an electromagnetic ether; but some also promote a Ritzian approach that involves additive light velocity without an ether. My own alternative theory tries to harmonize both approaches, by positing additive light velocity in a gaseous ether; see Chappell 1979, 1980.)

After the sessions, all four of us agreed that we had made a strong case, and had left considerably more doubt about the validity of the theory in the minds of our listeners than had existed when they first arrived.

For June 1994, Coe and I hope to sponsor a still larger and longer presentation, involving more dissidents than before. We also hope to make a stronger effort to attract a few mainline physicists to our audience; there are, after all, a great many of them, especially at U. C. Berkeley and at Stanford University, working within one hour's drive from San Francisco State Univ., where the meetings will be held. Preliminary inquiries indicate that the same AAAS organizers who facilitated our 1992 sessions will once again do their best to give us the proper arena to present our case; but in this case, other officials will evidently be judging the suitability of the symposium, and those may force us to abandon that plan and substitute a series of individual papers. In any event, in one format or another, I feel confident we can have our say at this meeting.

A symposium proposal must be submitted by 15 Oct., 1993; but this is only an initial proposal, and need not include all the names of the participants, or any paper titles. There are already two others besides Coe and me who have expressed interest in attending. In the symposium format, if it is allowed, we can probably accommodate at least four more; and individual papers can be added beyond that. The cost of these regional meetings is very modest compared to that of most national and International scientific meetings. Unfortunately, we cannot obtain any funding for travel.

If any *Apeiron* reader wishes to take part in this event, please send me your inquiry, along with at least one brief sample of your writing (published or unpublished), to the address below. Those who contact me by mid-December 1993 have a chance to be included in the preliminary program for the symposium—or if it is not approved, then in appropriate paper sessions. A detailed preliminary symposium program with exact titles of proposed papers must reach the AAAS by 31 Dec. Some changes can be made in this program, possibly even adding new papers, up to 15 March 1994, when the final program complete with both titles and abstracts must be received by the AAAS. As in 1992, *in*

*absentia* poster-session papers will most likely be allowed, if those who cannot afford to make the trip in person wish to send them. Those who want to obtain for themselves official literature about submitting materials to the meeting may write to this address:

Pacific Division AAAS,  
California Academy of Sciences,  
Golden Gate Park,  
San Francisco, CA 94118, USA.

Note, however, that no one at this address can tell you anything about my own plans for criticisms of special relativity, Remember also that we cannot be sure that any orthodox physicists will attend. I

look forward to hearing from those of you who are interested.

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