@ ISSUE

Correspondence, conference threads and debate.

A Landmark Challenge to Establishment Physics

The most important thing to report about the meeting of dissident physicists and cosmologists in San Francisco during 20–23 June, 1994—advance notice of which was printed in *Apeiron* in October, 1993—is simply that it did take place. It was not canceled shortly before the scheduled time, as some worried might happen, since late cancellations of meetings of this type have indeed occurred before, as a result of pressure from an intolerant establishment.

This meeting was a landmark in at least two senses: (1) It was the first large-scale challenge to modern physics in North America for several decades, although even larger dissident meetings have been organized in Europe since the 1980s; the most recent was in St. Petersburg, Russia in May 1994, and was attended by S.F. contributor Neil Munch. (2) It was part of a regional meeting of the world's largest general science organization, the American Association for the advancement of Science (AAAS), which for decades has not allowed such a degree of dissidence at its national meetings.

It was also much larger than originally anticipated, offering a program with 57 papers by 53 different authors—the result of many invitees suggesting still others, until the number of invitations tripled. But unfortunately no local reporters attended, nor any physicists from major departments, although many were invited.

We might have had more visitors, but the Pacific Division of the AAAS, to whose regular yearly meeting our special sessions were attached, kept our plans obscure by not allowing us symposium status, which would have meant advertisement months in advance; and even in the final program, it refused to print our individual session titles, which had such eye-catching phrases as "Beyond Special Relativity…". Even the general title of our 14 sessions was distorted, when the AAAS added "…in an historical context" to the agreed upon "Challenges to Contemporary Views in Physics and Astronomy"; only the first of them was primarily historical. Hosting San Francisco State University chipped in too, causing serious inconvenience—especially to a few of us with hip, heart, etc. problems—by moving our initial sessions on Monday to a smaller room rather far from the scheduled one, too late to notify most attendees (and the forbidden room went unused all day).

Still, our group was very grateful to be able to meet in some way, and this we owe mainly to Michele Aldrich, official liaison person between the AAAS national office and the Pacific Division. She had already taken a tolerant interest in the efforts of the late Lee Coe, of Berkeley, California, in criticizing special relativity and the Big Bang theory at several previous Pacific AAAS meetings, most often alone in single papers, but also in a small 1992 group effort in Santa Barbara (see *Apeiron*, October 1993).

Sadly, Lee Coe passed away in February 1994, at the age of 86. To honour his efforts on behalf of our cause, this San Francisco meeting was dedicated to his memory, and also to the memories of two other valiant workers on behalf of a new and more soundly-based physics who had died during the previous year: Petr Beckmann of Boulder, Colorado, well-known founder of the journal *Galilean Electrodynamics* (see his obituary by Howard Hayden, who contributed to the S.F. meeting, in *Apeiron*, February 1994); and William Carnahan of Austin, Texas, for many years the leader of the Association for Pushing Gravity Research, whose members promoted Lesage-type gravity theory.

Although rather obscure, the APGR was probably the largest and best organized group of dissident theoretical physicists in North America during the nadir of intolerance for such efforts from the late 1950s to recent years; and since about 20 of its members gathered in Huntington Beach, California, probably no other meeting of this size and type has occurred on this side of the Atlantic until this year. Contributors to that 1981 meeting who also read papers in S.F. included John Fernandez, John Kizer and myself. The renowned pioneer radio astronomer Grote Reber of Tasmania, who contributed in S.F. in absentia, was also an active APGR member.

Of the 53 authors, only 33 were scheduled to be there in person, and four of these were unable to make the trip. Among the U.S. authors, several were absent co-authors, and a few of those present read two or three papers each; 11 papers from outside the U.S. were on the program; nine of these were read in absentia, and one was not sent. Still another of these 11 was read by Bernardo Gut of Switzerland, who was able to obtain travel funds after the mere 3 months' advance notice we could give him following acceptance of abstracts, and so he became one of the 29 attending authors.

Our program also included two discussants representing establishment physics. The AAAS was particularly anxious for us to include as many of these as possible, so as to offer a balanced presentation. An exhaustive search was undertaken, by mail and in person, which most likely—as only half of the department secretaries I wrote to cooperated in distributing invitations—reached over 250 academics in physics and related fields. Out of these, Edward Apgar, who teaches extension courses at Harvard University, sent an abstract and read a paper at the meeting. At least, none of the invited physicists, some of whom were later invited again as listeners, issued any complaint about us to the AAAS; and yet a controversial symposium scheduled for the same S.F. meeting, with speakers arguing that the medical establishment is incorrect in claiming that the HIV virus is the main cause of AIDS, elicited vigorous objections and much pre-meeting debate in the press. Does the contrasting silence among the physicists reflect growing tolerance for dissent? Or do they think we are so ineffectual a threat that we don't seem worth acknowledging?

We did finally locate two discussants, mainly because each is a long-time friend of one of us: Ralph Vrana, retired from Cal

Poly San Luis Obispo, and Lewis Epstein of San Francisco City College, who argued against Lee Coe at the 1992 mini-meeting.

Vrana and Epstein both discussed papers on special relativity (SR), which was the chief center of interest at our meeting; abut 60% of the papers dealt with it primarily, either to discuss its shortcomings or to elaborate on alternative ideas. In my invitations, I had singled it out as the key topic of concern, with lesser attention to Big Bang theory and quantum mechanics. In one of our too-infrequent general discussion periods, we tried to develop a statement on the "sense of the meeting", but could not reach unanimity about any scientific topic. Yet we did agree that at least 75% of attending authors—I would guess at least 80%—found at least some serious shortcoming in SR, many if not most of these being convinced that it is totally invalid. To my surprise, three authors revealed they were not sure the Big Bang theory is wrong; leaving only 90% opposed to it. The only issue on which all agreed is that establishment physics has for many years been far too dogmatic and intolerant towards challenges to current orthodoxy.

The Pacific AAAS printed a notice in its newsletter inviting anyone to submit any sort of paper either challenging or defending current orthodoxy in physics and astronomy. Four papers from those responding to this notice were on our program; and these authors either accepted only or partially disagreed with SR. Still another paper not close to our main concerns, from historians of science Danielle and Arthur Mihram, was grouped with our sessions primarily because there were no other history of science abstracts; but we learned to our surprise that Arthur had once penned some objections of his own to SR.

Alternatives to SR suggested in S.F. ranged from various ether and field concepts and theories, with or without Maxwellian or Lorentzian elements, to some variant of the Ampère-Neumann line of electromagnetic theory—which in our century has been developed by Ritz, Bush, O'Rahilly, Waldron, and also by a few contributors to our meeting, including Peter Graneau of Northeastern University in Boston (whose paper was co-authored and read by Milo Wolff), and Domina Spencer of the University of Connecticut in Storrs (whose late husband and collaborator Parry Moon was a student of Bush). I believe that it is vital to work for possible syntheses of such varying approaches. Not much new was done in this regard at our meeting; but the Spencer approach already allows for field concept within the Ampère tradition, and even concedes that an electromagnetic field and an ether might ultimately be just different concepts representing the same reality. Also, one of my papers showed how additive photon speeds and varying net velocity of photons across a gaseous ether of uniform density can both be accepted without real conflict, if the photons undergo collisions and move on indirect paths, variable in amplitude and length depending on the force they introduce into the ether (as would follow from Newton's Third Law).

There is no way I can come close here to characterizing the entire range of ideas presented in all the papers read in S.F. But let me mention at least the substantial contributions made by Francisco Müller of Miami, Florida. Francisco presented three individual papers, one reporting on laboratory experiments contradicting SR, and also read a paper co-authored with Dale Means, discussing an ambitious plan to detect a large-scale Sagnac effect resulting from the earth's orbital motion. His great effort and dedication led to his being provisionally elected, by the minority of attendees who met on the last evening after all sessions had ended, as President of a new organization designed to promote the purposes of this meeting. Its exact name is still being decided by our group in general; but it will probably include the words "Natural Philosophy," as suggested by George Curé, who proposed that the organization be formed.

This new organization is sponsoring publication of a full Proceedings of the meeting; the planning of more meetings in the near future; and a search for additional publicity. The only press coverage of our meeting so far was a supportive article, "Silenced by Science," in the *Ottawa Citizen* in Canada, on 19 June. (Contributor Paul Marmet and *Physics Essays* editor Emilio Panarella both live in Ottawa, and provided interviews and the desired "local angle" to writer Shelley Page.)

Of course, we would like eventually to break the decades-long barrier to Neo-Newtonian symposia at AAAS national meetings; and of course we could meet on our own. But as of September, 1994, our best hope for a future meeting seems to be in conjunction with the Southwest Rocky Mountain Division of the AAAS, at Norman, Oklahoma, in May, 1995. Early inquiries suggest we may be allowed symposium status there, and even if not, may still be allowed extra discussion time in the midst of individual contributed papers—an important element in any such program that for the most part was not allowed to us in S.F.

Probably the most valuable of our few general discussions in S.F. occurred during open time in our schedule on Wednesday afternoon. Then, developing thoughts introduced a few minutes earlier in John Kizer's paper, we shared information on the reasons SR was not essential to the primarily technological effort of developing atomic energy. This issue seems to be one of the most crucial of several special themes we need to focus on prominently in future meetings, since assuming a necessary link between SR and atomic energy is a very widespread and influential error that causes many to ignore our work.

I apologize to those many contributors, some of them especially important to whatever success our meeting has achieved, whose names I have not listed here because of limited space. Readers may learn abut their ideas and those of all others on the S.F. program in our Proceedings, which we hope to publish by late next spring. I expect its appearance will be announced here in *Apeiron*.

John E. Chappell, Jr. (meeting organizer)
1212 Drake Circle
San Luis Obispo, California
93405 USA

Absurdities in Modern Physics

It is refreshing to discover that some sanity exists in the world of physics. I refer to Paul Marmet's "Absurdities in Modern Physics: A Solution." Unfortunately, Mr. Marmet accepts space as a vacuum, devoid of anything "kickable or slammable" (5.6).

At the same time he states (5.5) that "the velocity of light is a characteristic of the medium in which light is detected," that speed being a function of the permittivity and permeability of the medium $1/\sqrt{\varepsilon\mu}$. He then cites quartz, glass, water, air and vacuum as representative media, each displaying different permittivity and permeability values. How is it that a vacuum, i.e., empty space, can possess characteristics akin to those displayed by discrete mass and not itself be mass? Are we to blithely postulate a "material vacuum" and ignore the contradiction?

It is obvious that the vacuum of space does indeed possess characteristics which determine the speed of light, and is therefore "kickable and slammable". One may reasonably conclude that space must be a medium of some sort, possessing mass, and, consequently, capable of supporting electromagnetic waves.

The most logical candidate for this mass is the "dark matter" quantified by Rubin and others. That this dark matter possesses both gravitational responsiveness and charge (perhaps negative) is implicit in its distribution within and around galaxies and galactic clusters, i.e., its density appears to be a function of its distance from the centre of mass ($1/D^2$). Parenthetically, one must observe that if determined by this dark mass, and as $1/\sqrt{\varepsilon\mu}$ is directly related to the density of a medium, then the velocity of light (c) will be much less than on earth as one moves toward the galactic centre and much greater as one moves into intergalactic space. The "speed of light" yardstick becomes anything but a constant measuring means!

What is this dark mass? Why not the energy into which matter is converted and from which matter is recovered? Surely, if one chooses to week out the absurd (as does Marmet), there must be a physically "real" medium for this transition and not some disembodied "field" for the energy phase of the matter-energy-matter cycle? E.g., an energy-entity, as opposed to electromagnetic wave energy.

(The argument for negative charge comes from examining the EMP from nuclear explosions, and the obvious positive charge possessed by our planets, derived from their magnetic fields and rate of rotation. This last points to the Sun as the source of this positive charge, and both this and the EMP suggest that the energy produced possesses a negative charge.)

What the of Michelson-Morley type of experiments? The dark matter is gravitationally (and possibly electrostatically) bound to and moves with any mass concentration (even a planet) and thus is co-moving with the experiments designed to detect it, effectively masking its presence.

What of the cosmological redshift? As a tangible (slammable, kickable) entity, dark matter, or energy-entity, appears to have about 100 times the mass of the visible universe. It forms a vast ocean into which and from which matter is constantly cycled, at an efficiency of 100%, and I stress the word "constant".

One can calculate that an average galaxy would require some 10 trillion years to completely burn the matter it contains. One may speculate that a galaxy may require perhaps 10 billion years to collapse from intergalactic gas and debris and energy into an operating entity. These times suggest that there are some 10,000 galaxies burning and adding to the density of the energy ocean while but one is acting to reduce its density. From this one may conclude that for every one volume of space being reduced in density there are 10,000 volumes of increasing density. Light, transiting the universe, will then travel through 10,000 times more space of increasing density than of decreasing density.

In that $1/\sqrt{\varepsilon\mu}$ (the speed of light) is based on the density of a medium, and that the number of e.m. waves in transit in that medium is also dependent on that density, it can be seen that for so long as the medium is increasing in density there will be more waves entering that medium than emerging from it. Expressing this mathematically, using t as time of travel of the e.m. wave, F and F_o as the incident and observed e.m. wave frequencies and R as the rate of change of the density of space, we can derive the following (redshift) formula:

$$F_o = F(1-R)^t, \quad \text{with } R = \frac{d\sqrt{\varepsilon\mu}}{\sqrt{\varepsilon\mu}}$$

[It should be noted that t is the only empirically unknown, in that F_o and F are observed, or otherwise known, and R may be approximated by comparing the energy being produced by the galaxies in the observable universe to that extant in that universe. This volume may be considered a closed container, in that it is surrounded by similar universal spaces all doing the same thing; therefore, the energy being added can only act to increase the overall energy density. R may also possibly be determined by observing that the speed of light which we measure here on earth seems to be decreasing, a phenomenon to be expected.]

In this scenario, no "tired light", nor "muon disintegration". or other mechanism, need be devised, in that there is no loss of e.m. energy, and the wave theory is re-established. That there is no energy loss can be seen in that every wave transmitted at F is, in effect, stored in the medium and will be eventually delivered to the observer at F_o. so, while the energy delivered at F_o per second is less than the incident energy at F_o, the total energy finally delivered is equal to the energy transmitted. Viewed another way, if we could cause R of the medium to become negative we could restore the original F. [We could even produce an F_o at a higher frequency than F by storing F in a compressed gas and suddenly decompressing that gas, thus creating a high intensity burst at several times the frequency of F.]

The muon scenario of Marmet is seen as superfluous, as are the Big Bang and Expanding Universe theories. In his "Semantics of Absolute Space", (*Apeiron* 19:6), Antonopoulos touches on the actuality and infinity of space, but, unfortunately, stops short of concluding that a space with no content is a contradiction, and, further, that an infinite space implies an eternity of existence of that space.

Being infinite and eternal, the universe must now be as it was an eternity ago and is now as it will be an eternity into the future. The "Entropic Death" idea is a groundless and pessimistic notion. Galactic cycles may churn its ingredients and galaxies may interact and merge but, overall, the universe is marvelously serene. it simply exists and this fact must be accepted as axiomatic. Such questions as "How", or "Why", etc. are meaningless.

As a final note to this argument, consider the collapsing galaxy. As it sweeps matter into a highly concentrated mass it simultaneously causes energy to be drawn into that new mass concentration. After ignition, two things happen sequentially. First, there is a high redshift created by the increase in density of the central volume of the energy by both the collapsing mass and the energy output from the newly ignited stars. Then, later, as energy is drawn in from the outer regions surrounding the new galaxy, an energy density reduction occurs in those regions and a substantial blueshift occurs, masking the inner redshift. It is suggested that these two possibilities may explain the intrinsic redshifts observed by Arp et al., and also the abnormal brilliance of such entities as quasars, etc.

James B. Wright
223 Pine Street
Yreka, CA 96097 USA

On the Relativity of Simultaneity (*Apeiron* 16:8–11)

These considerations are stimulated by the analysis of Xu Shaozhi and Xu Xiangqun in *Apeiron* 16 and the comments which followed (*Apeiron* 19:34–37)

The authors' contention that simple velocity addition or subtraction is not in accordance with the PIVL is surely correct. Their dissatisfaction with the paradoxical results of either Galilean or Lorentz transformations, which associate mathematically velocities of frames of reference with the speed of light, is understandable. This has led them to doubt the PIVL; yet there is ample reason to believe that the PIVL is valid not only on theoretical grounds, but in view of much supporting practical evidence, from the original Michelson-Morley experiment to the physical events recorded in high-velocity particle accelerators. There is however the possibility that the mathematics of frame-transformation are based on a fallacious concept, leading to the curious results which appear to arise.

It seems reasonable to suppose that the time of initiation of an emission event is when an excited atom, occupying a specific position in space, emits a photon which travels as an oscillating wave-packet at a constant speed c in vacuo. Any velocity this emitting atom may possess, although determining its position at the time of emission, has no effect on the fixed transmission speed of the photon once it has been emitted. The same is the case when the photon is absorbed by the receiving atom, which may or may not be in motion. If this is the case, there is no reason to suppose any relationship between the speed of light transmission and the velocity of its originator or receiver, nor a basis for any close mathematical linkage between c and v.

Turning now to the Einstein train problem as illustrated by the authors in their Fig. 1(a), it is first important to emphasize a fundamental concept. If the embankment from which the two flashes of lightning are simultaneously emitted at A and B is in the same frame of reference as M', these two signals must reach the point M' simultaneously, and M' will be opposite M and equidistant from A and B, to give equal time-lapses of AM'$/c$ and BM'$/c$. This is analogous to the firing simultaneously of two identical bullets from A and B at the point M'; they must arrive simultaneously, and if an observer is located at M' at this instant (irrespective of any velocity he may have), he cannot escape being hit by two bullets. Even if (mindful of the Lorentz enthusiasts) we deprive the observer of both a clock and measuring rods, but give him instead an electronic device which responds by raising a flag when, and only when, two signals are received synchronously, the event of the raising of the flag can only occur at the point M'.

The conclusion that M' is a unique position in space at which simultaneity of received signals will occur seems logically inescapable, If the observer is at the position M' at time AM$/c$, he must record simultaneity, and if not he will record a time-lapse between two signals. whether the train is in motion relative to the embankment or not. If the train is in motion with velocity v, the distance of the observer from M' must be such at any time prior to the moment of simultaneity at M', that his velocity will carry him to M' at the required instant, i.e. if T is the time of the flash event, and T' the time of the arrival event at M', his distance from M' must comply with $v(T'-T)$. The inversion of relative motion shown in Fig. 1b does not alter this outcome. The velocity of the train is then divorced from any involvement with c. The determination of simultaneity is thus only a matter of the establishment of a spatial position at a specific time.

The clock paradox now disappears, as does the ROS, whilst the PIVL holds, It does not seem unreasonable to adopt this stance, although certain observed phenomena, e.g. the prolonged time before decay of very high velocity muons, seem discordant.

Whilst the observer can detect his relative motion by the presence of a Doppler shift from expansion or compression of the received photon wave-packets, he has of course no means of detecting whether he is in motion or stationary.

What is perhaps more important is the imponderable question, beyond that of the PIVL issue, of what the physical conditions are which limit the speed of light in vacuo to its known finite value?

Finally, as a practical photometric observer of eclipsing binary stars, spending many cold hours measuring their orbital periods as one eclipses the other, I am considerably disconcerted to read the authors' statement that "there is no reason to believe that stellar binaries are genuine double stars", and would welcome clarification!

John Watson
Iddons, Henley's Down
Catsfield, Battle TN33 9BN
East Sussex, England

Force Cannot Depend on Acceleration

My article (Smulsky 1992) about the force of interaction between two charges has raised some interest. Prof. Andre K.T. Assis has kindly sent me a few papers on this question. He is a supporter of Weber's force, which depends on acceleration of the particle. In his papers, which show extensive knowledge of the historical background Assis has studied different properties of Weber's force. For example, in one paper (Assis and Caluzi

1991) he showed that according to Weber's law, the charge in a flat capacitor could attain velocities larger than light velocity. But this contradicts experiment. I agree with Assis's result. In another paper (Assis 1992) Assis refutes Richard A. Waldron's proof showing that the force cannot depend an acceleration. I think that in this case Assis is not right. His mistake is due to R.A. Waldron's mistaken derivation. Therefore, I shall repeat R.A. Waldron's derivation and remove the error.

If the force depends on acceleration $F = F(r,v,a)$, then at small acceleration the force a can be given in the form of a Taylor series expansion

$$F = f_0 + f_1 a + f_2 a^2 + \cdots \tag{1}$$

Where $f_i = f_i(r,v)$, $i = 0,1,2,\ldots$

If the force given by (1) acts on a body with mass m, it will receive the acceleration

$$a = F/m \tag{2}$$

If the force is multiplied by a factor n: $F_1 = nF$, then according to Newton's second law (7) the acceleration will be

$$a_1 = F_1/m = nF/m = na \tag{3}$$

The expression (1) is general and it is valid for force F_1:

$$F_1 = f_0 + f_1 a_1 + f_2 a_1^2 + \cdots \tag{4}$$

If we substitute F_1 and a_1 in Eq. (4), we obtain $Fn = f_0 + f_1 na + f_2 n^2 a^2 + \cdots$ Then

$$F = f_0/n + f_1 a + f_2 na^2 + \cdots \tag{5}$$

Since the left parts of Eqs. (1) and (5) are equal, the right parts most also be equal. But they are not equal. Therefore the initial suggestion about the force depending on acceleration is wrong.

Besides R.A. Waldron's proof and Assis's result there are many other contradictions due to the force law, depending on acceleration. We will not dwell on them, as this force law contradicts the essence of force.

If one body acts on another, then the resulting effect is an acceleration of the second body, i.e. the acceleration is expression of this effect. On other hand, man measures the effect with the help of a force. In this way, he counteracts the body's motion by means of a third body, e.g., a spring, and its deformation defines the magnitude of the force. Therefore, the force and the acceleration define the action on the body. They are the same (N.B.: the acceleration exists objectively but a force is introduced by man to describe the effect on the body). The coefficient of proportionality (m) between the force and the acceleration is due to the choice of standards (e.g., the platinum-irridium cylinder with height and diameter 39 mm, which we call a kilogram), by means of which we establish units of measurement of the acceleration and force. Thus, Newton's second law $F = ma$ expresses the equivalence of force and acceleration.

So, if we establish the force, then an acceleration is defined. By integration we can find the speed $v(t)$, and direction $S(t)$, i.e. we find all parameters of the body's motion. Hence, the force cannot depend on acceleration; it can depend only on velocity and distance, which are relative to the acting body.

This error, that force depends on acceleration, also exists in Fluid Mechanics, where we have Basse's force and the force between masses

$$F_B = -3r\sqrt{\pi}\int_0^t \frac{d\mathbf{v}/d\tau}{(t-\tau)^{0.5}}\,d\tau$$

$$F_{jm} = -\frac{\pi\rho}{12}\frac{d^3 a}{(t-\tau)^{0.5}} \tag{6}$$

It is considered that this, force acts on a particle which moves in a fluid with acceleration a.

In Electrodynamics and Fluid Mechanics this forces have been introduced theoretically. But forces must be founded on experimental data. Based on experimental data, I (Smulsky 1994) have derived expressions for the force with which the moving charge q_1 acts on a stationary charge q_2 (in Gauss's units)

$$\mathbf{F}_q = q_2\mathbf{E}_1 = \frac{q_1 q_2 \mathbf{R}}{R^2[R^2 - (\boldsymbol{\beta}\times\mathbf{R})^2]^{3/2}}(1-\beta^2) \tag{7}$$

where $\boldsymbol{\beta} = \mathbf{v}_1/c$, and $c_{em} = 1/\sqrt{\varepsilon\mu}$ is the electromagnetic velocity or velocity of light in space with permittivity ε and permeability μ; $\mathbf{v}$ is the velocity of charge q_1.

The moving charge acts on the magnet pole with force

$$\mathbf{F}_M = M\mathbf{H}_{q_1} = \frac{M q_1(\boldsymbol{\beta}\times\mathbf{R})}{[R^2 - (\boldsymbol{\beta}\times\mathbf{R})^2]^{3/2}}(1-\beta^2) \tag{8}$$

where M is the magnetic charge.

The forces (7) and (8) allow us to calculate all phenomena of the electrodynamics of moving charges. In this case, the mass, time and distance do not depend on the charge velocity.

References

Smulsky, J.J., 1992. The main problem of modern physics, *Apeiron* 14:18.

Assis, A.K.T. and Caluzi, J.J., 1991. A limitation on Weber's law, *Physics Letters A* 160:25–30.

Assis, A.K.T., 1992. On forces that depend on acceleration on the test body, *Physics Essays* 5:328–330.

Waldron, R.A., 1991. Notes on the Form of the Force Law, *Physics Essays* 4:247–248.

Smulsky, J.J., 1994. The new approach and superluminal particle production, *Physics Essays* 7 (to be published).

Joseph J. Smulsky.
Institute of the Earth's Cryosphere, RAS
625000, Tyumen, P.O.B. 1230, Russia

The Truth is Always Concrete

Aristotle noticed that every man longs for knowledge. Coming into the world, he starts cognizing the surroundings by means of sense organs. Later, having learned his language, he continues cognizing with the help of parents, teachers, authors of books, etc. The majority stop at this. Only few of this majority become scientists. For that, it is sufficient to learn some portion of

knowledge and pass an exam (defend thesis). The objective of scientists is to preserve the knowledge entrusted to them. They function as storekeepers classifying the knowledge (arranging it on the shelves) to make it handy and easily used. Passing their erudition to their pupils, they provide continuity of the knowledge in time. But there is also the highest stage of cognition—that is independent acquisition of new knowledge. Very few reach this stage (Copernicus, Galileo, Newton, the schoolboy E. Galois, the monk Gregor Mendel, the teacher Tsiolkovsky and some others).

New knowledge for mankind can be discovered either by means of one's own sense organs—or by mind. Geographical, astronomical and similar discoveries belonged to the sense ones. As a rule, they require large expenditures to outfit expeditions, equipment for observatories and laboratories. As for theoretical discoveries, they are accessible to anybody; there must be only a doubt in some theory and the ability to think rationally.

Long ago, I was struck by absurdity of a phrase from a scientific book of the following approximate content: "It was surely determined that matter and light possess dual nature, they are both a wave and a particle, they are both discrete and continuous". While we are alive, we clearly distinguish the agreeable from disagreeable, the living from dead, the discrete from continuous. Aristotle formulated laws of rational thinking (logic) based on this difference. Formerly, philosophers of ancient times agreed on the opinion that if the world is indivisible, it must consist of indivisible substance (matter), and disagreed on the problem of matter structure. Is it discrete or continuous? One of these hypotheses must be true; the other is false. Which? If matter is discrete, it must consist of the smallest particles (atoms) moving in empty space. And if matter is continuous, it must fill all the space of the Universe, nowhere leaving vacancy. Aristotle founded his pre-classic physics based on the hypothesis of matter continuity. In full accordance with this physics, Huygens, Newton's senior contemporary, founded the Wave Theory of Light trying to explain optical phenomena by oscillations (waves) of continuous matter medium (ether) allegedly filling the Universe.

But after Copernicus and Galileo, who had deprived the Earth of immobility, Newton understood that planets and comets move. Almost always along the same orbits due only to the fact that space doesn't prevent their moving, i.e. it is empty. In this case, matter is discrete, that is, it consists of the smallest particles. Newton founded classical (exemplary) physics. According to his physics the Wave Theory is impossible, only the Corpuscular Theory of Light explaining optical phenomena as a stream of special particles-corpuscles is possible. But Newton failed to explain all the optical phenomena. As a result, in 1818 the Paris Academy of Science with the help of Fresnel restored to life the Wave Theory of Light which is incompatible with Newton's theory. When they came back to a Wave Theory of Light (to waves of ether), physicists came back to continuous matter. For all that, they preserved Newton's physics. So, modern theoretical physics was founded on two mutually exclusive conceptions of matter—its duality.

It should be noted that this uneasy duality caused so many paradoxes (theoretical conclusions incompatible with reality) that physicists have begun to doubt not only logic, but of common sense in general.

I can explain, in full accordance with Newton, optical phenomena, gravity and a number of other phenomena of nature, rejecting the absurd duality. I am fully aware of the fact that even after publishing my hypotheses quite a few years will require to "run" them in the scientific world. Only then they can be accepted or corrected. But they cannot be rejected on the whole because the truth is always concrete. Matter is either discrete, or continuous. Either—or?

Pavel Karavdin
Tscheikinoi 11-103, Tscheliabinsk
454129 Russia (translated by
N.Larionova)

Redshift retraction

I now feel obliged to withdraw my proposal for the "tangent redshift" (Gifford 1992) in favour of Dart's photon log-decay redshift (Dart 1993), which I consider to be a real breakthrough in redshift theory. It now seems so obvious that we can only wonder why it was not proposed 50 years ago. It not only accounts for the redshift of light well within the limits of accuracy of the ability to measure; it also clarifies the many "tired-light" schemes and does away with "Olber's Paradox".

Dart's equation can be restated as distance $D = (c/H)\ln(1+z)$, where H is Hubble's constant and $(1+z)$ is redshift, or wavelength observed divided by wavelength of source. Dart based his distance equation on a distance of 10^{10} light-years, corresponding to an H value of 97.8 km sec^{-1} Mpc^{-1}. I prefer a value of 68.682 km sec^{-1} Mpc^{-1}, because this will correlate with Newton's gravitational constant, as described later. The value of 68.682 km sec^{-1} Mpc^{-1} is reasonable, since the average of thirty published H values is 74 km sec^{-1} Mpc^{-1}, with an average error of ± 13 (Huchra 1992).

I must now give up my idea of a slight curvature of the path of light over great distances in the "tangent redshift" proposal. But the curved path of the graviton must be retained in order to comply with Planck's law of circular action, $E = hf$, where $f =$ frequency (c/λ).

Dart considered the photon to be analogous to linear oscillation of a pendulum which releases one "neutrino" of mass 1.64×10^{-65} grams at each end of swing. But it now becomes possible to form a visual image of the structure of the photon which displays all of the known properties of the photon. These properties are: Planck's law of circular action, spin, frequency, mass, spin polarization angle and wavelength.

The photon may be visualized as a planar ring pattern of gravitons of individual mass $m_o = 1.6411 \times 10^{-65}$ grams circling around the ring pattern at $v = c$, at frequency c/λ, where wavelength λ is the circumference of the ring, and while releasing one graviton per cycle as the photon redshifts its way through space.

My choice of the H value of 68.682 km sec^{-1} Mpc^{-1} provides

the interesting tautology:

$$H = \frac{2Gm_o}{cL^2}$$

where $H = 68.682$ km sec^{-1} Mpc^{-1} $= 2.2259$ cm km sec^{-1} cm^{-1}, $G = 6.673 \times 10^{-8}$ cm^3 gm^{-1} sec^{-2}, $c = 2.9979 \times 10^{10}$ cm sec^{-1}, $m_o = Hh/c^2 = 1.6411 \times 10^{-65}$ grams, and where $L =$ Planck length $= (hG/c^3)^{1/2} = 5.0510 \times 10^{-33}$ cm.

Or, stated another way, the acceleration between two adjacent gravitons is $Hc = a = Gm/R^2 = Gm_o/L^2$.

References

Dart, Henry P., III, 1993. A new alternative to the Big Bang, *Apeiron* 17.

Gifford, John F., 1992. Doppler redshift versus tangent redshift, *Apeiron* 14.

Huchra, John P., 1992. The Hubble constant, *Science* 256.

John F. Gifford
P.O. Box 117
Corrales, NM 87048 USA

Corrections

Number 18 (February 1994)

Page 9: (abstract): Vectors should appear in $\Sigma(\mathbf{r},t,\mathbf{w})$, $\Sigma'(\mathbf{r}',t',0)$ and

$$\mathbf{F} = e[\mathbf{E}^\circ + \mathbf{w}\times\mathbf{B} + (\mathbf{v}-\mathbf{w})\times\mathbf{B}] = e[\mathbf{E}+\mathbf{v}\times\mathbf{B}] = \text{inv}$$

Page 11: Equation (19) should read

$$\Delta t = t_1 - \frac{(t_2+t_3)}{2}.$$

Four lines above equation (19), read $t = t' = \bar{t} = \text{inv}$.

Number 19 (June 1994)

Page 27: equation (3) should read:

$$f(r) = -\frac{2\pi G\rho_o R}{r}\left(1 - \frac{r^2}{3R^2}\right)$$

Page 35: centre column, line 16 and page 37, right column, line 18: "14, 2:75" should read "4, 2:75".

Page 37: left column, line 8: "($\pm$ for receding, for approaching)" should read: "(in the signs $\pm$ and $\mp$: the upper signs for receding; the lower for approaching)"

Notice

Plasmatronics Inc. maintains and distributes a bibliography of works on alternative physics. Contact address: Plasmatronics Inc. Post Office Box E, Menlo Park, CA 94026, USA.

Instructions to authors

APEIRON is a scientific journal devoted to cosmology and fundamental physics. It publishes only convincingly argued, adequately documented papers in English, as well as English translations of historically important texts.

APEIRON appears three times a year, and is indexed in *Physics Abstracts*. Submission implies that a paper is not under consideration by another publication and has not been published previously. All submissions will be reviewed by anonymous referees with expertise in the field, and every effort will be made to publish material presenting original viewpoints. There is no page charge or offprint charge. Send contributions to:

C. Roy Keys, 4405 St-Dominique, Montreal, Quebec, Canada H2W 2B2.

All papers must be submitted typewritten or printed in three copies, and once accepted, on MS-DOS or MAC diskette (Word, RTF or ASCII format preferred). The first page must include the title, the author's name and address, and a brief abstract. The International System is the preferred system of units. References must be indicated between brackets in the text by the author and year of publication, with a full alphabetical listing at the end of the manuscript. For books, the listing should include the full title, place of publication, publisher and year of publication. Journal articles should be referenced with the full title (between quotation marks), journal name, volume and page number. Graphical elements should be approximately $3\times$ oversized, clearly numbered, labeled and captioned.