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Conference threads, debate and correspondence

On experiments to test Special Relativity

Joop F. Nieland, in a letter on page 19 of your autumn 1990 issue no. 8 suggests an experiment already done some 300 years ago. In particular, Roemer in 1676 (and subsequently Halley with more precision) observed the fact that the apparent observed velocity of light depends upon the velocity of the observer v; so

$$c' = c + v, \tag{1}$$

where c' is the apparent observed velocity of light and c is the velocity of light with respect to absolute space (or with respect to the luminiferous ether). In particular, he found that the apparent velocity of light c'_+ was $c + v$ when the Earth approached Jupiter and was $c'_- = c - v$ when the Earth receded from Jupiter. The difference in the apparent or observed velocity of light was determined by the changes in the apparent period of Jupiter's moons. Knowing the velocity of the Earth when approaching and receding from Jupiter, he was then able to calculate the velocity of light relative to absolute space. Clearly his result would have been quite impossible if the observed velocity of light did not depend upon the velocity of the observer, the Earth. The same addition formula (1) was obtained by Bradley to predict stellar aberration. He also used the explicit value v of the earth in its orbit about the sun to obtain the value of the velocity of light with respect to absolute space. His value agreed with Roemer's. He could not

possibly have obtained his result if the velocity of light observed were not a function of the velocity of the observer *v*. "Special Relativity" was proven wrong a couple hundred of years before the so-called theory was proposed. I personally know of *NO* experiment that is in agreement with Special Relativity.

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Action at a distance and modern field theory (Phipps, T.E., Jr., *APEIRON* 8, 8)

Ideas of action-at-a-distance, in any manner inspired in association with the three classical fields, are emerging due to a long-standing misunderstanding of the gravity and Coulomb forces. The magnetic force and field can be left out of the discussion because they are merely derivatives of the Coulomb field, and represent (accurately or not) what happens to physical conditions (*i.e.* permittivity and permeability) of vacuum space in the vicinity of moving electric charges commonly defined as electric currents. That leaves us only with the gravity field and the Coulomb field. Both are based on the concept of potential energy, a concept that is long overdue for the dustbin of history.

Since the invention of "potential energy" in Newton's time, this concept has grown amazingly real in science, while it has no reality whatsoever. Where is it located, and in what kind of physical form? For classical scientists "potential energy" was a justified concept as there was no way as yet to equate it with the restmass-loss happening due to field strength. Ever since the discovery that stars shine because they consume their own mass, potential energy has been an obsolete,

spurious concept, which is the prime cause of scientific mysticism. This obsolete concept has spawned such mind-boggling mystical concepts as strangeness, charm, up and down... and action-at-a-distance.

It is well known from astrophysics that a contracting stellar mass converts part of its mass into kinetic energy, *i.e.* radiation, without any loss of baryons. The radiant energy equals the loss of potential energy, *i.e.* the loss of restmass of all the stellar mass particles, through a gravitational or nuclear process. In short, it amounts to an aggregation of mass into a smaller volume, whereby changed space-physical factors (field) cause a reduction of restmass in each particle. A gravitationally free-falling particle is accelerated because it converts restmass into kinetic energy. An object lifted to a higher altitude consumes the exterior supply of energy to restore its restmass to the precise value required by the higher altitude and field strength.

The gravitationally varying restmass, which is either not or not adequately accounted for in modern theory, in fact performs the role of the classical potential energy. The lack of recognition of this fact leads to many misconceptions and errors which, in most cases, are quantitatively very marginal, but which become significant in theories of strong fields. The potential energy philosophy does not resolve where and how the action of field and force take place. The loss of restmass always precisely matches the loss of "potential energy" and the production of kinetic energy. The restmass of particles varies precisely with the field strength, and proves therewith that the field-force-action is taking place inside the mass particles. The conversion of restmass into kinetic energy is a self-propelling process of the accelerated object.

Gravitational acceleration is not an action-at-a-distance, but an auto-propulsive thrust of which the magnitude is exactly determined by the gravity field's strength. All mass objects have a restmass which

varies exactly with the field strength in my Vacuum Refraction Theory (unpublished). And all electrically charged particles have their restmass precisely (re)converted into(from) kinetic energy by the voltage potential of space, *i.e.* by the electric field. This irrefutable interpretation of the gravity force and Coulomb force eliminates all speculation about action-at-a-distance associated directly or indirectly with the three classical force-fields.

Gravity fields, electrical fields and magnetic fields are anisotropic conditions of space in the vicinity of mass (resp. electric charge). Every mass particle, with its intrinsic electromagnetic wave nature, is compelled to respond to the field conditions of the space-medium. Its interior response is a liberation of self-entrapped energy, *i.e.* a conversion of restmass into kinetic energy of acceleration, and the observed response is interpreted as an acceleration by gravity force, Coulomb force or magnetic force.

An electric current is simply and fundamentally an electric charge in motion; it is a secondary concept one step removed from the most fundamental concept of electric charge. For fundamental theory, we should avoid reasoning with secondary or tertiary concepts, such as magnetism. Ampere's law and all other non-fundamental laws cannot convincingly serve us to resolve the argument about action-at-a-distance, which has been postulated only because of erroneous thinking about potential energy and particle restmass.

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On action-at-a-distance (Phipps replies)

The boggle is surely in the mind of the beholder. My mind agrees with Nieland's (1990) in being boggled by strangeness and charm, but not in being boggled by action-at-a-distance. (I ask myself: how does his mind respond to the advanced solutions of Maxwell's equations?)

Is potential energy a concept "long overdue for the dustbin of history"? Ironically, with some color of justification I might have agreed with such a judgment as long as I accepted treatment of the central force problem by the established Sommerfeld-Dirac Lagrangian,

$$L = -m_0 c^2 \left[1 - \left(\frac{v}{c} \right)^2 \right]^{1/2} + k/r \qquad (1)$$

because the potential energy term, k/r, sits here in splendid isolation from mass and everything else. Thus it seems devoid of linkages to physical mechanisms governing other forms of "energy"—apart from the fact that "it works," surely a prime candidate for the dustbin. Eq. (1) is at a conceptual dead end for the simple reason that it goes as far as the Coulomb law can take us. However, quite recently—by going beyond the Coulomb law to employ the Weber-type action-at-a-distance formulation so distasteful to Nieland—I was able to derive (Phipps 1990) the altered (improved?) "relativistic" Lagrangian

$$L = \left(-m_0 c^2 + k/r \right) \left[1 - \left(\frac{v}{c} \right)^2 \right]^{1/2} \qquad (2)$$

This results from using Weber's velocity-dependent potential, modified at high relative velocities to reflect the existence of a limiting particle velocity $v < c$. Post has shown (1991) in the Coulomb energy case that this altered Lagrangian, Eq. (2), leads to a fine-

structure formula differing only by terms in α^2 or in higher powers of $a \approx 1/137$ from the established Sommerfeld formula based on Eq. (1). Which of these two Lagrangians gives the better account of the fine structure of physical atomic spectra is not clear at the moment, but is definitely an empirically decidable question.

The point about the altered Lagrangian (2) is that the k/r term no longer sits in isolation from mass; in fact (*Coulomb energy*)/c^2 becomes an additive contributor to mass. This fulfills a prophetic opinion expressed by Brillouin in his book on relativity theory, there should be a *mass-equivalence of potential energy* to match that of kinetic energy. To my mind the ability to introduce a position-dependent effective mass $m^* = m_0 - k/rc^2$ justifies and legitimizes potential energy by assigning it a mass equivalence, thus bringing it into the ($Energy = mc^2$) fold. In short, potential energy becomes an integral, *non-ad-hoc* part of mass-energy-momentum physics.

Not so in the eye of beholder Nieland. He effectively recognizes the (somewhat Machian) relative-to-mass position dependence of mass—although expressing this recognition in field-jargon as "the restmass-loss happening due to increasing field strength" ... which causes me to wonder why fields come into it if potentials suffice. But to him this recognition becomes a *casus belli* against potential energy. For now we can reify the "effective mass" m^* and use it as a sort of (third-law-ignoring) jet propellant to produce kinetic motion... though the propellant is *analytically* still our bad old Newtonian or Coulombic potential energy expression, k/r, which still "acts" (if this locution be permissible) by the devil's own instant action-at-a-distance. Incidentally, if one tries to eradicate the latter work of Satan by borrowing from the angels a $(t - r/c)$ retarded action variable, one not only utterly destroys analytic tractability but introduces first-order unphenomena such as gravitational aberration, never observed. To put it mildly, I fail to see the justification for Nieland's vendetta against

action-at-a-distance. If he and I have made no mistakes, the observable results of instant action should seemingly be identical with those of his auto-propulsion model. But I heartily applaud his all-too-rare recognition of potential energy as an aspect of mass.

References

Nieland, J. F., 1991. *APEIRON* **11**, 1.

Phipps, T. E., Jr., 1990."Toward Modernization of Weber's Force Laws" *Physics Essays* **3**, 414.

Post, E. J., 1991. "Phipps's Potential Function for Weber's Force Law," letter submitted to Physics Essays.

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Comments on Festschrift Vigier

On Festschrift Vigier (*APEIRON* 9-10, 1991)

I am happy about Toivo's (Jaakkola) conversion in the direction of vacuum interactions rather than metaphysical "forces over distance". I think he might find a great deal of his EGC by reading the article preceding his own in the last *APEIRON*.

In fact, I want to go a stop further than EGC, namely to the common interaction between the strong nuclear force and the electromagnetic and gravitational forces. The so-called weak force responsible for the radioactive decay, I have never been able to accept us a force at all. I rather think that particle systems decay because they leave their equilibrium quantum states in terms of surface and energy.

I appreciate all the work done by Toivo in collecting all the observational evidence from different sources and bringing them together in a sensible philosophical framework. This has been a large

task over many years; the same is true of my quest, and it is satisfying to see that the results are now converging. He is certainly supported by Rudnicki in his efforts.

Many of the other authors are working in the same direction, even if they follow different paths. The work of Napier shows without doubt that the redshift is related to the presence of mass, and that it has a periodic or quantized behaviour. His thorough testing of the hypothesis is really providing a solid basis for future theory building. Perhaps he could do the same with my particle masses.

Of course we all share Vigier's and Pecker's belief that the wave nature of the particle is more than a statistical variation and that there is an interaction between the particles and the vacuum: hence the redshift and the forces. And the photon restmass—an elementary quantum? And gravitation—an interaction in the vacuum?

The redshift dependence on epoch of creation described by Arp may be compared with my conclusion that the stars absorb energy from space in the gravitational process and that way get the fuel which is kept as binding energy when building up heavier elements, up to the neutron star, while radiating back into space what they cannot absorb. Only when they are young will fusion contribute to the radiation; with age it will make the stars heavier. This could also have a relevance in the light of Clube's paper.

Ghosh's inertial induction is consistent with mass increase of particles, as I have shown in an unpublished paper.

Marmet's paper shows clearly evidence against the big bang and introduces a mechanism which seems to be realistic, although I think that other mechanisms are also contributing: on a cosmological level the interaction with the vacuum, in the form of a Dirac ether *à la* Vigier or a graviton bath as in Jaakkola's case.

When I read Roscoe's paper, I got the feeling that he is also getting a surface-like geometry for the interactions; either it is a three-

dimensional surface in the four-dimensional world or a two-dimensional surface in our three dimensions. But I don't know yet whether this should give some comfort to my idea that energy in quantized systems is a surface phenomenon.

To conclude from above, I think we have passed a turning point and are now ready to focus on a new epoch in physics—laying the groundwork for an understanding of nature in the coming century.

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Rudnicki (*APEIRON* 9-10 p.4)

The difficulties of proving the relativistic expansion hypothesis are clearly stated, but the problem of *disproving* it is not discussed. To be seriously considered a hypothesis should be at least rationally acceptable. My "Contradiction" article (*APEIRON* 4) together with discussions (*APEIRON* 5) show that two necessary assumptions of the expansion hypothesis contradict each other. If so, the expansion hypothesis can not be rationally acceptable, and the problem can be reduced to one of establishing the correct, non-expansionary mechanism which causes the redshifting of light as it passes through intergalactic space.

Arp (*APEIRON* 9-10 p.18)

Some questions are raised by the proposed cosmological concept, for instance:

1. What is the source of energy for the proposed "continuous creation" of matter in the universe?

2. Why must the redshifts be primarily intrinsic within galaxies? There are plausible proposed mechanisms to account for the redshift taking place in intergalactic space.
3. Why must the higher intrinsic redshifts of more recently formed galaxies be attributed to reduced particle energy? If quasars, with initially small observed mass and high central redshifts, start the creation of new galaxies, the anomalous redshifts at their centers could simply be progressively obscured as older galaxies grow and acquire larger discs of gas clouds, dust and stars.
4. How could the proposed creation of particle matter at low quantum energy levels (high redshift) near the centers of formative galaxies (quasars) be correlated with the extreme luminosities and energy levels observed there?
5. What accounts for the clouds of hydrogen gas now known to exist in all areas of intergalactic space if matter creation takes place only in galaxies? If matter from these clouds supplies part of the matter for forming galaxies, the proposed relation of galactic redshift to time of matter creation would be confused.

Ghosh (*APEIRON* 9-10, p. 35)

The ideas discussed are very interesting but raise several questions:
1. If the induced velocity dependent inertia of an object (*i.e.* its resistance to constant linear motion) requires the continued gravitational attraction of the object by other bodies in all directions, how can the same velocity dependent inertia be induced in a passing light photon by a massive single, nearby body such as the sun?
2. Since inertial induction, whether acceleration dependent or velocity dependent, apparently has the universal effect of resisting and slowing down both the linear and rotational movements of all

objects, would not the universe eventually arrive at a state of zero movement and energy? If not, what would avoid it?

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On the shape of planetary orbits

The accepted explanation for the size, the shape, and the manner of maintenance of planetary (satellite) orbits has been a source of perplexity to me. The establishment descriptions and explanations appear not to correspond with conditions that we see in, or we have been able to learn about, our solar system:

1. The sun moves in an orbit about the galactic center.
2. The earth (planets) move about the sun in their orbits.
3. Jupiter's orbital speed increases for six years and then decreases for six years.
4. There is a powerful mutual attraction between the sun and each of its planets.
5. Mercury overshoots its turn about the forward edge of it's orbit.
6. Mercury's highest orbital speed occurs closest to the orbital control (the sun) and vice versa.
7. Planetary orbits have been constant over long periods of time.
8. The sun emits constantly high speed particles we call solar wind; our planet lives in this atmosphere.
9. There is a period at year's end when the sun rises at the same time for seven days; shortly thereafter it also sets at the same time for seven days. In late June there are similar periods lasting two days each.
10. To change orbital distance, speed must be increased to reach a higher orbit, and then decreased to that needed at the higher

orbit. To reach a lower orbit, speed must first be decreased, and then increased to maintain the lower orbit.

It is impossible to reconcile these facts with the accepted description of planetary orbits as elliptical, having the sun at one focus of the ellipse. If we wish to describe planetary orbits accurately we must be able to explain each of the above factors.

The sun's motion is given various values, ranging from about 65 miles/second in early accounts, to about 12.5 miles/sec in the later accounts. I consider 12.5 miles/sec a very close approximation, since this speed agrees well with the known distances of the planet from the sun.

There is a powerful mutual attraction between the sun and each of its planets, which pulls the planets toward the sun at all times. This attraction combines with the sun's velocity to create long oval orbits, which are necessary for the planets' ability to remain in orbit. The planet's speed in orbit varies constantly, controlled by the sun's motion and the planet's position relative to the sun. Mutual attraction may be a strong, or a weak, accelerating force, or decelerating force, depending upon the relative positions and directions of travel of the sun and the Planet.

These conditions are illustrated in the accompanying figure.

The sun moves (12.5 x 60 x 60 x 24 x 182.5) miles in each six months of our year, but the planet's path differs widely from one side of the sun to the other. The second half of the orbit appears to be the mirror image in reverse of the first half. What seems to be an ovate orbit is in reality one curving path crossing over and back across another straight path We find therefore a great increase in speed from zero during equinox orbital speed has increased to a maximum, and then a decline to zero at the spring equinox. This agrees with what we know about Jupiter's increasing/decreasing speed, which also divides its 12 year orbit into two 6 year periods. This also explains the

apparent motion of Mercury's orbit. Excess speed in the first half of the orbit causes the planet to overshoot the line parallel to the sun's motion. This excess speed ensures that the planet will remain in orbit. It is dissipated during the second half of the orbit.

If one ignores the sun's motion a much shorter ovate path will be visualized. Since one end of the orbit is wider than the other it cannot be an ellipse, which is a balanced figure.

Orbital shapes are necessarily ovate, with a wide end and a narrow end, since there are increases and decreases of orbital velocity. Centrifugal force must balance with speed to maintain inertia, but acceleration shifts the planet to a more distant orbit and deceleration brings it down to a lower orbital distance. We see that orbital speed and distance conditions change constantly, so obviously an orbit is a thing of constant change.

It is apparent that the sun drives its planets in two ways:

1. Radiation from the sun give light and heat in inverse proportion to the distances of the planets. There is a very narrow zone in the solar system where a lifebearing planet can exist and support life. This assures that there will be only one life bearing planet in a solar system at a given time.
2. The sun's motion combined with the mutual attraction between the sun and the planets produces the power that maintains the planets in their orbits.

By analogy we can understand that the motion of the galactic center also provides the power that maintains the stars in their orbits.

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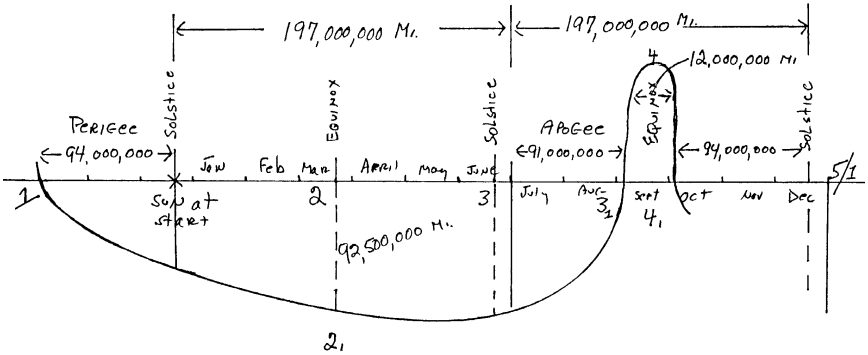

The planets exist constantly in the atmosphere of the solar wind, which both retards their speed and pushes them away from the sun. Mutual attraction and orbital speed maintain distances, but constant infusions of power are necessary to overcome the drag of the solar wind, so the planets will remain properly in their orbits, and not be drawn into the sun. This power is added on each orbit in the form of increased speed at the half way point. Excess speed/power injected in the first half of the orbit insures that the orbit will be maintained; it is erased during the second half of the orbit as the planet's speed is retarded.
The planet begins the year at point 1, proceeding through 1 and 3 in 6 months, to produce a half oval. Its course through point 4 and back combines with the sun's movement to produce the second half oval in reverse: the result is an oval orbit.

Address of the Participants in the 2nd International Conference "Problems of Space and Time in the Natural Sciences" to Scientists and Educators September 16-21, 1991 St. Petersburg, USSR

Colleagues,

Thanks to the technological advances of the 20th century, the experimental basis of science has been greatly enlarged, and this always give a powerful impulse to progress in fundamental theories.

Nevertheless, the prevalence of relativistic mechanics (Special Theory of Relativity) has promoted misinterpretations of the results of experiments and observations and is now an obstacle to the development of classical methods in astronomy and celestial mechanics, geophysics and cosmology, quantum mechanics and electrodynamics. The domination of the relativity establishment has a harmful influence on the philosophy and ethics of the scientific community.

Due to the prohibition and silencing of publications which contradict the adherents of Einstein, modern theoretical physics and astrophysics is in the midst of a crisis. The papers of the Conference participants give evidence of the inconsistency of the postulates of Einstein relativity theory and the lack of convincing experimental proof.

We propose that the teaching of relativity theory be discontinued in the lower grades, and that time be devoted instead to the origin and development of theories based on classical principles, to a close examination of the experience of the past, to improving observational and experimental techniques and the methods of analysis of results.

We hope the rejection of a policy of confrontation between social systems and military blocs will create a more favourable atmosphere for the development of science and education, and put an end to the suppression of scientific discussion on the pretext that state secrets must be protected.

Participants in the conference from the USSR, USA, Canada, Italy, Great Britain, Switzerland, Germany, Brazil, Austria and Finland
M.P. Varin, Chairman of the Organizing Committee
S. A. Tolchelnikova, Secretary

Note received with *Edinburgh Astronomy Preprint* "Evidence for redshift periodicity in nearby field galaxies" (B.N.G. Guthrie and W.M. Napier)

As you will see the enclosed paper confirms the Tifft phenomenon of redshift periodicity for field galaxies out to 1000 kms^{-1} at a confidence level of a few parts in 10^5. However it is already out of date as we have now extended the analysis to the whole of the Local Supercluster ($cz \leq 2600$ km s^{-1}). This extended analysis confirms the redshift periodicity, at roughly the 'million to one' level (we are submitting an article to *Nature* this week).

The periodicity only appears when the motion of the Sun around the center of the Galaxy is subtracted from the heliocentric redshifts. Instrumental or data reduction artefacts would therefore have to involve subtracting the solar galactocentric motion from the raw redshifts before generating the supposed false periodicity. For this and other reasons we regard the phenomenon as celestial rather than terrestrial.

I am writing mainly to keep the *APEIRON* group informed, but also to express my opinion that tired light mechanisms which involve a continuous rather than discrete energy loss during photon propagation cannot account for this extraordinary phenomenon. A second requirement on any such mechanism is that, as Chip Arp has pointed out in the past, the Doppler effect due to the peculiar motions of the galaxies must somehow be suppressed. A third requirement is coherence of the periodicity over at least the dimensions of the Local Supercluster. Finally, we only see it for the spirals.

I believe this is what Sherlock Holmes called a three-pipe problem.

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