

A PHYSICS CHALLENGE

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Life and intelligence appear to be attached to complex combinations of fundamental particles of matter. Their cause should, therefore, be traceable to these particles. If the laws that define the operation of the universe are named 'physical laws' then life and intelligence are the result of the physical laws of the universe. Physical unity must include us as a part of the physical universe. The current lack of unity of mechanics, life and intelligence demonstrates that the laws of physics are not the real physical laws of the universe.

Physics is the development of mechanical interpretations of the operation of the universe. It deals only with the study of patterns in changes of velocity. It does not even include the cause of change of velocity. I do not deny the mechanical usefulness of the mechanical laws of physics. My point is directed at separating the study of change of velocity from the theoretical interpretations, or inventions of the mind, that are attached to it.

Theoretical physics has constructed a picture of the universe resting upon foundational building blocks designed when we saw only very narrow views of the operation of the universe. With the far better view we have today, it would be scientific to review the correctness of the historic foundational building blocks. Instead theoretical physics carries along unsubstantiated highly questionable artifacts.

I introduce the process of removing artifacts contained in today's theories by offering evidence of significant problems with theoretical physics. The evidence is in the form of anomalies brought to light by new theory. There are several of them, and they involve a wide range of theory. These anomalies are very simple in form and contain only established numbers. It is obvious that the units do not match. That is what makes them anomalies. They are:

$$h = keC$$

$$\mu = \frac{v_s}{C}$$

$$\varepsilon = \frac{1}{v_s C}$$

$$r = eC$$

$$f = \frac{E}{r}$$

$$f = k\omega$$

DEFINITIONS:

r = radius of the hydrogen atom

μ = magnetic permeability

ε = electric permittivity

v_s = speed of sound

f = force exerted by the photon

E = energy of the photon

ω = frequency of the photon

h = Planck's constant = 6.625×10^{-34} (joule*seconds)

k = Boltzmann's constant = 1.38×10^{-23} [joule/(molecule*degree_kelvin)]

e = electron charge = 1.602×10^{-19} (coulombs)

C = speed of light = 2.998×10^8 (meters/second)

I will discuss two of the anomalies. The first anomaly contains four important fundamental constants. It says: Planck's constant numerically equals Boltzmann's constant times electron charge times the speed of light. There is no way to deduce from current theoretical physics that these constants have any chance at all of forming an equation. Their units just don't match. It should be a shock to physicists to find out they do. These constants are very unusual numbers. They are not the simple kind where coincidence might have a chance to occur. The very fact that they form an equation challenges the credibility of their theoretical interpretations.

Electromagnetic radiation is represented by its speed. Electric charge is represented by itself. Molecular kinetic energy and temperature are represented by Boltzmann's constant. Planck's constant represents energy. Furthermore, relativity theory is represented by the speed of light. Electromagnetic theory is represented by electric charge. Molecular mechanics is represented by Boltzmann's constant. Planck's constant represents quantum mechanics. If this equation has meaning then it must be new meaning, because it doesn't make sense in any of these theories represented by the terms in the equation.

The second anomaly says: The magnetic permeability of a material is numerically equal to the speed of sound within the material divided by the speed of light. Here are examples of putting this equation to the test:

$$\mu = \frac{v_s}{C}$$

The typical speed of sound in glass is:

$$v_{sGL} = 6.0 \times 10^3 \frac{\text{meters}}{\text{sec}}$$

Substituting this into the equation above:

$$\mu = \frac{v_s}{C} = \frac{6.0 \times 10^3 \frac{\text{meters}}{\text{sec}}}{3.0 \times 10^8 \frac{\text{meters}}{\text{sec}}} = 2.0 \times 10^{-5}$$

This is the correct magnetic permeability of glass. I will perform the analogous calculation for the metals of gold, copper, and steel. The speed of sound in gold is:

$$v_{sAU} = 2.0 \times 10^3 \frac{\text{meters}}{\text{sec}}$$

Substituting:

$$\mu_{AU} = \frac{2.0 \times 10^3 \frac{\text{meters}}{\text{sec}}}{3.0 \times 10^8 \frac{\text{meters}}{\text{sec}}} = 6.7 \times 10^{-6}$$

The speed of sound in copper is:

$$v_{sCU} = 3.5 \times 10^3 \frac{\text{meters}}{\text{sec}}$$

Substituting:

$$\mu_{CU} = \frac{3.5 \times 10^3 \frac{\text{meters}}{\text{sec}}}{3.0 \times 10^8 \frac{\text{meters}}{\text{sec}}} = 1.2 \times 10^{-5}$$

The speed of sound in steel is:

$$v_{sST} = 5.0 \times 10^3 \frac{\text{meters}}{\text{sec}}$$

Substituting:

$$\mu_{ST} = \frac{5.0 \times 10^3 \frac{\text{meters}}{\text{sec}}}{3.0 \times 10^8 \frac{\text{meters}}{\text{sec}}} = 1.7 \times 10^{-5}$$

Each of these answers gives the magnitude of the magnetic permeability of the material. The anomaly demonstrates a connection between electromagnetism and the speed of sound. Each of the seven anomalies threatens the correctness of current theory.

The mechanical usefulness of theory derives from the measure of how well its interpretation adheres to empirically determined patterns of changes of velocity. It is these mathematically describable patterns that cause our equations to yield correct predictions. These patterns of the operation of the universe are presented to us in the form of information containing measures of distance and time. This is because our information is delivered by photons. Their mechanical interpretation is that they cause changes of velocity. The units of change of velocity involve only distance and time. We understand the mechanical operation of the universe solely from the perspective of distance and time.

Theoretical physics is currently trying to describe the operation of the universe using units that are themselves theoretical. Here is a simple example of what has occurred with the units of physics. Whenever a change in velocity is observed to occur we feel there must be a cause. Physics has never been able to determine the nature of any cause of change of velocity. We proceed, in spite of this, with choosing to give names to the causes that we decide must exist. We name one of the causes as *electric charge*.

Where did the idea of electric charge originate? It came about because unidentifiable quantities regularly appeared in the formula for electric force. Since they only appeared in the measurement of electrical effects it seemed reasonable that they must be representative of the cause of these effects. Nevertheless it was only an educated guess. Once the cause was theoretically segregated and named we needed to be able to uniquely quantify it. We did this by inventing new units called 'coulombs'. Afterwards we tend to forget we never discovered the nature of the cause. We became so used to the name and units we began to imagine the cause has been proven.

For another example, it is observed that there are two different effects of change of velocity, but physics knowledge is unable to account for both of them by defining a single source. What should be done at this point in order to guard against error while continuing to develop theory for the purpose of using it in practical applications? After all, we can't wait until we know all the answers before we try to use what we do know. I say in a case such as this that we must resist the temptation to imagine two different sources just so we can move on with our theory. We don't understand the cause of either effect, so we certainly cannot know there are two different causes. The best, most useful theory is the one that produces unity that begins at the fundamental level and continues, in a clear logical manner, into higher level theory.

The invention of two separate forces will sooner or later become an impediment to discovering the single source. The more sources of force we add on, the further away from the correct solution we will be. I am certain the separation of forces existing today results from this practice being repeated throughout the development of physics. Today theorists cannot unite gravity with the other forces of physics because they have theoretically segregated it. It is treated in a manner that makes it artificially incompatible with the other theoretical forces. This impediment to unity consists of the unscientific practice of assigning arbitrary names for unknown causes. This leads to the attachment of artificial theoretical units causing permanent mathematical separation among these causes. The damage is done long before we actually understand the real nature of the causes.

These anomalies are telling us something very important and pervasive. The anomalies say that our invention of units to quantify unknown causes of physical effects works when theory is developed in bits and pieces. When artificial units are invented to cover a portion of theory, they work well in that portion. However, they become an impediment when we try to put segregated portions of theory together into a unified theory. This problem occurs because we made it occur.

If all effects are the result of the same primary cause, we have thwarted our opportunity to discover this. If we are going to develop a unified theory of the universe that makes sense, we must start right from the beginning using the true units of all measurements.

Concerning the problem of units for the anomalies listed above, the problem is not that the units are as incompatible as they are made to appear. The units defined as being unique from distance and time are artificial. The theoretical causes of change of velocity are defined from the perspective of inherent disunity on the fundamental level. Therefore, the theorist causes the units to be unmatched. The problem is that all these added on units beyond distance and time are disjointed, nonphysical substitutions for the real units. We need to show them in their natural form in order to know for certain when they do and do not match. When we insist upon retaining units left over from earlier periods of more limited knowledge, we cause our theories to stagnate. All real units should consist of distance, time and complex combinations of these two.

We know causes only through their effects. Our knowledge of their effects is gained only from measurements involving distance and time. The artificial units of our theories are not representative of this knowledge. These units such as coulombs, joules, newtons and kilograms must be redefined in a manner showing their origins in distance and time. This act is not just a matter of changing names. There are ideas and theoretical interpretations attached to these names. It requires a change of theoretical interpretation. It requires new ideas that do away with theoretical segregation of causes. This is required to find theoretical interpretations that can achieve fundamental unity. When this is accomplished a major impediment to achieving a fully unified general theory is removed; the units then match.