

WHAT IS WRONG WITH MATHEMATICAL PHYSICS?

Mathematical Physics as it exists today consists of the following mathematical theories:

- A. Newton's Laws and Universal Gravitation
- B. Maxwell's Equations
- C. Special and General Relativity Theory
- D. Schrodinger's Equation
- E. String Theory

In the following it will be shown that B. through E. are physically false and do not represent physical, experimental reality and that all of mathematical physics may be constructed from Newton's Laws and Universal Gravitation within the context of the Galilean Transform and the negative results of the Michelson-Morley Experiment.

1. Maxwell's Equations

Maxwell's Equations are false because as will be shown, electromagnetic energy is never a wave and always a photon and as photons carry energy through a vacuum, the photon, as will be shown, is a small mass photon ($\sim 10^{-10}$ amu) with kinetic energy $0.5mv^2$.

Assuming Maxwell's Equations are correct, Bragg deduced Bragg's Law, $\lambda = D\sin\theta$ for the 1st order spectra using a spectroscopic grating. In order to measure the wave length of light, one uses a spectral grating i.e. a smooth piece of plain glass thinly coated with Al upon which parallel lines a distance D apart are scratched with a diamond tipped needle using a ruling engine. Assuming light is a self-interfering wave, one can derive Bragg's law: $\lambda = D\sin\theta$ where λ is the wavelength, D as above and θ is the angle through which the 1st order spectra is diffracted. If one now makes a second grating with parallel lines a distance d apart where $D \neq d$ and using the SAME diamond tipped needle as above and shines the same monochromatic light source on both gratings, and now assuming Bragg's law is correct: $\lambda = D\sin\theta = d\sin\phi$ where $\theta \neq \phi$. Experimentally however $\theta = \phi$ and therefore Bragg's Law is experimentally false. This proves that e.m. radiation is not a self interfering wave and that the most important equation of quantum mechanics $E = nhf = nhc/\lambda$ is physically false and does not represent physical reality where as above, the photon is a small mass photon ($\sim 10^{-10}$ amu) with kinetic energy $0.5mv^2$.

This simple experiment proves that a universe of experimental data based on Bragg's Law is false and does not represent physical, experimental reality. This includes Pauling's work on the helical structure of Proteins and Watson and Crick's work on the helical structure of DNA. However spectroscopic identification of atoms and molecules is still valid and useful as are Chargaff's Rules.

2a. Special Relativity Theory

- 1) The experimentally determined speed of green laser light is faster than the experimentally determined speed of red laser light and therefore the 2nd postulate of special relativity is false and the consequences of the 1st + 2nd postulates are false and do not represent physical, experimental reality e.g. the Lorentz Transform and the formula $E=mc^2$.
- 2) It has been proved (My text, links below) directly from the 1st postulate of special relativity that the 2nd postulate is false by proving directly from the 1st postulate that the speed of light is vectorally additive and that no other function of the speed of light is derivable from the 1st postulate. The proof constitutes the 1st chapter of the text. In a straight forward manner, it can be shown that the negative results of the Michelson-Morley Experiment follow directly from the Galilean Transform.

2b. General Relativity Theory

During W.W. I, Einstein worked on the General Theory the principle new physical idea is that mass warps (bends) empty space and the amount of warping determines the force between two objects e.g. The Sun and Mercury. The problem with this idea is that one attributes something, the experimentally determined force between two mass objects to nothing i.e. the bending of empty, atom less space. This is counter to 300 years of physics experience in which physical atom caused experimentally determined causes, have physical experimentally determined effects on masses made of atoms. There is no experiment that directly measures the curvature of atom less space and strictly speaking, we have left the realm of experimentally verifiable causes and have substituted pure mathematics. The problem is that there is no experimental way to settle the difference between attributing the force between two mass objects to the curvature of space and say attributing the force between two mass objects to the amount of dark matter between the two mass objects, assuming dark matter is atom less.

It is quite true that Einstein derived the unexplained at the time perihelion shift of the planet Mercury of $43.11 \pm 0.20''$ of arc per century. At the time of the derivation, the observationally determined perihelion shift of Mercury was $\Delta\phi(\text{obs}) = 5,600.73 \pm 0.41''$ of arc per century and Newtonian theory gives a value of $\Delta\phi(\text{Nt}) = 5557.62 \pm 0.21''$ of arc per century with a difference of $\Delta\phi(\text{obs}) - \Delta\phi(\text{Nt}) = 43.11 \pm 0.20''$ of arc per century i.e. close to the Einstein value of $43.03''$ of arc per century. The above values are found in Steven Weinberg's text, "Gravitation and Cosmology".

As will be remembered, the general theory did not evolve full blown at once but had an "Evolutionary" coming into being with several field equations developed that were later scraped. The last developed set had a cosmological term with an undetermined constant, the cosmological constant. The constant was determined so as to derive $43.03''$ of arc per century.

As above the main objection to the theory is that it makes an assumption (the warping of

space due to mass) that is not experimentally verifiable and thus renders the theory pure mathematics and not mathematical physics that can be experimentally verified.

3. Schrodinger's Equation

Schrodinger originally derived his equation so as to be able to derive the wave lengths of light emitted by electrically excited Hydrogen in a glass tube. As described above, light is not a wave but a photon and as will explained below, a small mass photon. This invalidates Schrodinger's Equation. It also invalidates the most important equation of quantum mechanics $E=nhf=nhc/\lambda$ as light is not a wave.

It is true that excited Hydrogen does appear to emit 4 colors in the optical; red, blue-green, blue-violet and violet. Excited Hydrogen emits one red line, however in order to create the blue-green, blue-violet and violet colors, the glass envelope must be doped with extraneous atoms (two red photons excite Ca to produce the blue-green line, three red photons excite Li to produce the blue-violet line and four red photons excite Mg to produce the violet line). This is not honest physics.

4. String Theory

String theory is a hybrid theory composed of General Relativity Theory and Quantum Field Theory both of which are false ($E \neq nhf = nhc/\lambda$) and consequently String theory is also false and does not represent experimental, physical reality.

5. Newton's Laws and Universal Gravitation

The fundamental hypothesis taken is that all of mathematical physics may be constructed from Newton's Laws and Universal Gravitation within the context of the Galilean Transform and the negative results of the Michelson-Morley Experiment.

From above, $E \neq mc^2$ and this raises 3 important questions:

- a. As the binding energy of the current model of the atom assumes $E=mc^2$, it is imperative to create a new model of the atom. The new atom is described below.
- b. What is the energy source of the sun?
- c. What is the energy source of nuclear weapons and atomic reactors?

As regards a. The new atom consists of a solid mass sphere of radius $\approx 10^{-8}$ cm held together by a strong force and kept from collapse by internal vibrations that cause a pressure gradient inside the atom where $P(r) = 1/3(\text{density}(r))U(r)^2$. This is a fundamental assumption and as it turns out replaces the concept of charge. The mathematical model for the new atom is found in chap. 3. Collisions between two energetic enough atoms create small mass photons ($\sim 10^{-10}$ amu) as collision products. As their mass is small, their speeds are of the order of 10^{10} cm/sec at S.T.P. The small mass photons replace the

concept of the e.m. field.

The new solid mass atom and small mass photon are applied to historically important physics experiments to yield numerical results in accord with experimental results. A major part of the text is devoted as to how small mass photons interact with liquids, solids, gasses and spectroscopic gratings.

The charge neutral solid mass atom and charge neutral small mass photon are also applied to charge effect experiments (Gold Foil Repulsion and Attraction, Millikan Oil Drop Experiment, Electric Power, Voltage, Amperage, Resistance, The Triode Vacuum Tube, etc.) without assuming the existence of charge to yield numerical results in accord with experimental results as derived in chap 7.

As regards b. The short answer is that the energy source of the sun is its gravitational field. Interestingly circa 1900 and before special relativity theory, astronomers hypothesized that the energy source of the sun was its gravitational field, however they calculated that the lifetime of the sun would be $\sim 10^8$ years; much too short to account for human evolution here on earth. How the present author circumvented this catastrophe to derive using Newtonian Mechanics, $\sim 10^{10}$ years as the life time of the sun makes an interesting read. See chapter 11.

As regards c. The energy source of nuclear fuel for both thermonuclear weapons and nuclear reactors is electrical energy. It takes more electrical energy to create nuclear fuel than is released when the fuel is used as an energy source. I know so from personal experience working with Emilio Segre at the Hanford Site in southern Washington State in December 1944. The energy source was electrical energy generated by the Grand Coulee dam on the Columbia River. See chapter 10.

Tracing the source of electrical energy:

If the energy source is falling water as in a hydroelectric dam, then the energy source is the sun necessary to evaporate water at ground level $z(1)$ and allow it rise (H_2O 18amu, N_2 28amu, O_2 32amu) condense and fall to ground level $z(2)$ with $z(2) > z(1)$.

If the energy source is fossil fuels, then again the energy source is the sun.

As above, the energy source of the sun is its gravitational field. As the sun emits small mass photons, its gravitational field will decrease as its gravitational field is carried away by small mass photons and the sun-earth distance will gradually increase. See chapter 13.

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