Explaining Unified Field Theory

Around 1970, in a class teaching special relativity at the University of Oregon, I challenged the theory but found it to be internally consistent. Later, however, I did not determine general relativity to be consistent with special relativity. Special relativity has been considered a unification of mechanics and electrodynamics, and Einstein failed to include general relativity in that unification.

One inconsistency between theories relates to light speed as a conditional limit only of special relativity whereby matter can neither exceed nor even reach. Similarly, light speed is conditional to general relativity inasmuch as it represents a limit at which matter cannot escape from a gravitational field. However, except by Einstein and other physicists, it has been interpreted as reachable for the possible existence of a black hole, and by Big Bang proponents as a singularity whereby all the mass-energy of the universe is assumed to have evolved from a no volume point in space.

A note to the contrary: Stephen Hawking viewed the black hole condition contrary to entropy, the second law of thermodynamics, and he proposed the black hole emit Hawking Radiation.

I proposed to Robert L. Zimmerman, an expert professor of general relativity at the University of Oregon, an addition of gravitational potentials theorem in analogy to the addition of velocities theorem of special relativity. He told me the idea was interesting but that he did not know how to apply it. Although he did not explain why he could not apply it, I have since discovered more complex differences between special and general relativity.

One difference between the theories is relativistic factors of special relativity relate relative space and time conditions directly to relative speed in proportion to constant light speed, whereas relativistic factors of general relativity relate directly to the potential escape speed from the gravitational field instead of to such actual speed as orbital speed in proportion to light speed. General relativity also pertains to gravitational acceleration as relating to change in speed instead of constant speed itself, and light speed is determined as slower in a gravitational field than it is in gravitational free space.

In my book Vacuum Effects (A Tired Light Vacuum Effect Explaining Gravity) available at http://www.bobticer.com or http://www.gravitycauseexexplained.com, I explain how escape speed and orbital speed interrelate. Unique is the fraction one-half, which is also conditional to quantum physics

in that atomic spin of matter is one-half that of electromagnetic radiation, as is visible light, and that of gravitational radiation.

By analysis, gravitational potential in proportion to orbital speed squared is one-half the escape field squared of the gravitational field, but for an escape speed of one-half light speed, light speed itself is reduced to one-half of what it is in gravitational free space. Moreover, additional to relativistic effects of relative motion in the field, clocks in a gravitational field are slower and measuring rods are shorter for a nullified perception of slower speed in the field by its occupants. Since one-half light speed becomes the conditional limit for escape speed instead of gravitational potential, it becomes evident there is possible convergence for unification of theory even though relativistic effects of relative motion in a gravitational field apply additionally.

The primary means of convergence is by way of an invariant. The Pythagorean Theorem provides a simple example. It is of a right triangle whereby the length-squared of the hypotenuse equals the addition of each length-squared of the two perpendicular sides, which is the same for all right triangles with a hypotenuse length of the same length. Invariant is simply convenient for relating variables of theory to a common factor.

The invariant of special relativity is the Minkowski Invariant. A similar invariant of general relativity is the Schwartzschild Metric from which variable light speed is derived. Significantly, if variable light speed of the gravitational field is substituted for light speed of gravitational free space, then its invariant becomes identical in form to the special relativity invariant.

Another invariant form was a matrix provided by Adrien Maurice Dirac in deriving a four dimensional relativistic space-time form of Schrodinger's wave equations that are now interpreted as probability equations of quantum physics. The Dirac Matrix includes a different interpretation of the commutative rule for multiplication, addition and subtraction. Although three plus five equals eight is opposite to either eight minus five equal three or eight minus three equal five, and although three times five equals fifteen is opposite to either fifteen divided by three equal five or fifteen divided by five equal three, there is a positive and negative divide in meaning to further consider. Along with the number i for a negative value of the square-root of one, Dirac matrices allow for the mathematical interpretation of matter and anti-matter. They thus provide additional interpretation of the Minkowski Invariant that was derived by multiplying the result of adding space and time variable to the result of subtracting relative space and time variables. Moreover, since the Dirac matrices include the one-half-spin condition of atomic matter-particles,

they comply with the convergence needed of special and general relativity.

Another factor for unification could be the Hubble Constant whereby more distant light spectrum is seen as red-shifted, as being weaker per distance. Two different explanations of it were originally proposed: either the more distant light sources are receding at a faster rate for an expanding universe or light loses energy as it moves through space. Either way, the Hubble Constant relating as a constant change per light speed at a distance equal to the nuclear diameter within the hydrogen atom appears to equal the ratio of gravitational force to electromagnetic force between the electron and proton. With a factor eight for relating volume ratios of different mass densities, and by dividing the ratio of electron speed to light speed in the hydrogen atom, the ratio of the mass density of the universe to the nuclear density of the hydrogen atom also appears to equal the ratio of gravitational to electromagnetic force between the electron and proton.