

APPLYING THE VECTOR-TENSOR-SCALAR RELATIONSHIP TO THE HIGGS BOSON AND PERIHELION PRECESSION (EXTENDING THE PREVIOUS SUBMISSION TO BOHR-DOM)

Abstract -

The Danish physicist Niels Bohr is reported to have said last century, "Your theory is crazy, but it's not crazy enough to be true." This article reaches a final conclusion that is, in a word, crazy. But the conclusion appears to be inescapable if mathematics has any value. So maybe the article is crazy enough to be true. It speaks of an equivalence between quantum particles and macroscopic objects via the vector-tensor-scalar relationship. That relationship also proposes a supersymmetry between fermions and bosons, explaining the quantum spin of both. Then it addresses the subjects of other large-scale dimensions and negative energy (the masses in other dimensions would be an easy solution to the "dark matter" problem this dimension has). Finally, Archimedes and Kepler combine to show that the vector-tensor-scalar relationship can substitute Earth (when considered as a whole) for the Higgs boson and extend it into the infinite and eternal Unified Field of the Block Universe Albert Einstein believed in.

SECTION 1 -

VECTOR, TENSOR, SCALAR AND THE HIGGS

The following illustration and text will be helpful to many readers in visualizing quantum spin/vector/tensor/scalar (it helped me a lot).

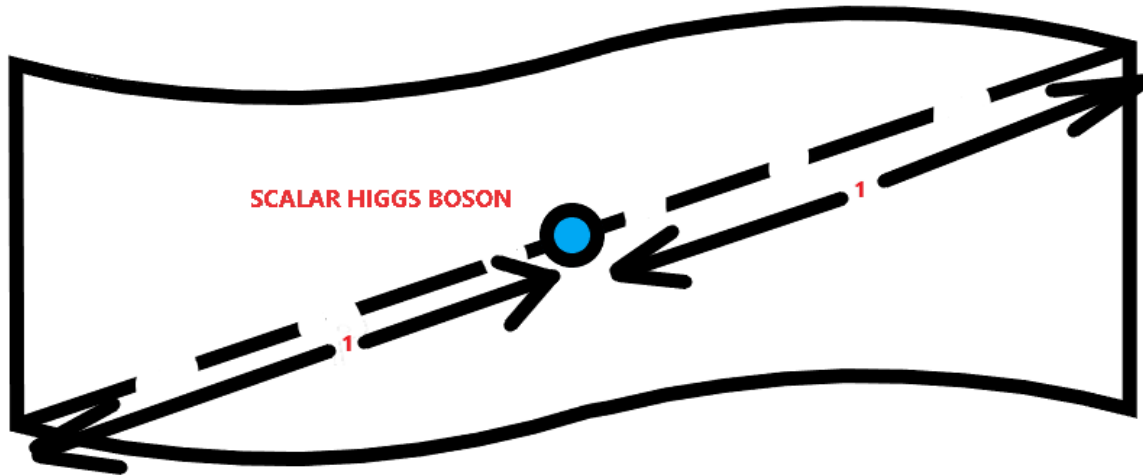


Figure 1 -

VISUALIZING QUANTUM SPIN AND VECTOR/TENSOR/SCALAR QUANTITIES

(drawn by author using Microsoft's "Paint" program)

A **vector** is a quantity which possesses both magnitude and direction. Two such quantities acting on a point (represented by the blue and black Scalar Higgs boson) may be represented by two sides of a parallelogram (one horizontal plus one vertical), so that the resultant diagonal (dashed line) also represents the vectors. The two sides and diagonal thus illustrate the graviton's spin 2 and the photon's spin 1.

When changing from one set of coordinates to another, a **tensor** is a set of functions which are transformed in a precisely defined manner. When changing from the above figure's diagonal to its point (the Higgs), transformation is in the precise manner of the photon revolving once (through 360 degrees) to look the same[^] – illustrated by either of the red 1's in the diagram. The other 1 represents that particle's continuous interaction with the graviton which simultaneously turns through 180 degrees (half a revolution) TWICE. Subtracting 1 from 1 (half the diagonal from its other half) leaves the spin 0 of the Higgs boson.

^ In "A Brief History of Time" by Stephen Hawking – Bantam Press, 1988, pp.66-67. Professor Hawking writes,

"What the spin of a particle really tells us is what the particle looks like from different directions."

Spin 1 is like an arrow-tip pointing, say, up. A photon has to be turned round a full revolution of 360 degrees to look the same.

Spin 2 is like an arrow with 2 tips - 1 pointing up, 1 down. A graviton has to be turned half a revolution (180 degrees) to look the same.

Spin 0 is like a ball of arrows having no spaces. A Higgs boson looks like a dot: the same from every direction.

In this Thought Experiment, 1 is subtracted from 1 to produce the spin of the Higgs boson (0). Visualize a photon's spin as the first 1. Now visualize the continuous interaction of the long-range electromagnetic and gravitational forces in this manner: the photon makes a revolution that affirms its identity. Continuously interacting with the particle of electromagnetism, the graviton completes a second half-revolution and still looks the same (retains its identity). The second half-revolution is the second 1. Together with the first 1 it's subtracted from, it forms the spin 0 of the Higgs boson.

Richard Feynman concluded that antimatter is simply ordinary matter going backwards in time (what is termed "matter-antimatter annihilation" occurs when those particles reverse direction in time). ["Physics of the Impossible" by Michio Kaku (Penguin Books, 2009) - p. 276] The particles and antiparticles involved in annihilation vanish but the mass-energy of gamma-ray photons, neutrinos, and sometimes less-massive particle-antiparticle pairs remains. This matter-antimatter can exist because division can be solved by repeated subtraction e.g. 4 subtracted from 20 five times equals zero, therefore $20 \div 4 = 5$. With energy particles, the photon's revolution minus the graviton's two half-revolutions equals the Higgs boson's zero spin. With matter particles, the graviton's spin is repeatedly subtracted from the photon's spin. This leads to negative values and negative energy (addressed by the following diagram and paragraph), but can also be thought of as photon spin being divided by graviton spin and producing matter particles of spin $1/2$. In other words, photon-graviton interaction forms the emergent property of mass (just as hydrogen-oxygen interaction produces wetness) and the Higgs boson is merely a by-product of the former interaction. The use of $1/2$ in both instances gives the fermions and bosons a form of symmetry. Photon spin is divided by graviton spin in the case of

fermions, and the graviton completes half-revolutions (180 degrees) when speaking of bosons. The result is a **scalar field** - completely described by its magnitude, without direction, and associated with spin-0 particles. It is representable by a position on a line which, in the diagram above, is the central blue and black dot on the diagonal.

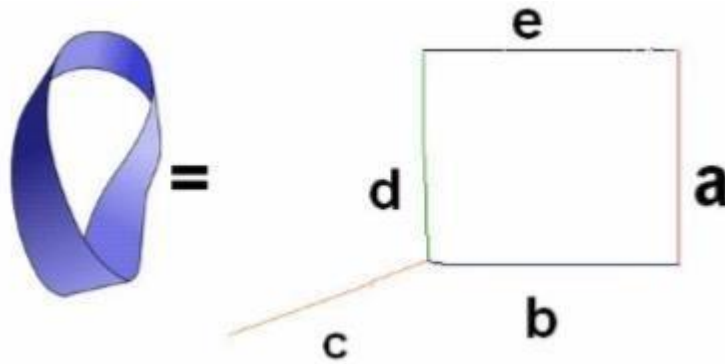


Figure 2 – MOBIUS MATRIX (Mobius equals a,b,c,d,e array)

Width *a* is perpendicular to the length (*b* or *e*) which is perpendicular to height *c*. How can a line be drawn perpendicular to *c* without retracing *b*'s path? By positioning it at *d*, which is then parallel to (or, it could be said, at 180 degrees to) *a*. *d* is already at 90 degrees to length *b* and height *c*. ***d* has to be at right angles to length, width and height simultaneously if it's going to include the Complex Plane's vertical imaginary axis in space-time (see next paragraph: the imaginary realm is at a right angle to the 4 known dimensions of space-time, which all reside on the horizontal real plane).** In other words, *d* has to also be perpendicular to (not parallel to) *a*. This is accomplished by a twist, like on the right side of the Mobius strip pictured above, existing in *a*. The twist needs to be more exaggerated than the illustrated one, with the upper right of the Mobius descending parallel to side "*a*" then turning perpendicular to it at approximately the level of the = sign. Thus, 90+90 (the degrees between *b* & *c* added to the degrees between *c* & *d*) can equal 180, making *a* & *d* parallel. But 90+90 can also equal 90, making *a* & *d* perpendicular. (Saying 90+90=90 sounds ridiculous but it has similarities to the Matrix [of mathematics, not the action-science fiction movie] in which *X* multiplied by *Y* does not always equal *Y* times *X*. The first 90 plus the second 90 does not always equal the second 90 plus the first 90 because 90+90 can equal either 180 or 90. The Mobius Matrix can perform the impossible in another dimension of making (*a*) and (*d*) perpendicular instead of parallel. In a mathematical universe; mass can be at right angles when, according to present ideas, only parallelism should be possible. It's logical that energy can be zero, or

even negative, when – according to present ideas - only positivity should be possible.

SECTION 2 -

FROM RELATIVISTIC PRECESSION TO SUPERSYMMETRY AND INFINITY

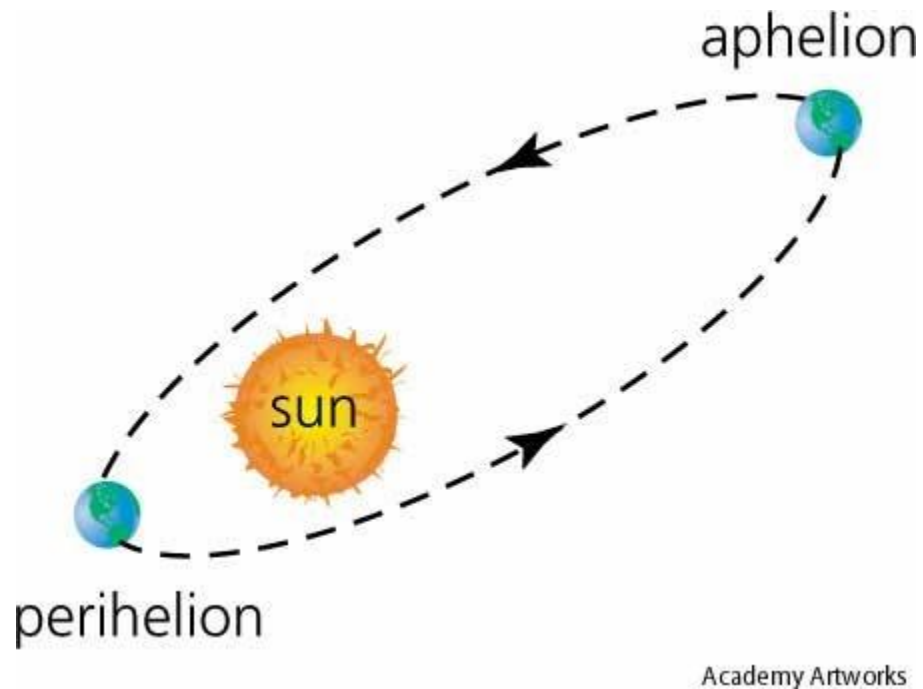


Figure 3 – PERIHELION AND PRECESSION (The difference between perihelion and aphelion is only approx. 3% in reality – it's greatly exaggerated in this illustration. Perihelion [closest point to Sun] is about 147.1 million kilometres [91.4 million miles] in early January – aphelion is about 152.1 million kilometres [94.5 million miles] in early July.)

When Earth is at the position of the **lower arrow**, the gravitational waves from in front of the Sun and from behind the Sun push against it. They cause it to move at right angles to the direction of the force applied against it and obey the law that all the planets precess.^ If motion continued in a straight line, the waves would propel Earth to the right, and further and further from the Sun. But other gravitational waves push against it and cause it to turn a corner, as if it were a bicycle whose rider had leaned to one side

in order to turn a corner. It's now in the **aphelion** location (its farthest spot from the Sun). Throughout its orbit, Earth is pushed by different gravitational waves, going through the positions marked by the **upper arrow** and by the word **perihelion** until it arrives approximately back where it started (the **lower arrow**). The orbit it traces out is always more-or-less centred on the Sun because all the relevant gravitational waves from deep space are being refracted towards the massive Sun's centre (just as some of the waves passing an island are refracted toward the shore by the island's mass).

^ "Precession is the tendency of a gyroscope – basically a spinning wheel mounted in a moveable frame - to move at right angles to the direction of any force applied against it. All the planets precess (though the effect is greatest at Mercury because it's the closest planet to the gravitational force associated with the Sun).

The Greek mathematician Archimedes (287-212 BC) was the first to succeed in calculating the ratio between the diameter and circumference of a circle: pi (π). He did it by drawing two polygons (many-sided figures), one just inside and one just outside the circle so they closely followed the circle's shape, then calculating the lengths of the polygons' perimeters. Between 1609 and 1619, German mathematician / astronomer / scientific astrologer Johannes Kepler developed his 3 laws of planetary motion. The 1st one states that the orbit of a planet around the Sun is an ellipse, not a circle. If the parallelogram of Fig. 1 is converted so it closely follows the elliptical shape in Fig. 3, the vector / tensor / scalar relationship applies to Earth's orbit.

The vector can be the magnitude and direction of the orbiting Earth itself. It and a second vector (Earth 6 months later in its orbit – more about this very soon) are represented by two sides of the parallelogram as well as by the resultant diagonal. The central point cannot be occupied by the Sun – it could if our planet's orbit was perfectly circular – or, since we're now discussing planetary spin and not quantum spin, by the Higgs boson. Being represented by the diagonal, Earth is naturally also represented by the diagonal's central point. In section 1, it became apparent that adding the mathematical objects of vector and tensor resulted in the object termed scalar. Successful conversion of Fig. 1's parallelogram to Fig. 3's ellipse means our planet is also a scalar object. It has magnitude but no direction and, looking back to Section 1, half its diagonal can be subtracted from the other half. This reduces the innumerable spins of particles composing the planet to an aggregate of a boson possessing spin 0. Such particles have no restriction on the number of them that occupy the same quantum state. This lack of restriction is compatible with Earth having no direction. This state is only possible if it has magnitude occupying a literally infinite and eternal amount of space-time, thus having no need of direction and being capable of possessing the same quantum state as any other material or immaterial body (the former would

similarly reduce the innumerable spins of particles composing them to an aggregate of a boson possessing spin 0). Occupying all time, vector-1 Earth must be united with vector-2 Earth (the one existing 6 months later in its orbit).

This unified field – of all Earths being united with all others, and of everything in the universe being reduced to a spin 0 boson - may compose the "block universe" Einstein believed in: a four-dimensional (3 of space + 1 of time) block of space-time containing all the past, and the entire future. Within such a cosmos, knowledge would do more than increase from what was known in the past to what will be known in the future. It could also loop back to previous times, resulting in insights into reality that wouldn't be fully appreciated for hundreds or even thousands of years. So although we only see one Earth; it's within the realm of possibility that it, and everything else, is not finite but is infinite and superposed and actually existing in more than one place - even everywhere in spacetime. The condition of everything being infinite, superposed and existing everywhere/everwhen in space-time completely removes the need for any kind of expansion. It sounds very strange because every object and event anywhere in space or time would be entangled with and capable of affecting any other object/event. However, it might add some common sense to quantum mechanics which has been repeatedly verified by experiment but makes no sense at all if we cling to the notion of finite, separate objects and events.

A model of the cosmos might be built that uses π and imaginary time, and resides in Virtual Reality (an artificial, computer-generated simulation or recreation of a real life environment or situation). Entanglement in the simulation is unable to remain separate from the quantum-mechanical and macroscopic entanglement existing in our perceived reality because imaginary time removes all boundaries between the two universes. They naturally merge, influencing each other and becoming one Augmented Reality (a technology that layers computer-generated enhancements atop an existing reality in order to make it more meaningful through the ability to interact with it). The poorly-named imaginary time of physics and mathematics unites with π (both are necessary to generate an infinite universe - alone, unbounded imaginary time is finite).
