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Communication

Wick Rotation: Implications for Quantum Spin and Dark Matter

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In addition to the 4 known dimensions on its x-axis (length, width, height, time), Wick rotation's vertical y-axis could describe "imaginary space" and "imaginary time".

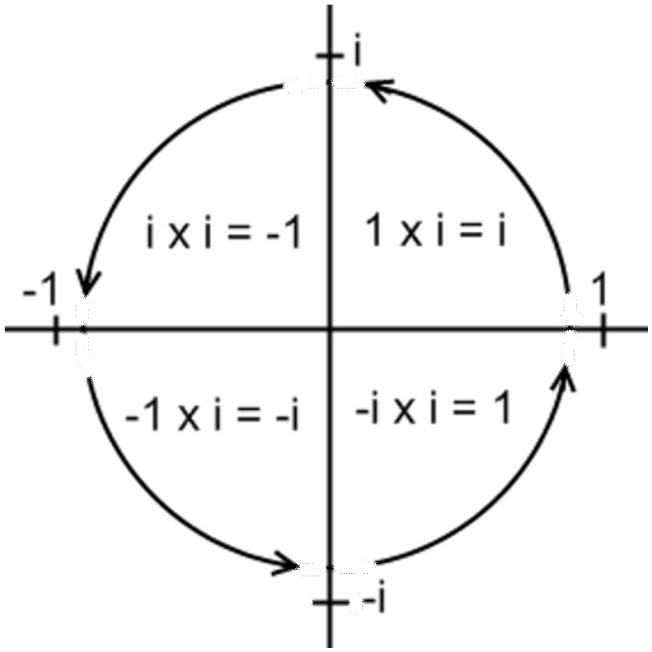

Figure 1: WICK ROTATION: "The complex plane reveals i's special relationship with cycles via the circle of i, also known as Wick rotation. Whenever a point on the complex plane is multiplied by i, it moves a quarter rotation around the origin or center of the plane.[1]" Max Planck assumed that electromagnetic radiation can only be emitted or absorbed in discrete packets, called quanta. He thought of his discovery as nothing more than a math device...a kind of trickery. Einstein developed his explanation of the photoelectric effect from this "mathematical convenience". So it appears possible that another supposed mathematical trickery (Wick rotation) will find practical application in the future

Imaginary space-time would be described by so-called imaginary numbers like i^2 = -1 and would represent the 5^{th} and 6^{th} dimensions. A modified view of dark matter is suggested here, in which imaginary space is not five dimensional but only one-dimensional. In that case, it wouldn't't be comprised of particles or have the 3 dimensions of familiar space. It would be one-dimensional (1D) like the binary digits. Referring to Einstein's 1919 paper,

which asked if gravitation and electromagnetism play a role in formation of elementary particles (and then undiscovered nuclear-force bosons), there would be no mass-producing interac-tion of those waves in imaginary space [2] Wick rotation would symbolize BITS rotating from the y-axis to the x-axis to form fermions and bosons. After fermions and bosons are produced on the horizontal x-axis of "real" space-time, the upper right quadrant of the Figure refers to those particles being broken down into BITS again. This is possible because of the Electric Dipole Moment. Just as electrolysis splits water into hydrogen and oxygen, the inherent EDM that can theoretically exist in every particle allows particles to be reverse engineered and become photons and gravitons, and finally the ones and zeros resulting from electrical pulses. The BITS may be thought of as modified dark matter, and the electric EDM currents as modified dark energy which would be added to the mass-energy of orbiting stars in a galaxy's outskirts to prevent their flying off into space.

Building on a book by Massachusetts Institute of Technology professor Max Tegmark detailing his Mathematical Universe Hypothesis [3], this is how Einstein's mass-production could work. The one-dimensional (1D) binary digits (bits) of one and zero, used in electronics, encode the 2D Mobius strips, which are viewed on the Internet and, according to this article, incorporate temporal Wick rotation (forming the 4^{th} dimension of time). A couple of Mobius strips pair-up to form a figure-8 Klein bottle (Mobius Doublet) [4] which is immersed in 3D - trillions of strips and bottles respectively produce photons and gravitons, which use Einstein's 1919 paper to interact and form the pressure known as mass - and quantum spin - of both massive electron, quark, Higgs/nuclear-force bosons, etc and the massless gluon. Examples of the quantum spin of particles based on photon spin = 1 and graviton spin = 2:
a) Photon divided by graviton = spin 1/2 of all matter particles;
b) Graviton divided by photon = spin 2/1 which may be responsible for the intense gravity of black holes;
c) Using time reversal in case of graviton: 1 + 2 - 2 = spin of nuclear-force bosons. It also equals photon spin - establishing a link between gravitation's spin 2, electromagnetism, and the nuclear forces;
d) The Higgs boson's spin zero can be arrived at through (1 - 2) + 1 which uses the experimental interpretation of a photon existing in two places simultaneously (it uses the graviton's spin 2 being taken away from the photon's spin 1, and the spin motion of 1 being in more than one place at the same time).
A 2017 paper says all of the information in the universe is contained in two-dimensional packages trillions of times smaller than an atom (in this case, the 2D package is the Mobius Strip) [5].

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