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Topological Geometrodynamics

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January 16, 2017

Topological GeometroDynamics (TGD) [1, 2] solves the energy problem of General Relativity (GRT) [3, 4]. Poincare symmetries of Minkowski space (M^4) are lost in curved space-time and Noether's theorem cannot be used to deduce basic conservation laws. In TGD space-time as an abstract 4-geometry is replaced with 4-surface $X^4 \subset M^4 \times CP_2$. Poincare symmetries of M^4 act on X^4 like rigid body rotations and remain symmetries.

Besides Relativity Principle (RP) of SRT, General Coordinate Invariance (GCI) and Equivalence Principle (EP) of GRT hold true. Strong form of holography (SH) is a further principle reducing to strong form of GCI (SGCI). SH states that X^4 and quantum states are coded by data at 2-D string world sheets and partonic 2-surfaces meaning a close relation to string models.

Geometrization of physics applies to entire quantum theory [5]. The arena of dynamics is "World of Classical Worlds" (WCW) identified as space of 3-surfaces by SH equivalent with space of preferred extremals X^4 of basic action S_K. WCW has Kähler geometry: Kähler function is determined by $S_K(X^4)$. Quantum states correspond to WCW spinor fields and WCW spinors to Fock states for second quantized induced spinor fields at space-time surface. Fermi statistics is geometrized.

Physics as generalized number theory [6] is second aspect of TGD involving p-adic physics for various primes p serving as correlates for cognition and fused with real physics to "adelic" physics.

Quantum measurement theory extends to a theory of consciousness and cognition [7]. Observer - self - becomes part of physical system. Quantum biology becomes part of fundamental physics and consciousness and life are seen as basic elements of physical existence. Experienced time and geometric time are not one and same thing anymore albeit closely related.

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References

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