

The Aikyon Theory

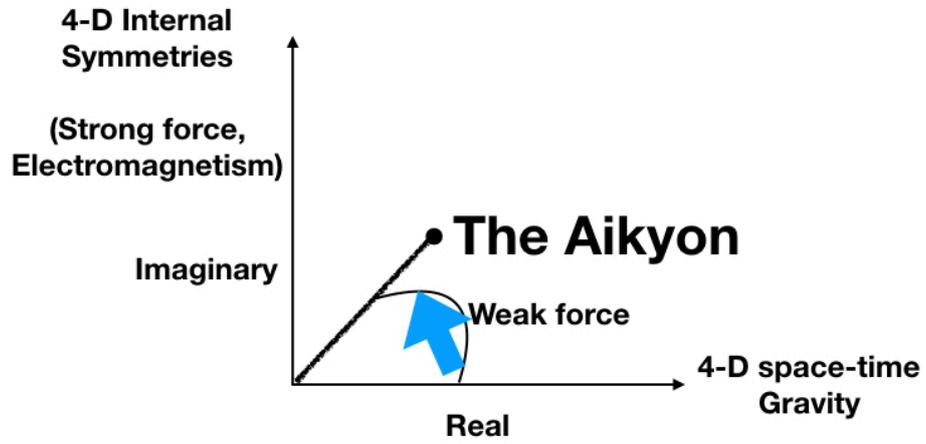
[The word Aikyon derives from 'Aikya' in Sanskrit, which means 'oneness'. To not make a distinction between space-time and matter].

At the Planck scale, there is no distinction between space-time symmetry and internal symmetry. Physical space is eight dimensional non-commutative octonionic space. One can imagine it as a 2-D complex plane, where the real axis represents 4-D to-be-spacetime, and the imaginary axis represents 4-D to be internal symmetries. The aikyon is an elementary particle, say an electron, *along with* the fields it produces. We do not make a distinction between the particle and the fields it produces. This is evident from the form of the action for an aikyon, shown below: variables with subscript B stand for the four known forces, and those with subscript F for any of the 24 known fermions of the three generations of the standard model. The Lagrangian is unchanged if B and F variables are interchanged. This is super-symmetry. And since the B-variables include both gravity and gauge-fields, there is a gauge-gravity duality.

The aikyon evolves in this 8-D space in Connes time. The aikyon is a 2D object, as if a membrane [2-brane]. Motion along the real axis is caused by gravity, along vertical axis by electro-colour force, and from real to imaginary by the weak force. Or we can just say, the aikyon moves in the 8D space under the influence of the unified force, given by the B-variable in the action.

There is one such action term for every aikyon in this space. Different aikyons interact by 'colliding' with each other. The coordinates of this 8D space are the eight components of an octonion. Algebra automorphisms transform one coordinate system to another. These are the analog of general coordinate transformations of general relativity and internal gauge symmetries of gauge theories, and hence unify those concepts. The theory is invariant under 8D algebra automorphisms. And because the laws of motion are those of trace dynamics, this is already a quantum theory.

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$$\frac{S}{C_0} = \frac{1}{2} \int \frac{d\tau}{\tau_{Pl}} Tr \left[\frac{L_p^2}{L^2} \left(\ddot{\tilde{Q}}_B^\dagger + \frac{L_p^2}{L^2} \beta_1 \ddot{\tilde{Q}}_F^\dagger \right) \left(\ddot{\tilde{Q}}_B + \frac{L_p^2}{L^2} \beta_2 \ddot{\tilde{Q}}_F \right) \right]$$