Establishing a minimum measurement boundary for the coupling of charged potentials eliminates the need for gluon fields.

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Abstract:

In our last investigation into the symmetries associated with Markovian and Bayesian time operators, we demonstrated how the implementation of rules for measurement at the horizon of a black hole could model sources of synchrotron and x-ray radiation in the inner accretion zone. In this brief exercise, we demonstrate how relative potential can act at the quantum scale. We use the same approach that was used at the horizon of a black hole to create an equivalency to the Quantum Chromodynamics (QCD) running coupling constant. We show that, by treating the running coupling constant as the minimum measurement boundary for the coupling of charged Lorentz invariant potential, we can eliminate the need for gluon fields.

Introduction

The standard theory of strong and weak coupling has withstood the shattering blows delivered at the LHC and verified many of the predictions associated with high-energy particle theory[1,2,3,4,5,6,9,10]. Explorers of the limits to experimental measurement, have matched the power that exists in the interior of stars and tightened the measurement parameters for all particle theories[16]. Perhaps the greatest contribution of the experiments at the LHC are the tightening of the boundaries of acceptable measurement. The experiments at the LHC have confirmed the existence of many predicted particles[1,2,3,4,5,6,9,10], however, as we proved both logically and rigorously in our most recent papers on the nature of measurement; *the strong force and the electroweak "forces" can no longer rely on smooth approaches to zero and must establish minimums for measurement*. In fact, all the forces of the SM based on zero-point energies must meet the minimum requirements for measurement in real space. Electroweak theory fits the minimum for measurement, because renormalization of the theory is based on the same Nambu-Poisson symmetries we use to construct our model. QCD, however, fails this test of minimum measurability. Dependence on zero point energies, represented by gluon fields and field tensors[1,2,3,4,5,6,9,10], is not allowed for a system defined by real measurement. However, in our model, we can use a center of least time to equate to the actions of zero point energies created by smooth approaches to zero. *To create a minimum measurement, for QCD gluon fields, we need to establish the minimum action. That action is coupling*. To equate our model to QCD, *we treat the running coupling constant as a relative time operator for the coupling of charged potentials*. In the next section, we shall show how these dynamics are already built into the same equation that we used to describe the dynamics at the horizon of a black hole.

Method

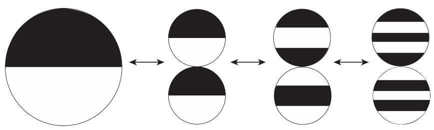
Rather than referring back to multiple papers, we introduce the term Quantum Statistical Dynamics (QSD) to refer to our rules for measurement, and the symmetry between quantum and relative time operators. In this exercise, we use the QSD toolkit to create an equivalency to the actions of the gluons that make up the standard model. In fact a simple equivalency to QCD is already built into our original equation:

$$-\{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_n)\ \} = \{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_\psi)\}$$

As you can clearly see, the Hamiltonians in this equation represent measurement boundaries for coupling attached to time operators. The strong force and the running coupling constant, can also modeled as measurement boundaries for coupling attached to time operators. We equate the running coupling constant to a relative time operator driven by individual quantum potentials representing the coupling of the various particles in the standard model. Individual quantum time operators are related to scale and mass of each measured particle within the overall relative wave function:

$$-\{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_n)\ \} = \left\{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_{Q_\psi})\right\}$$

As we demonstrated, in our model at the horizon of a black hole, the separation of Markovian and Bayesian boundaries creates a measurement boundary for charged and uncharged potentials. Charged potentials, including all three charges, are required to be on the Bayesian side of the equation bounded by binary quantum potential. We can demonstrate the dynamics of coupling by using a simple diagram(fig.1).Wave functions can be derived from these spherical potentials in two ways; either through Fourier transformation or an equivalency to Weyl harmonics[11,12] on a sphere. Both charged and uncharged potentials can be represented using opposing Berry circuits[13,14,15] mapped to the surface of a sphere:



$$-\{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_n)\ \} = \left\{\mathcal{H}_{sin}, \mathcal{H}_{cos}, f(t_{Q_\psi})\right\}$$

Fig.1- Geometric representation of coupling dynamics

As you can see we have created a simple geometric translation of the dynamics of our basic separation of time operators. Odd dynamics represent charged potentials and a wave-based time operator. *In our model, all charged particles are required to be paired in order to be in symmetry with uncharged quantum potential*. Coupling is a boundary condition for all charged mass in order to maintain this symmetry (Fig.1). Polarity, current, spin, angular momentum and Coulomb potentials must also be conserved for all charged potentials[14]. All of these Lorentz invariant coherencies are conserved through coupling(Fig.2).

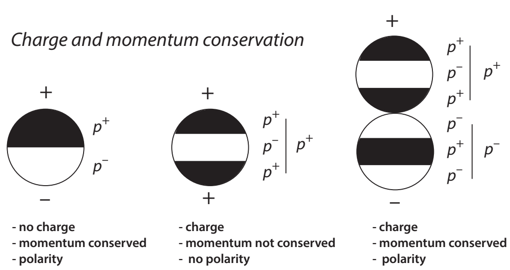


Fig.2- Polarity, current, spin, angular momentum and Coulomb dynamics must be conserved for all charged particles. Conservation of these Lorentz invariant boundary conditions is accomplished through coupling.

The strong nuclear force can be equated to a measurement boundary for the coupling of charged Lorentz-invariant potentials. As we pointed out in our last paper this measurement does not require observers. We can model the same dynamic without gluon fields by simply representing the running coupling constant as a relative measurement boundary condition for the coupling of charged Lorentz-invariant potentials. This allows us to equate to all the actions of the strong "force" without a smooth approach to zero or zero-point energies.

Discussion

The strong force is a measurement of coupling. Experiments at the LHC have only served to tighten the limitations for this basic restriction for all particles. In this application, of minimum boundary conditions for measurement, we demonstrated that *coupling is the minimum measurement for all charged potentials* based on conservation of charge, spin, angular momentum, current, polarity and Coulomb laws. Establishing a minimum for the measurement of these conserved values allows us to equate our model to the QCD running coupling constant. *We use the same equation to equate to the running coupling constant that we used, in our last paper, to describe the boundary conditions at the horizon of a black hole*.

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[16] *Many experimental and theoretical developments at the LHC confirm the actions of the strong force and the running coupling constant. The experimental confirmations are actually too numerous to list here. Suffice it to say, that the QCD running coupling constant is still a valid measurement for high energy measurements of particle coupling parameters done at the various LHC experiments.*