Thomas McCarty

Strongly Coupled SU(2) QCD

Abstract

Soliton like solutions are constructed for the totally antisymmetrized gluons and quarks of strongly coupled SU(2) QCD when the diagonal gluons with respect to their vector and color indices have vacuum expectation values. The Gauss law equations are also analyzed as they are broken up into their static and time dependent components. The strong coupling analysis is carried out by using envelope functions whose numerators solve the linear parts of the equations of motion and the denominator function are constructed to approximately solve the dominant and cubic interactions of QCD. The solutions of the color electrostatic potentials are real exponential in their spatial arguments and thus dominate the cubic and quadratic interactions of the gluons. The denominator functions are designed to solve and tame or reign in these exponential functions of the electrostatic fields and thus denominator of the quarks and gluons can be thought of as electric flux envelopes.