

Point Form QCD

The structure of point form quantum field theory is used to analyze the QCD vacuum and bound state problems. An algebra of operators formed from quark, antiquark, and gluon creation and annihilation operators is used to generate a total four momentum operator, which includes the gluon self coupling terms. The vacuum is then the Lorentz invariant state which is annihilated by the four-momentum operator. Such a state is obtained from the generalization of the coupled-cluster technique, familiar from nuclear physics. Several model calculations will be presented which indicate the general nature of the vacuum and bound states.