Interpolating 't Hooft Model between the Instant Form Dynamics and the Light-Front Dynamics[1] BAILING MA, CHUENG-RYONG JI, North Carolina State University — The $1 + 1$ dimensional QCD in the large N_c limit, known as the 't Hooft model, exhibits confinement as well as mass gap phenomena. It was originally formulated in the Light Front Dynamics (LFD), and utilizing the simplifications of the LFD formulation, such as the boost invariance, 't Hooft was able to solve the model even analytically. Since then, it was formulated also in the Instant Form Dynamics (IFD) and later on solved numerically in the moving frames of the meson. In this work, we reformulate the 't Hooft model in the quantization form interpolating between the LFD and the IFD. Introducing an interpolation angle parameter, δ, we connect the ordinary IFD formalism with the LFD where the vacuum structure is very distinguished. We present the single quark's mass gap equations, along with their solutions, before showing the quark-anti-quark bound state equations. While the bound state equation depends on the dynamical forms, the mass spectra of the mesons solved from it turn out to be independent of the value of δ as expected. We present the solutions of the meson mass spectra, as well as their wavefunction solutions in different interpolating forms.

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