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Interpolation method from instant form to the light-front dynamics

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As is well known, it is difficult to compute quantities defined on the light-front in a lattice approach, since the light-front dynamics is strictly in the Minkowski space, while the lattice formulation is in the Euclidean space. I will introduce a method to connect the light-front dynamics (LFD) to the ordinary instant form dynamics (IFD), which is called the interpolation method. By having an angle parameter called the interpo- lation angle, denoted as δ, which runs between $0\circ$ and $45\circ$, we can unify the IFD and LFD formalisms into one. Letting $\delta \longrightarrow 0$ gets back to the IFD, and properties of the LFD are recovered by letting $\delta \longrightarrow \pi/4$. The light-front zero mode issues can be examined by studying the limit of $\delta \longrightarrow \pi/4$. In this talk, I will present the quasi-PDFs in 't Hooft model (large Nc QCD in 1+1 space-time dimensions), obtained by solving the Bethe-Salpeter equation numerically in a general interpolation form. I will compare the results of letting δ get close to $\pi/4$, versus boosting to a large momentum in the instant form.

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