

Interpolation between the instant form and the front form of relativistic dynamics

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The instant form and the front form of relativistic dynamics proposed by Dirac in 1949 can be linked by introducing an interpolating angle. The instant form dynamics (IFD) provides a traditional approach evolved from non-relativistic dynamics and makes a close contact with Euclidean space developing time-dependent quantum field theory, lattice QCD, etc. The front form dynamics, now known as the light-front dynamics (LFD), however, works strictly in Minkowski space and provides useful frameworks to study deep inelastic scattering, parton distribution functions, deeply virtual Compton scattering, generalized parton distributions, etc. We present the recent development of the interpolation between IFD and LFD and discuss ramifications from this development.