

Relativistic Quantum Invariance

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The invariant nature of the relativistic quantum field theories such as QED and QCD is discussed with the idea of interpolating the instant form dynamics (IFD) and the light-front dynamics (LFD). Reviewing the connection between LFD and IFD, one can learn the distinguished features of each form and how one may utilize those distinguished features in solving the complicate relativistic quantum field theoretic problems more effectively. With the ongoing 12-GeV Jefferson Lab experiments, the internal structures of the nucleon and nuclei are vigorously investigated in particular using the physical observables defined in the LFD rather than in the IFD. Why and how the LFD is more advantageous than the IFD for the study of hadron physics is illustrated with explicit examples of the interpolation in QED and QCD.