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Exploring the Dyson-Schwinger equations and the pion in Minkowski

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In recent years, significant efforts have been developed to formulate and solve the Bethe-Salpeter and Dyson-Schwinger equations (DSE) directly in Minkowski space, in contrast to the usual procedure of formulation in the Euclidean space and subsequent extension to Minkowski space, which is the approach used in lattice gauge theories. In this talk, the solution for the Dyson-Schwinger equation (DSE) in Minkowski space for the quark propagator in a QCD-inspired model is presented, with a focus on the realization of dynamical chiral symmetry breaking (DCSB) in the large coupling regime. It will be shown that this simple model offers the possibility of the exploration of many different physical problems, such as the chiral symmetry breaking region, and could provide a phenomenological model for the pion, its observables, and momentum distributions.

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