Contribution ID : **32** Type : **QCD and Hadrons**

Charged Meson Form Factors at Jefferson Lab Hall C

Thursday, 11 February 2021 13:30 (15)

Quantum Chromodynamics (QCD) is the accepted theory of the strong force between quarks and gluons and in recent years many successful predictions have come out of perturbative QCD (pQCD). However, pQCD is restricted by the running coupling constant α_s, so at lower energies a problem arises where the predictions of pQCD no longer apply. While QCD-based models attempt to understand this region, they must be guided by experiment. Thus, many open questions remain: How does QCD transition between the perturbative (weak) and non-perturbative (strong) regimes? What predictions does QCD make for hadronic structure? How do other properties of hadrons, such as mass and spin, arise from QCD? In order to help answer these questions, the form factors of charged mesons, specifically the π^+ and K^+, are ideal candidates as they are relatively simple systems for theory to predict and are accessible experimentally. As the Goldstone bosons of the strong interaction, they are also seen as key to understanding some properties of QCD, such as Dynamic Chiral Symmetry Breaking (DCSB), which is the mechanism believed to generate >98% of the visible mass in the universe. This talk will give an overview of the effort to study the π^+ and K^+ form factors at Jefferson Lab, as well as a quick overview of the facilities at Jefferson Lab and Hall C.

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Please select: Experiment or Theory

Experiment

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