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Nucleon Structure on the Light-Front

CHRISTIAN WEISS, Thomas Jefferson National Accelerator Facility

The light-front (or partonic) view of relativistic dynamics enables a description of hadrons as composite many-body systems that shows many analogies with traditional few-body systems (atoms, nuclei). It defines the spatial structure of hadrons and allows one to study the space-time evolution of strong and electromagnetic processes. Light-front methods represent an essential tool in the theory and phenomenology of nucleon structure and are used both in QCD and in formulations based on effective degrees of freedom. In this talk we explain the physical picture and highlight several novel applications. This includes (a) the transverse charge and current densities measured in elastic eN scattering and their interpretation; (b) the study of peripheral spatial nucleon structure using chiral effective field theory; (c) resonance structure on the light-front; (d) the mapping of the spatial distributions of QCD quarks and gluons (Generalized Parton Distributions, or GPDs) in the nucleon using exclusive processes at multi-GeV momentum transfer.