

Probing the Strange Sea Quarks with Kaon SIDIS

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It is well known that protons and neutrons are made from constituents, called quarks and gluons, which give substructure to these particles. The goal of this project is to make measurements of the spatial distributions and the momenta of the quarks that provide a three-dimensional map of quarks in the nuclear medium. This knowledge provides the basis of our understanding of nuclear matter in terms of the dynamics of their internal constituents. This abstract focuses on the study of the contribution of the sea quarks and in particular of the strange sea to the proton spin structure. This study is feasible with semi-inclusive deep inelastic scattering of electrons off proton and deuteron targets in Hall B at Jefferson Lab. To achieve the desired precision, a Ring Imagine CHerenkov (RICH) detector was built so pion, kaon and proton identification is well performed in the momentum range of 3 to 8 GeV/c. The experimental method and projected precision of the measurements of the parton distributions using Kaon SIDIS will be discussed and the status of the recently built Hybrid RICH detector will be presented.

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RICH Collaboration of Hall B of Jefferson Lab

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