

Abstract Submitted
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Optimization of Experiment Detecting Kaon and Pion Internal Structure¹ JACOB WACHT, George C. Marshall High School — Pions and kaons are the lightest two-quark systems in Nature. Scientists believe that the rules governing the strong interaction are chirally, symmetric. If this were true, the pion would have no mass. The chiral symmetry is broken dynamically by quark-gluon interactions, giving the pion mass. The pion is thus seen as the key to confirm the mechanism that dynamically generates nearly all of the mass of hadrons and central to the effort to understand hadron structure. The most prominent observables are the meson form factors. Experiments are planned at the 12 GeV Jefferson Lab. An experiment aimed at shedding light on the kaons internal structure is scheduled to run in 2017. The experimental setup has been optimized for detecting kaons, but it may allow for detecting pions between values of Q^2 of 0.4 and 5.5 GeV². Measurements of the separated pion cross section and exploratory extraction of the pion form factor from electroproduction at low Q^2 could be compared to earlier e-pi scattering data, and thus help validating the method. At high Q^2 , these measurements provide the first L/T separated cross sections and could help guide planned dedicated pion experiments. I will present possible parasitic studies with the upcoming kaon experiment.

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