

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Exploring the Hadron Structure through Meson Electroproduction¹ SALINA ALI, MARCO CARMIGNOTTO, TANJA HORN, Catholic University of America — Meson form factors play an important role in our understanding of the lightest mesons on the basis of Quantum Chromodynamics (QCD). They provide a scale independent measurement of the transition from non-perturbative to perturbative degrees of freedom. The pion form factor is well known up to $Q^2 = 0.3 \text{ GeV}^2$ through elastic scattering. However, to get to larger Q^2 values, one needs to use the pion electroproduction method. The E12-09-011 experiment at 12 GeV Jefferson Lab aims to test the expected approach of the hard scattering regime through precision measurements and the relative contributions and kinematic dependencies of the longitudinal and transverse cross sections. Although E12-09-011 is a designated kaon experiment, the setup will also allow for detecting pions in parallel. Extracting the pion form factor from E12-09-011 would allow for consistency checks of the electroproduction method at low Q^2 and experimental checks of the reaction mechanism. This can also allow one to obtain a real pion rate from kinematics that currently rely on models for estimating uncertainties. In my talk, I will present the current status and discuss the outlook on future studies of light quarks with pion production, particle identification requirements, systematic uncertainties and potential pion form factor extractions at 12 GeV Jefferson Lab.

¹Supported in part by NSF grants PHY1306227, PHY1306418 and PHY1530874.

Salina Ali
Catholic University of America

Date submitted: 29 Jun 2017

Electronic form version 1.4