Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Weak Neutral-Current Axial-Vector Form Factor and Neutrino-Nucleon Scattering DAVID RICHARDS, RAZA SUFIAN, Jefferson Lab, KEN-FEI LIU, University of Kentucky — We perform a phenomenological analysis, where we combine a calculation of the strange quark electromagnetic form factor from lattice QCD with (anti)neutrino-nucleon scattering differential cross section data from MiniBooNE experiments to determine the weak axial-vector form factor $G_A^Z(Q^2)$. We show that the precise value of $G_A^Z(0)$ obtained from the lattice calculation greatly improves the precision of the form factor extraction. Finally, we show that a consistent determination of the form factor from neutrino and anti-neutrino scattering data requires a non-zero contribution from the strange quark EM form factor in the neutral current scattering process.

David Richards
Jefferson Lab

Date submitted: 08 Aug 2019 Electronic form version 1.4