

SES17-2017-020010

ET

Abstract for an Invited Paper
for the SES17 Meeting of
the American Physical Society

Nucleon Tomography

LATIFA ELOUADRHIRI, Jefferson Lab

A fundamental challenge of modern nuclear physics is to understand the structure of the constituents of nuclear matter, protons and neutrons. The 12 GeV Upgrade of the Continuous Electron Beam Accelerator Facility (CEBAF) at Jefferson Lab and the construction of state-of-the-art detector systems make it a unique facility in the world to address this challenge. Electron scattering is a superb experimental tool to study the internal structure of nucleons at differing distance scales, as the resolving power of the probe can be varied. The Generalized Parton Distributions (GPDs) provide the theoretical framework to interpret the experimental data. The CLAS12 detector and continuous wave electron beams of up to 12 GeV energy will enable a collaboration of users' community from all around the world to perform precise exclusive experiments in a large kinematical regime to effectively engage in nuclear imaging, revealing hidden aspects of its internal structure, and providing insight into quark confinement forces in the nucleon. I will review the landscape of both theory and experiments, and describe the new equipment with a focus on the approved science program for the CLAS12 detector, which will provide a unique capability to study 3D nucleon imaging.