High Energy Nuclear Physics With Spectator Tagging



Monday, March 9, 2015 - Wednesday, March 11, 2015

Old Dominion University

Scientific Program

High-energy electron scattering from light nuclei (deuteron, helium) is a powerful tool for exploring the partonic structure of the neutron, short-range NN correlations in nuclei, and the nuclear modification of quark/gluon densities. The reach and precision of such experiments can be greatly increased by detecting the low-momentum nucleons produced by the breakup of the nucleus in the high-energy process ("spectator tagging"). A rich program of tagged electron scattering is planned in fixed-target experiments with the JLab 12 GeV Upgrade, and in polarized colliding-beam experiments with a future Electron-Ion Collider (EIC). Such measurements pose unique challenges both for experiment (detection of low-momentum nucleons, energy/momentum resolution) and theory (nuclear structure calculations). The workshop brings together researchers in high-energy electron scattering, nucleon spin physics, nuclear theory, and accelerator physics, to review the status and prospects of spectator tagging and discuss the strategy for measurements with JLab 12 GeV and EIC.

Topics include:

Neutron partonic structure with spectator tagging (deuteron, 3He) Short-range NN correlations and high-momentum configurations Tagging non-nucleonic degrees of freedom Nuclear modifications of quark/gluon densities Small-x coherent phenomena in tagging Tensor-polarized deuteron Light-front structure of light nuclei Spectator tagging with JLab 12 GeV (BoNuS, Halls A/C) *Spectator tagging with EIC (forward detection, IR design, polarization)