SOCIETY OF PHYSICS STUDENTS (SPS) SEMINAR

The Hadron-Blind Ring-Imaging Cerenkov Detector

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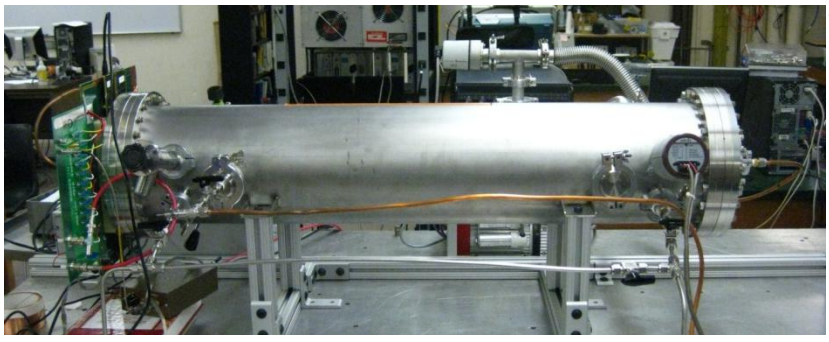
High-energy nuclear collision experiments use a combination of tracking detectors and calorimetry to form large momentum and energy spectrometers that identify and track particles after a collision. Particle identification at higher energies where the particle's mass is negligible in comparison with the particle's total energy becomes increasingly difficult as the particle's velocity approaches the speed of light. These spectrometers must evolve as the physics criteria advances such as in the case of the proposed Electron Ion Collider (EIC). The EIC's beam energies, required to probe the mysteries of the exploding gluon density at low parton momentum fraction and the hypothesized color glass condensate, will produce hadrons that leave the collision site at up to 100 GeV. A ring-imaging Cerenkov detector is being developed for this tricky particle identification, which uses a CsI photocathode, Gas Electron Multipliers (GEMs), and a MgFl coated spherical mirror to detect and focus Cerenkov photons. These photons and the rings they trace are the key to particle identification in this energy regime. Results from the construction tests and beam tests of a prototype will be presented, including the detector's response to 7 GeV electrons from the Stanford Linear Accelerator and 20 GeV, 25 GeV, and 32 GeV positively-charged hadrons from the Fermilab M-Test facility



WHERE: SR – 151

WHEN: Noon

Thursday,

March 20, 2014

Pizza and Soda are provided!