Contribution ID: **202** Type: **Oral Presentation**

Capabilities of Accelerator Beam Lines in Research and Development at Necsa

Friday, 15 July 2011 11:00 (15 minutes)

<p>P-LABS at Necsa consists of two linear particle accelerator facilities; a Van de Graaff with terminal potential up to 4 MV and two radio frequency quadrapole (RFQ) accelerator systems that can accelerate D+ ions to 3.7 - 5.1 MeV (or protons to 1.8 – 2.5 MeV). Depending on the beam target used these accelerators can produce fast neutrons (and associated gamma rays) at a rate of $10^6 - 10^12n/cm^2/s$.

One can utilize the high penetrative nature of the fast neutrons as well its ability to distinguish between different elements, to conduct radiography and tomography on samples. These fast neutrons can also be used to conduct time of flight analysis. One can also utilize the associated gamma rays together with the fast neutrons for material identification and non destructive testing including identification of threat material within cargo. Utilization of the Monte Carlo Neutral Particle code (MCNP) is also done to simulate the facility and experiments beforehand. Some of the techniques currently being investigated will be presented here.

Level (Hons, MSc,
   PhD, other)?

MSc

Consider for a student
   award (Yes / No)?

Yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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Session Classification: NPRP

Track Classification: Track B - Nuclear, Particle and Radiation Physics