Contribution ID: **256** Type: **Oral Presentation**

Comparison of neutron fluence spectra measured with NE213 proton recoil spectrometer and NE230 deuteron recoil spectrometer

Friday, 12 July 2013 10:30 (20 minutes)

Abstract content
   (Max 300 words)

Measurements and detail knowledge of neutron fluence spectra are required in research and application. In application such as neutron radiotherapy, neutron fluence spectra in and near the treatment area is required for characterization of the quality of radiation and determination of absorbed dose. These fluence spectra can be measured or calculated.
Recoil spectrometry with time of flight is used to measure the fluence spectra; in particular the NE213 proton recoil spectrometer with time of flight is used widely and is well established. However, in water phantom (a simulation of a human tissue) recoil protons from the water causes distortions in the measured fluence spectra, a way to overcome this is to use a deuterated organic liquid scintillator NE230 which is based on deuteron recoil.
Experiments were carried out at the neutron beam facility at iThemba LABS in Cape Town. Neutron beams of energies up to ˜64MEV were produced by bombarding either Li (1.0mm), Be (10.0mm), or C (10.0mm) targets with 66MeV protons from the separated sector cyclotron. Neutron fluence measurements were carried out separately with either NE213 or NE230 scintillation detectors, using time of flight methods. Preliminary results will be presented and discussed.

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yes

Level for award
 (Hons, MSc,
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MSc

Main supervisor (name and email)
and his / her institution

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Would you like to <br> submit a short paper <br> for the Conference
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No

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Session Classification: NPRP

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