Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Neutron generator yield measurements using a phoswich detector with the digital pulse shape analysis ALEXANDER BARZILOV, IVAN NOVIKOV, PHILLIP WOMBLE, JULIAN HEINZE, Western Kentucky University — The phoswich detector designed as a combination of two scintillators with dissimilar pulse shape characteristics that are optically coupled to each other and to a common photomultiplier is used for the simultaneous detection of fast and thermal neutrons. The digital signal processing of detector signals is used. The pulse shape analysis distinguishes the scintillation signals produced by photons, fast neutrons, and thermal neutrons. The phoswich was tested using the photon and neutron sources. We discuss neutron yield measurements for a pulse DT neutron generator. The spatial distribution of fast neutron flux and thermal neutron flux was evaluated for the generator in presence of neutron moderating materials.

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Date submitted: 03 Jan 2012 Electronic form version 1.4