Abstract Submitted
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The Fast Neutron Imaging Telescope (FNIT) for Detection of Illicit Nuclear Materials[1] RICHARD WOOLF, JAMES RYAN, PETER BLOSER, ULISSE BRAVAR, JASON LEGERE, JOHN MACRI, University of New Hampshire, PROCHETA MALLIK, University of Glasgow, MARK MCCONNELL, University of New Hampshire, BENOIT PIRARD, CANBERRA France, JOSHUA WOOD, University of New Hampshire, UNIVERSITY OF NEW HAMPSHIRE COLLABORATION, UNIVERSITY OF GLASGOW COLLABORATION, CANBERRA FRANCE COLLABORATION — We report on the characterization, modeling, and algorithm development for FNIT – a Fast Neutron Imaging Telescope. Initially designed to measure solar neutrons in the inner heliosphere, it was later tailored to detect and measure clandestine special nuclear material (SNM) with unique spectral and directional information. To make such measurements, a double scatter telescope is needed. Laboratory testing with a FNIT prototype has been performed in order to characterize such instrumental parameters as time-of-flight, spatial, energy and angular resolutions. Extensive GEANT4 modeling has been performed in an effort to fully characterize the instrument response. These simulations, along with the tests performed with a strong Cf-252 fission neutron source, will allow us to develop efficient, on-line spectral de-convolution and imaging algorithms for a scaled-up, field ready portable neutron telescope. We will present the most recent analysis results.

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