

Abstract Submitted
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**Development of the Real-Time Portable Neutron Spectro-
scope (NSPECT) for Detection and Identification of Special Nuclear
Materials¹** JAMES RYAN, CHRISTOPHER BANCROFT, PETER BLOSER,
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LAROCQUE, GREG RITTER, Michigan Aerospace Corp. — We describe the
development of the Neutron Spectroscopy (NSPECT) prototype detector capable
of real-time neutron source location and identification. Real-time detection and
identification fills an important gap in locating Special Nuclear Materials (SNM).
NSPECT is suitable for locating SNM by detecting fission neutrons and reconstruct-
ing images of their source. NSPECT is an instrument with imaging and energy
measurement capabilities that is sensitive to neutrons in the 1-20 MeV range. The
detection principle is based upon multiple elastic neutron-proton scatterings in an
organic scintillator. The instrument utilizes two detector panel layers. By measuring
the recoil proton and scattered neutron energies, the direction and energy spectrum
of the incident neutrons can be determined and discrete sources identified. Event
reconstruction gives NSPECT the capability to provide an image of the source of
interest. The design of NSPECT is a low power, low mass, rugged instrument, suit-
able for field deployment. Its modular design allows the user to combine multiple
units for increased sensitivity.

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