

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Linear Inertial-Electrostatic Fusion Neutron Sources and Highly Enriched Uranium Detection¹ JOHN SANTARIUS, GERALD KULCINSKI, MARCOS NAVARRO, AARON FANCHER, RICHARD BONOMO, GILBERT EMMERT, UW-Madison — A newly initiated research project investigates methods for detecting shielded highly enriched uranium (HEU) and other special nuclear materials by combining multi-dimensional neutron sources, forward/adjoint calculations modeling neutron and gamma transport, and sparse data analysis of detector signals. An overview of the project will be presented, and progress will be described in: (1) developing optimized, adaptive-geometry, inertial-electrostatic confinement (IEC) neutron source configurations with neutron pulses distributed in space and/or phased in time, and (2) applying sparse data algorithms, such as principal component analysis (PCA) to enhance detection fidelity.

¹Research supported by US Dept. of Homeland Security grant 2015-DN-077-ARI095 and the Grainger Foundation.

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Date submitted: 14 Jul 2017

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