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SPIDER: New detector for measuring fission fragments at LANSCE K. MEIERBACHTOL, F. TOVESSON, C.W. ARNOLD, T.A. BREDEWEG, Los Alamos National Laboratory, E. DUGHIE, A.A. HECHT, University of New Mexico, M. JANDEL, R.O. NELSON, Los Alamos National Laboratory, D. SHIELDS, Colorado School of Mines, M.C. WHITE, Los Alamos National Laboratory — Studying fission fragment yields of neutron-induced fission reactions are valuable for advancing the theoretical understanding of the fission process through validation with data and as a diagnostic tool for nuclear applications. Current yield data are limited to a small range of incident neutron energies and mass resolutions of 2-3 atomic mass units (amu). A new detector, SPIDER (SPectrometer for Ion DEtermination in fission Research), is being developed to measure fission yields with high precision as a function of incident neutron energy from thermal to 20 MeV at Los Alamos Neutron Science Center (LANSCE). The time-of-flight spectroscopy '2E-2v' method used by SPIDER measures the velocity and kinetic energy of the two main fission fragments in coincidence, to identify their masses. Bragg spectroscopy will also be employed in combination with the energy measurement to determine the charge of each fragment. Prototype work is ongoing and has indicated that 1 amu mass resolution can be achieved. Current results will be presented.

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Krista Meierbachtol
Los Alamos National Laboratory

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