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Imaging special nuclear material with muon-induced neutron emission. J. MATTHEW DURHAM, Los Alamos National Laboratory — Cosmic ray muons are a ubiquitous source of energetic charged particles that can be used to image high-Z material through significant amounts of shielding. Negative muons which come to rest inside fissile material can be captured into atomic orbitals and induce fission, which may lead to detectable neutron emission. Muon tracks that are correlated with neutron emission can therefore serve as a signal for the presence of fissile material, and laminography with the tagged muon tracks can be performed to produce an image of the neutron emission source. In this presentation, we will discuss results of imaging tests using this technique at Los Alamos National Laboratory, and possible applications in treaty verification.

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