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Title: Muon Imaging for Dry-Cask Storage Verification

#### Abstract

Cosmic ray muons provide a natural source of deeply penetrating particles that can be used to verify the contents of a used fuel casks. Colleagues at LANL developed muon imaging detectors that they used for simple planar imaging, and we are pushing further to improve on the imaging techniques, data analysis approaches, and the use of those detectors for multiple angle tomographic imaging. Travel restrictions have prevented the collection of new data. As a result, recent work has focused on the application of various imaging techniques to the existing planar data of a partially loaded fuel storage cask at INL. The detectors were placed in several positions, one on either side of the cask, though always with the same planar orientation to create a wider view projection image. While this restricts the angles viewed, we were able to section the data into slightly different discrete angle views based on detector array positions due to the azimuthal spread of incoming muons. We created images from these slightly different discrete angles which compared well with modeled backprojections. Current work examines tracking individual muon angles from that data to create a sinogram for a more continuous angular imaging and hopefully a smooth radon transform tomographic reconstruction.