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Spectral unfolding of fast neutron energy distributions MICHELLE MOSBY, KEVIN JACKMAN, JONATHAN ENGLE, Los Alamos National Laboratory — The characterization of the energy distribution of a neutron flux is difficult in experiments with constrained geometry where techniques such as time of flight cannot be used to resolve the distribution. The measurement of neutron fluxes in reactors, which often present similar challenges, has been accomplished using radioactivation foils as an indirect probe. Spectral unfolding codes use statistical methods to adjust MCNP predictions of neutron energy distributions using quantified radioactive residuals produced in these foils. We have applied a modification of this established neutron flux characterization technique to experimentally characterize the neutron flux in the critical assemblies at the Nevada National Security Site (NNSS) and the spallation neutron flux at the Isotope Production Facility (IPF) at Los Alamos National Laboratory (LANL). Results of the unfolding procedure are presented and compared with *a priori* MCNP predictions, and the implications for measurements using the neutron fluxes at these facilities are discussed.

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