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Effects of Hot-Spot Geometry on Backscattering and Down-Scattering Neutron Spectra Z.L. MOHAMED, O.M. MANNION, C.J. FORREST, J.P. KNAUER, K.S. ANDERSON, P.B. RADHA, Laboratory for Laser Energetics, U. of Rochester — The measured neutron spectrum produced by a fusion experiment plays a key role in inferring observable quantities. One important observable is the areal density of an implosion, which is inferred by measuring the scattering of neutrons. This project seeks to use particle-transport simulations to model the effects of hot-spot geometry on backscattering and down-scattering neutron spectra along different lines of sight. Implosions similar to those conducted at the Laboratory of Laser Energetics are modeled by neutron transport through a DT plasma and a DT ice shell using the particle transport codes *MCNP* and *IRIS*. Effects of hot-spot geometry are obtained by "detecting" scattered neutrons along different lines of sight. This process is repeated for various hot-spot geometries representing known shape distortions between the hot spot and the shell. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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