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Improving the DD and DT nToF environment for the bottom, axial line-of-sight detectors at Sandia National Laboratories' Z Machine Laboratories[1] SARA PELKA, JEDEDIAH STYRON, GARY COOPER, University of New Mexico, CARLOS RUIZ, GORDON CHANDLER, MICHAEL MANGAN, CLARK HIGHSTRETE, JOSE TORRES, Sandia National Laboratories, COLIN WEAVER, University of New Mexico, GARY WHITLOW, Sandia National Laboratories — Parameters such as neutron yield, ion temperature, and Be-liner areal density can be inferred from neutron time-of-flight (nToF) measurements and are essential to understanding the performance of a MagLIF implosion. It is important the measured signals accurately represent the source conditions. Simulations were performed using the Monte Carlo for N-Particle (MCNP) code to improve the quality of measured signals on the bottom, axial nToF detectors at the Z machine. The present Z-machine and detector shields give rise to significant amount of bremsstrahlung and scattered neutrons being incident on the detectors. This alters the shape of the signal and results in a poor signal-to-noise ratio and unresolved structure. By changing the geometry surrounding the detectors and adding a midpoint collimator the simulations suggest the contributions from neutron scattering and bremsstrahlung can be minimized, lowering the background and improving the detector signal.

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