Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

X-ray burn through studies for symmetry control considerations in support of magnetic-indirect-drive fusion platform development[1] S. M. FINNEGAN, S. H. BATHA, K. C. YATES, P. A. BRADLEY, R. J. LEEPER, R. J. OLSON, Los Alamos National Laboratory, Los Alamos, NM, USA — Numerical simulations investigating the dependence of shine-shield material and thickness for mode-selective, time-dependent control of P2 and P4 Legendre mode asymmetries for magnetic-indirect-drive (MID) target designs are presented. The MID concept uses a plasma pinch to create x-rays within a primary hohlraum directing them into a secondary hohlraum where the resultant bath of x rays ablates and compresses a capsule containing deuterium and tritium fuel to high temperatures, creating fusion [T. W. L. Sanford et al., Physical Review Letters 83, 5511 (1999)]. A shine-shield is used to control the radiation flow from the primary to the secondary hohlraum and shape the implosion drive, including eliminating the pole-hot x-ray flux that would otherwise be seen by the capsule. We describe design options and the feasibility for exercising time-dependent control over low-mode asymmetries that are independent of hohlraum length.

[1]Work performed by Los Alamos National Laboratory under contract 89233218CNA000001 for the National Nuclear Security Administration of the U.S. Department of Energy. (LA-UR-19-26039)

Sean Finnegan
Los Alamos National Laboratory, Los Alamos, NM

Date submitted: 01 Jul 2019 Electronic form version 1.4