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Numerical Investigation of OMEGA Saturn Implosions A. SHVYDKY, J.A. MAROZAS, R.S. CRAXTON, I.V. IGUMENSHCHEV, F.J. MARSHALL, P.W. MCKENTY, T.C. SANGSTER, S. SKUPSKY, R.L. MCCRORY, Laboratory for Laser Energetics, U. of Rochester — The basic concept behind the Saturn polar-drive scheme¹ is the use of a CH equatorial ring which, by refracting the intentionally skewed x-ray-drive laser beams toward the target equator, minimizes the overall illumination nonuniformities during the implosion. In this paper Saturn target implosions on OMEGA are investigated numerically using the 2-D radiation hydrodynamic code *DRACO* with 3-D ray trace. Results indicate the development of large, localized nonuniformities in the shell near the target equator. Simulation results demonstrate that these perturbations are caused by undesirable focusing of laser rays refracted by the ring. The results will be compared with OMEGA experiments examining several ring sizes and positions aimed at reducing the illumination nonuniformities and improving target performance. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

¹R.S. Craxton and D.W. Jacobs-Perkins, Phys. Rev. Lett. **94**, 095002 (2005).

Stanley Skupsky
Laboratory for Laser Energetics, U. of Rochester

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