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Progress on 3-D ICF simulations and Ray-Traced Power Deposition Method[1] ANDREW J. SCHMITT, Plasma Physics Division, Naval Research Laboratory, Washington DC, DAVID E. FYFE, Berkeley Research Associates, Beltsville MD — We have performed 3D simulations of Omega-scale and NIF-scale spherical direct-drive targets with the massively parallel FASTRAD3D code. Of particular interest is the robustness of the targets to the low mode perturbations impressed on the target by the laser system and how it compares to the influence of the perturbations produced by laser imprinting. As part of this simulation capability, we have upgraded our smoothed 3D raytrace package to run in spherical geometry. This package, which connects rays to form bundles and performs power deposition calculations on the bundles, can decrease laser absorption noise while using fewer rays and less message passing. This model produces both the imprint and the low-mode asymmetry drive that we are interested in here. We show recent simulation results of directly-driven targets using conventional ignition drive, and report on the influences of the two sources – low mode asymmetry and laser imprint – as the pellet conditions (e.g. adiabat) are varied.

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