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Investigation of Acquired Fuel Motion Caused by Ice Roughness in OMEGA Cryogenic Experiments D. CAO, P.W. MCKENTY, J.P. KNAUER, Laboratory for Laser Energetics, U. of Rochester — It is expected that DT ice/gas interfaces in cryogenic targets will have a certain level of ice roughness; however, less is known about the possible influence of this roughness on net fuel motion during a target implosion. Measureable nonzero net fuel velocity is typically associated with low-ℓ mode asymmetries. Since ice roughness is mainly characterized by low ℓ modes, this work examines the effect of roughness on fuel motion in OMEGA cryogenic experiments. The measurements of fuel motion are taken using neutron time-of-flight (nTOF) diagnostics, which operate on the principle that emitted neutrons have an additional velocity component caused by the fluid motion from which they are borne. This gives rise to an energy shift of the neutron energy spectra. NTOF measurements will be shown illustrating the overall fuel motion that is systematically seen in OMEGA cryogenic implosions but not seen in warm target implosions. Results from 2-D *DRACO* simulations, which include low ℓ-mode ice roughness, will be presented and the predicted acquired fuel motion will be compared to experimental data. 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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