SIMULATIONS OF FILL TUBE EFFECTS ON THE IMPLOSION OF HIGH-FOOT NIF IGNITION CAPSULES[1]

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Encouraging results have been obtained using a strong first shock during the implosion of carbon-based ablator ignition capsules [1,2,3]. These "high-foot" implosion results show that capsule performance deviates from 1D expectations as laser power and energy are increased. A possible cause of this deviation is the disruption of the hot spot by jets originating in the capsule fill tube. Nominally, a 10 μm outside diameter glass (SiO2) fill tube is used in these implosions. Simulations indicate that a thin coating of Au on this glass tube may lessen the hotspot disruption. These results and other mitigation strategies will be presented.

[1] O. A. Hurricane, et al., Nature, 506, 343 (2014).
[2] T. R. Dittrich, et al., Phys. Rev. Letters, 112, 055002 (2014).
[3] H.-S. Park, et al., Phys. Rev. Letters, 112, 055001 (2014).

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