

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Tamping effects and confinement time in NIF experiments Y.M. WANG, B. CHENG, T.J.T. KWAN, F. MERRILL, Los Alamos Natl Lab, C. CERJAN, Livermore Natl Lab, S.H. BATHA, Los Alamos Natl Lab — Tamping is expected to play an important role in inertial confinement fusion capsule experiments performed at the National Ignition Facility (NIF). It is expected to increase the confinement time of thermonuclear burning (TN) in the hot spot. In this work, we study the dependence of the capsule performance with respect to the density ratio of the pusher to the hot fuel at the cold-hot interface numerically through LASNEX simulations in one-dimension. Our study shows that the dependence of the capsule performance (neutron yield) with respect to the square root of the density ratio is not linear: the sharper the interface, the higher the tamping effect and neutron yields. Our analysis indicates that the tamping factor in both NIC and NIF experiments has not been appreciable and the tamping factor on yield is less than 1.1. Thus, the tamping factor has not yet played a significant role in the current NIF ignition design. Furthermore, the confinement time in NIF experiments will be discussed. (LA-UR-15-25596).

Yi-Ming Wang
Los Alamos Natl Lab

Date submitted: 23 Jul 2015

Electronic form version 1.4