

Abstract Submitted  
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**Alpha heating and implosion performance in cryogenic layered NIF implosions** BRIAN SPEARS, D.S. CLARK, M.J. EDWARDS, S.W. HAAN, J.D. LINDL, D.H. MUNRO, L.J. SUTER, C.A. THOMAS, Lawrence Livermore National Laboratory — To achieve fusion ignition, implosions on the NIF must first demonstrate significant heating of the hot spot by alpha particle deposition. Improvements in capsule performance, as measured by ITFX, lead to increased alpha heating. Using a large database of two-dimensional simulations, we show that low-performing capsules fall into two limiting categories: low velocity and low areal density. As the capsule performance is improved on approach to the heating and ignition regimes, all implosions approach similar behavior at a given ITFX. We will describe the experimental observables used to diagnose alpha heating and its effects, and we will discuss these effects in the context of current cryogenic layered implosions on NIF. Prepared by LLNL under Contract DE-AC52-07NA27344.

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