Abstract Submitted
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Understanding the advantages of pushered capsules in the dynamic power balance for ICF[1] S.A. MACLAREN, O.A. HURRICANE, D.D. HO, R.E. TIPTON, E.L. DEWALD, D.A. MARTINEZ, LLNL — Criteria for determining the onset of thermonuclear ignition typically balance the rate of self-heating due to alpha particle deposition against losses from heat conduction, radiation and expansion against the confining mass. With the recognition that ICF stagnation is in fact a dynamic process, one can consider these criteria as a balance between the rate of net energy production and the disassembly rate of the hot spot. This is commonly formulated as a relation between the product of stagnation pressure and confinement time (P-tau) and the hot spot temperature, a form that highlights the role of the stagnated mass on the confinement time. A variation on standard laboratory ICF designs, the Pushered Single Shell (PSS)[1,2] takes advantage of enhanced confinement (tau) to relax the requirements on hot spot pressure and temperature in order to achieve robust self-heating. We describe current designs for PSS implosions on the NIF and illustrate their advantage in terms of ignition criteria with comparisons against non-pushered implosion designs. [1]D.C. Wilson et al., Fusion Technology **38**, pp. 16-21, July 2000 [2]D.D. Ho et al., APS-DPP 2018 PO6.00011

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