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An alternative approach to the self-heating regime for inertial confinement fusion[1] S.A. MACLAREN, D.D. HO, O.A. HURRICANE, LLNL — To achieve self-heating and gain in an inertial confinement fusion (ICF) hot spot, the power generated from D-T fusion must exceed the losses due to radiation, conduction and PdV work as the compressed fuel disassembles. In typical ICF designs, this requires efficient conversion of the implosion kinetic energy into ion thermal temperature to "spark" the fusion reactions and generate fusion power before the loss terms take over. Thus, a premium is placed on the peak fuel velocity for these designs to the detriment of stability. A recent paper[2] re-formulates the time-dependent power balance of a self-heating implosion into an expression for an enhancement in pressure amplification above that which is achieved by adiabatic compression alone. This restatement highlights the crucial roles that tamping and Bremsstrahlung losses play in reaching the threshold for self-heating, implying that an approach that focuses on these two, i.e. increasing confinement and reducing radiative losses, may point to a more readily achievable route to ignition. In this context we discuss a capsule design using a graded Be to high-Z shell to enhance tamping and trap Bremsstrahlung losses while minimizing the hydrodynamic instability from the increase in density with radius[3]. As a result this design achieves robust self-heating at much lower velocity and greater remaining mass than typical low-Z ablator designs. [2] O.A. Hurricane et al., Phys. Plasmas **26**, 052704 (2019). [3] D. Ho et al., APS DPP PO6.11 (2018)

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