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A High Radiation Temperature Hohlraum for Inertial Confinement Fusion Implosions[1] CHRISTOPHER YOUNG, ANDREA KRITCHER, DANIEL CASEY, KEVIN BAKER, ALEX ZYLSTRA, LAURENT DIVOL, DAVID STROZZI, J. STEVEN ROSS, Lawrence Livermore National Laboratory, HARRY ROBEY, Los Alamos National Laboratory, DEBRA CALLAHAN, OMAR HURRICANE, Lawrence Livermore National Laboratory — The HotThick campaign at the National Ignition Facility (NIF) is a new effort to increase energy coupled to the implosion using a higher radiation temperature (∼315 eV), generated by fielding the full NIF laser power and energy (480 TW, up to 1.9 MJ) in a small hohlraum (5.4 mm diameter) at small case to capsule ratio. The higher drive supports a thicker CVD diamond (HDC) ablator and DT ice layer than previous campaigns at the same capsule scale. Fielding a longer laser pulse at full power and energy in a smaller hohlraum presents significant hohlraum physics challenges, including mitigating backscattered laser power and maintaining implosion symmetry control. This work presents an overview of the design and first five shock timing and symmetry implosion experiments. The target radiation temperature of 315 eV was surpassed with 1.4 MJ of laser energy, and applying wavelength detuning of each outer cone (44° and 50°) relative to the inner cones (23° and 30°, so-called "4 color" cross-beam energy transfer) has successfully maintained backscatter at reasonable levels, equally balanced between all four cones. Future experiments will increase wavelength detuning to further mitigate flux asymmetries.

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