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Hot spot temperature measurements in DT layered implosions PRAVESH PATEL, T. MA, A. MACPHEE, D. CALLAHAN, H. CHEN, C. CERJAN, D. CLARK, LLNL, D. EDGELL, LLE, O. HURRICANE, N. IZUMI, S. KHAN, L. JARROTT, A. KRITCHER, P. SPRINGER, LLNL — The temperature of the burning DT hot spot in an ICF implosion is a crucial parameter in understanding the thermodynamic conditions of the fuel at stagnation and and the performance of the implosion in terms of alpha-particle self-heating and energy balance. The continuum radiation spectrum emitted from the hot spot provides an accurate measure of the emissivity-weighted electron temperature. Absolute measurements of the emitted radiation are made with several independent instruments including spatially-resolved broadband imagers, and space- and time-integrated monochromatic detectors. We present estimates of the electron temperature in DT layered implosions derived from the radiation spectrum most consistent with the available measurements. The emissivity-weighted electron temperatures are compared to the neutron-averaged apparent ion temperatures inferred from neutron time-of-flight detectors. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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