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Electron temperature from x-ray continuum measurements on the NIF LEONARD JARROTT, BENJAMIN BACHMANN, ROBIN BENEDETTI, NOBUHIKO IZUMI, SHAHAB KHAN, OTTO LANDEN, TAMMY MA, SABRINA NAGEL, ARTHUR PAK, PRAV PATEL, MARILYN SCHNEIDER, PAUL SPRINGER, Lawrence Livermore Natl Lab, LLNL COLLABORATION — We report on measurements of the electron temperature within the hot spot of inertially confined, layered implosions on the NIF using a titanium differential filtering x-ray diagnostic. The electron temperature from x-ray emission is insensitive to non-thermal velocity flows as is the case with ion temperature measurements and is thus a critical parameter in interpreting stagnated hot spot conditions. Here we discuss measurements using titanium filters ranging from 10μm to 1mm in thickness with a sensitivity band of 10-30keV coupled with penumbral pinholes. The use of larger pinhole diameters increases x-ray fluence improving sensitivity of photon energies with minimal attenuation from the compressed fuel/shell. This diagnostic has been fielded on a series of cryogenic shots with DT ion temperatures ranging from 2-5keV. Analysis of the measurement will be presented along with a comparison against simulated electron temperatures and x-ray spectra as well as a comparison to DT ion temperature measurements. This work was performed under the auspices of U.S. DoE by LLNL under Contract No. DE-AC52-07NA27344.

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