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The Particle X-ray Temporal Diagnostic for time-resolved measurements of electron temperature in cryogenic DT implosions at OMEGA J. FRENJE, P. ADRIAN, N. KABADI, M. GATU JOHNSON, C.K. LI, F. SEGUIN, R. PETRASSO, MIT, H. SIO, LLNL, T. AGLIATA, J. KATZ, S. REGAN, A. SORCE, C. SORCE, C. STOECKL, LLE — The Particle X-ray Temporal Diagnostic (PXTD) is currently being implemented on OMEGA for a time-resolved measurements of the electron temperature in cryogenic DT implosions. This will be done through time-resolved measurements of the x-ray continuum in the energy range of 10–20 keV. As this type of measurement is unaffected by residual fuel-bulk flows and other non-thermal effects, it provides valuable information about the thermal properties of the hot spot as well as the stagnation pressure in a cryogenic DT implosion. Combined with a neutron-time-of-flight measurement of the ion temperature, which is in contrast affected by flows and non-thermal effects, an understanding of the energy balance can be obtained. This type of data can also be used to assess when an implosion starts deviating from 1D behavior, or when asymmetries and residual fuel-bulk flows start to become significant in the implosion. The work was supported by DOE and LLE.

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