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Evaluation of continuum x-ray emission for measuring electron temperatures in ICF implosions[1] JOHN BENAGE, JAMES COBBLE, GEORGE KYRALA, DOUGLAS WILSON, Los Alamos National Lab — Though most ICF capsules produce plasma conditions where the electron and ion temperatures are not equal and the electrons serve as a sink for the hotter ions, the electron temperature is rarely measured in ICF experiments. When it is measured, one usually relies on spectral emission from much higher z dopants that are assumed do not perturb the conditions in the implosion. We present here an evaluation of the continuum emission produced in thin glass capsule implosions and compare temperatures determined from the continuum emission to that obtained from K-shell line emission in doped implosions. The dopant used is Kr and the x-ray range evaluated is between 12-17 keV. In this evaluation we consider how these two methods compare at many different dopant and gas fill concentrations and estimate the usefulness of the method when no dopant is present. Correlations are also considered with the uniformity of the x-ray source by considering x-ray framing camera images in the same spectral range.

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