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**X-ray Thomson Scattering from Spherically Imploded D<sup>3</sup>He filled capsules** ANDREA KRITCHER, ANDREW SMITH, TILO DOEPPNER, AARON MILES, OTTO LANDEN, RICCARDO TOMMASINI, WARREN HSING, SIEGFRIED GLENZER, LLNL — We plan to measure the Novel time-resolved electron temperature of gas filled spherically imploding capsules-type targets at the Omega OMEGA laser facility, via x ray Thomson scattering. These experiments will aim to characterize the energy balance and the ion and electron temperature equilibration times for plasmas not in local thermodynamic equilibrium (non-LTE). In these experiments, the non-collective, or microscopic particle behavior of the gas, will be probed by scattering a 9 keV Zn He-alpha x-ray source from the gas at angles of 90° and 135°. Then, the width of the scattered Compton feature for these non-degenerate plasmas will provide a direct measure of the electron temperature from first principles due to Doppler broadening. These measurements will be combined with previous platforms to infer the time resolved ion temperature by measuring nuclear reaction products from the D-D and D-<sup>3</sup>He reactions that depend strongly on ion temperature. The measured time resolved ion and electron temperatures will be compared, thus enabling investigation of ion and electron equilibration times in non-LTE plasmas. These experiments will provide an additional platform for studying the electron temperature, using Thomson scattering, of non-LTE imploding gas filled capsules at the National Ignition Facility (NIF). Work performed under the auspices of the USDoE by LLNL under Contract DE-AC52-07NA27344. LLNL-ABS-490825

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