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Radiation transport modeling and preliminary UV spectroscopy measurements on expanded WDM[1] NICHOLAS RAMEY, JAMES COLGAN, CHRIS FONTES, PETER HAKEL, HEIDI MORRIS, JOSHUA COLEMAN, Los Alamos National Laboratory, RYAN MCBRIDE, RONALD GILGENBACH, University of Michigan, Ann Arbor — Warm Dense Matter (WDM) is characterized by the strongly correlated nature of the ions in addition to the partially or fully Fermi degenerate electron population. An intense, relativistic electron pulse heats range-thin low-Z metal foils to WDM in a two-stage heating process. The Los Alamos suite of atomic physics codes [1] has been utilized to determine plasma parameters from the visible spectral range [2] but did not consider the strong density gradient and opacity. The FESTR code [3] is used as a spectral postprocessor of LASNEX hydrodynamic simulations to generate long wave UV synthetic spectra accounting for emission and absorption effects. A linear array of 19, 200-um fibers couple to a UV-sensitive ICCD camera and Czerny-Turner spectrometer to provide temporal and 1-D spatial resolution of the expanding plasma plume. The use of FESTR allows us to model temperature and density regimes that have not yet been quantified in expanded electron beam driven WDM. [1] C.J. Fontes et al., J. Phys. B 48, 144014 (2015). [2] J.E. Coleman and J. Colgan, Phys. Rev. E 96, 013208 (2017). [3] P. Hakel, Comp. Phys. Commun. 207, 415 (2016).

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