

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Soft X-ray Spectrometer for Characterization of Electron Beam Driven WDM¹ NICHOLAS RAMEY, Univ of Michigan - Ann Arbor, JOSHUA COLEMAN, JOHN PERRY, Los Alamos National Laboratory — A preliminary design study is being performed on a soft X-ray spectrometer to measure K-shell spectra emitted by a warm dense plasma generated by an intense, relativistic electron beam interacting with a thin, low-Z metal foil. A 100-ns-long electron pulse with a beam current of 1.7 kA and energy of 19.8 MeV deposits energy into the thin metal foil heating it to a warm dense plasma. The collisional ionization of the target by the electron beam produces an anisotropic angular distribution of K-shell radiation and a continuum of both scattered electrons and Bremsstrahlung up to the beam energy of 19.8 MeV. A proof-of-principle Bragg-type spectrometer has been built to measure the Ti K- α and K- β lines. The goal of the spectrometer is to measure the temperature and density of this warm dense plasma for the first time with this heating technique.

¹This work was supported by the National Nuclear Security Administration of the U.S. Department of Energy under Contract No. DE-AC52-06NA25396.

Nicholas Ramey
Univ of Michigan - Ann Arbor

Date submitted: 10 Jul 2017

Electronic form version 1.4