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First Results from Shocked Foam XRTS on Z[1] E.C. HARDING, T. AO, J.E. BAILEY, S.B. HANSEN, R.W. LEMKE, D.B. SINARS, G.A. ROCHAU, M.P. DESJARLAIS, I.C. SMITH, J. RENEKER, D. ROMERO, J.F. BENAGE, Sandia National Lab, I. GOLOVKIN, Prism Computational Sciences, Inc., G. GREGORI, University of Oxford — For the first time, a space-resolved X-ray Thomson Scattering (XRTS) spectra from shocked foam was recorded on the Z machine. The large electrical current produced by Z was used to launch an Al flyer plate to 25 km/s. The impact of the flyer plate on a CH_2 foam target produced a shocked state with an estimated pressure of 0.75 Mbar, density of 0.47 g/cc, and temperature of 4.3 eV. Both unshocked and shocked portions of the foam target were probed with 6 keV x-rays produced by focusing the Z-Beamlet laser onto a nearby Mn foil. The data comprises of three, spatially distinct spectra that were simultaneously captured with a single spectrometer. These three spectra originated from the following target locations: the laser spot, the unshocked foam, and the shocked foam. The spatial resolution was made possible by the use of a spherically-bent crystal spectrometer. The analysis of this data using the new SPECT3D scattering tool will be presented, as well as future improvements to the experimental hardware.

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