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X-ray spectroscopy of highly ionized atoms using Transition Edge Sensor (TES) microcalorimeters at the NIST EBIT JOSEPH TAN, National Institute of Standards and Technology (NIST), P. SZYPRYT, G.C. O'NEIL, NIST, E. TAKACS, S.W. BUECHELE, Clemson University, A.S. NAING, University of Delaware, D. A. BENNET, W.B. DORIESE, M. DURKIN, J.W. FOWLER, NIST, J.D. GARD, University of Colorado, G.C. HILTON, K.M. MORGAN, C.D. REINTSEMA, D.R. SCHMIDT, D.S. SWETZ, J.N. ULLOM, YU. RALCHENKO, NIST — NIST has built a new broadband X-ray spectrometer from an array of 192 individual TES (Transition Edge Sensor) microcalorimeters, designed specifically for high resolution spectroscopy of X-ray transitions in highly ionized atoms, spanning a spectral range from a few hundred eV to 20 keV. Commissioned recently at the NIST EBIT (electron beam ion trap) facility, this time-resolved, photon-counting TES Spectrometer is dubbed the acronym "NETS". We present the earliest NETS observations of X-ray emissions from various ion species created in the NIST EBIT [1], which serve to illustrate its capabilities. Ongoing studies enabled by NETS, including tests of atomic theory and other potential applications, are also presented at this conference. [1] P. Szypryt, *et al.*, Rev. Sci. Instrum. **90**, 123107 (2019)

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