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Measurement and identification of EUV spectra from highly charged Yb in an electron beam ion trap YURI RALCHENKO, NIST - Natl Inst of Stds Tech , ROSHANI SILWAL, Clemson University, Clemson SC, N/A DIPTI, JOAN M. DREILING, NIST - Natl Inst of Stds Tech, SAMUEL SANDERS, B. HEMALATHA RUDRAMADEVI, Clemson University, Clemson SC, JOHN D. GILLASPY, National Science Foundation, ENDRE TAKACS, Clemson University, Clemson SC — Extreme ultraviolet (EUV) spectra of Rb-like Yb^{33+} through Na-like Yb^{59+} ions were produced and accurately measured in an electron beam ion trap at National Institute of Standards and Technology. The EUV radiation was observed with a flat-field grazing incidence spectrometer in the wavelength region of 2 nm to 26 nm. The electron beam energies were varied between 1.6 keV and 8.6 keV to distinguish between different N- and M-shell ions. More than 100 new spectral lines due to Δn=0 electric-dipole and magnetic-dipole transitions were unambiguously identified using large-scale collisional-radiative (CR) simulations of non-Maxwellian EBIT plasma with the code NOMAD. The CR model included nearly 74,000 levels from about 30 ions of Yb which allowed us to reach a comprehensive description of level population kinetics. Also the Na-like D_1 $3s_{1/2}$–$3p_{1/2}$ and D_2 $3s_{1/2}$–$3p_{3/2}$ lines were measured at the electron beam energy of 18 keV thereby providing a test of relativistic and quantumelectrodynamic effects on atomic structure of highly-charged ions. Detailed comparisons between measurements and simulations will be presented.

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