Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Single and double core-hole ion emission spectroscopy of transient neon plasmas produced by ultraintense x-ray laser pulses CHENG GAO, JIAOLONG ZENG, JIANMIN YUAN, National University of Defense Technology — Single core-hole (SCH) and double core-hole (DCH) spectroscopy is investigated systematically for neon gas in the interaction with ultraintense x-ray pulses with photon energy from 937 eV to 2000 eV. A time-dependent rate equation, implemented in the detailed level accounting approximation, is utilized to study the dynamical evolution of the level population and emission properties of the laser-produced highly transient plasmas. The plasma density effects on level populations are demonstrated with an x-ray photon energy of 2000 eV. For laser photon energy in the range of 937 - 1360 eV, resonant absorptions (RA) of 1s-np (n>=2) transitions play important roles in time evolution of the population and DCH emission spectroscopy. For x-ray photon energy larger than 1360 eV, no RA exist and transient plasmas show different features in the DCH spectroscopy.

Zengxiu Zhao
National University of Defense Technology

Date submitted: 22 Jan 2016 Electronic form version 1.4