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Time evolution of electron structure in femtosecond heated warm dense molybdenum. V. RECOULES, CEA DAM DIF, F. DORCHIES, CELIA, Univ. Bordeaux, France, J. BOUCHET, CEA DAM DIF, C. FOURMENT, P.M. LEGUAY, CELIA, Univ. Bordeaux, France, B.I. CHO, GIST, Gwangju, Korea, K. ENGELHORN, Lawrence Berkeley National Laboratory, Berkeley, USA, M. NAKATSUTSUMI, C. OZKAN, T. TSHENTSCHER, European XFEL, Hamburg, Germany, M. HARMAND, S. TOLEIKIS, DESY, Hamburg, Germany, M. STORMER, Helmholtz Zentrum Geesthacht, Geesthacht, Germany, E. GALTIER, H.J. LEE, B. NAGLER, P.A. HEIMANN, SLAC National Accelerator Laboratory, Menlo Park, USA, J. GAUDIN, CELIA, Univ. Bordeaux, France — The time evolution of the electron structure is investigated in a molybdenum foil heated up to the warm dense matter regime by a femtosecond laser pulse, through time-resolved XANES spectroscopy. Spectra are measured with independent control of temperature and density. They are successfully compared with ab initio quantum molecular dynamic calculations and an analytical model. We demonstrate that the observed white line in the L3-edge reveals the time evolution of the electron density of state from the solid to the hot (a few eV) and expanding liquid.

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