

Abstract Submitted  
for the DAMOP20 Meeting of  
The American Physical Society

**Photoionization cross section measurements from the  $6s5d\ ^1D_2$  excited state of ytterbium at and above the ionization threshold** BILAL SHAFIQUE, Department of Physics, University of Azad Kashmir, Muzaffarabad, Pakistan, RAHEEL ALI, Atomic and Molecular Spectroscopy Lab., Quaid-i-Azam University, Islamabad, Pakistan, SAMI ULHAQ, National Institute of Lasers and Optronics (NILOP), Islamabad, Pakistan, MUHAMMAD RAFIQUE, Department of Physics, University of Azad Kashmir, Muzaffarabad, Pakistan, MUHAMMAD ASLAM BAIG, Atomic and Laser Plasma Physics Department, National Centre for Physics, Islamabad, Pakistan — Experimental investigations of photoionization cross sections from the  $6s5d\ ^1D_2$  excited state are reported for atomic Ytterbium. A heat pipe-cum-linear thermionic diode ion detector employing saturation technique and working in space charge limited mode has been used for generating the atomic vapors of Yb. A Nd:YAG pumped narrow bandwidth ( $\sim 0.2\text{ cm}^{-1}$ ) Hanna-type dye laser charged with LDS-698 dye and tuned at 722.6 nm is used for the two-photon resonance transition  $6s^2\ ^1S_0 \rightarrow 6s5d\ ^1D_2$ . The excited state population is then promoted to the ionization threshold at 439.2 nm and above threshold at 375 nm, 355 nm, and 300 nm. The intensity of the exciting laser (722.6 nm) is kept fixed while that of the ionizing laser is varied using neutral density filters. The data is plotted between ionizing laser energy and photo-ion signal. The experimental data points are fitted using the least square fit algorithm which yields photoionization cross sections at the ionization threshold and in the continuum.

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Date submitted: 30 Jan 2020

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