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Measurement of photoionization cross sections from $6s5d\ ^1D_2$ excited state of ytterbium at and above the first ionization threshold BILAL SHAFIQUE, Department of Astronomy, The Ohio State University, RAHEEL ALI, Atomic and Molecular Spectroscopy Lab., Quaid-i-Azam University, Islamabad, Pakistan, SAMI ULHAQ, National Institute of Lasers and Optics (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 the 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 355 nm and 300 nm. The intensity of exciting laser (722.6 nm) is kept fixed while the ionizing laser energies are 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 yield photoionization cross sections at ionization threshold and in the continuum.

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