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Laboratory study of K-shell photoionization of oxygen and oxygen hydrides ions

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The interpretation of the spectra sent by satellites required the knowledge of many atomic data, including photoionization cross sections or energy and oscillator strength of bound-bound transitions for many ions, over a broad photon energy range going from infra-red to x-rays. These data are mainly provided by theoretical results using state-of-the-art methods like R-matrix. Recently, discrepancies have been observed between the calculated energy of the Kα transitions in atomic oxygen and its ions and those determined from the satellites observations [1-2]. The results of the experimental studies of K-shell photoionization of oxygen ions performed at the French synchrotron radiation center SOLEIL will be presented [3]. A merged-beam setup installed on the PLEIADES beam line allows for the determination of absolute photoionization cross sections and transitions energy on singly- and multiply-charged ions in the 10-1000 eV photon energy range. The first results obtained with this setup on oxygen hydrides will be also presented. [1] E. Gatuzz et al, ApJ 768, 60 (2013) [2] F. Nicastro et al, MNRAS (2016) [3] J.M. Bizau et al, Phys Rev A 92 023401 (2015)