

Abstract Submitted  
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**Double ionization of O<sub>2</sub> via single photon at energy below double ionization threshold** I.A. BOCHAROVA, C. STUCK, M. SCHOEFFLER, A. BELKACEM, TH. WEBER, LBNL, R. DOERNER, T. JAHNKE, University of Frankfurt, A. LANDERS, Auburn University, C.L. COCKE, Kansas State University — We studied the double ionization of O<sub>2</sub> molecule at photon energies below the double ionization threshold (about 41.5 eV). At this energy the double ionization is a two-step process. A highly excited cation state is produced by the interaction of the neutral molecule with the photon. The cation autoionizes subsequently. We try to elucidate the dissociative intermediate states of this singly charged ion during this double ionization processes. Therefore we performed a kinematically complete experiment measuring the 3d-momentum vectors of two electrons and two oxygen ions in coincidence following the excitation of O<sub>2</sub>, dissociation of O<sub>2</sub><sup>+</sup> and the subsequent autoionization of the excited neutral oxygen atom. We present the ionic kinetic energy release as a function of electron energies (energy maps), electron angular distributions in the body fixed frame and compare our results to previous time-resolved studies [A. Sandhu et al., Science, 322, 1081, (2008)].

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