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Dynamic modification of the fragmentation of autoionizing excited states of O_2^+ W. CAO, G. LAURENT, S. DE, M. SCHOEFFLER, T. JAHNKE, A. ALNASER, I. BOCHAROVA, C. STUCK, D. RAY, M. KLING, I. BEN-ITZHAK, T. WEBER, A. LANDERS, A. BELKACEM, R. DOERNER, C.L. COCKE, J. R. M. LAB., KANSAS STATE UNIVERSITY, MANHATTAN, KS 66506, USA TEAM, LBL, BERKELEY, CA 94720, USA TEAM, IFK, UNIVERSITY OF FRANKFURT, MAX-VON-LAUE-STR. 1, D-60438 FRANKFURT, GERMANY TEAM, PHYS. DEPT., AMERICAN UNIVERSITY OF SHARJAH, SHARJAH, UAE COLLABORATION, DEPT. OF PHYSICS, AUBURN UNIVERSITY, AUBURN, AL 36849, USA COLLABORATION — The dynamic process of fragmentation of excited states of molecular oxygen is investigated in a two-part study. First, using monochromatic 41 eV radiation and COLTRIMS detection of O+/O+ ion pairs and associated electrons, we establish that this channel is populated only by an indirect process enabled by autoionization of excited oxygen neutrals, and identify the final active molecular states involved. Second, we probe the dynamics of this process using an attosecond pulse train of 35-42 eV EUV, followed by an intense laser pulse (5.10^{11} W/cm^2). A model gives qualitative agreement with experiment.Supported by Chem. Sci. DOE DE-FG02-86ER1349, NSF CHE-0822646 and USARO W911NF-07-0475

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