

Abstract Submitted
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Kinematically complete investigations of the Photo Double Ionization of N₂ and O₂ near threshold¹ A. GATTON, I. BOCHAROVA, F.P. STURM, B. GAIRE, LBNL, M. HONIG, P. BRAUN, M. PITZER, D. METZ, H.K. KIM, Uni. Frankfurt, W. CAO, KSU, J.B. WILLIAMS, UN-Reno, A.L. LANDERS, Auburn, TH. WEBER, LBNL — We present the first Fully Differential Cross Sections (FDCSs) in the single Photon Double Ionization (PDI) of the many electron molecular systems *O*₂ and *N*₂. Both measurements were taken at beamline 10.0.1 of the Advanced Light Source, with 50eV photons for *N*₂ and 46eV photons for *O*₂. We present three dimensional distributions (theta, phi, yield) of the photoelectron in the body fixed frame after quadruple differential gating on: the initial state of the molecule, the electron energy sharing, the orientation of the polarization vector relative to the molecular axis, and the emission direction of one photoelectron in the molecular frame. We compare these distributions to the FDCSs of the PDI of *H*₂ and show profoundly different emission patterns indicating complex electron-electron correlation.

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