

Abstract Submitted
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Molecular Frame X-Ray Photoelectron Angular Distributions and an Attempt to Detect Core Hole Localization CYNTHIA S. TREVISAN, California State University, Maritime Academy, JOSHUA WILLIAMS, University of Frankfurt, THOMAS RESCIGNO, Lawrence Berkeley National Laboratory, C. WILLIAM MCCURDY, University of California, Davis, ALLEN LANDERS, Auburn University — We present preliminary experimental and theoretical results of the angular dependence of electrons ejected from the core orbitals of ethane (C_2H_6) as viewed in the frame of the molecule in search for evidence of the localization of core holes on one of two equivalent atoms following X-ray photoionization. While the probability of ionization from equivalent atoms is the same, the fragmentation pattern following ionization can be asymmetric and reveal the creation of a core hole on one atom followed by breakup dynamics that depend on its location. These experiments, together with the theoretical calculations to interpret them, may result in direct observation of the fundamental quantum phenomenon of localized hole dynamics in isolated polyatomic molecules following Auger decay. Our measurements employ the COLTRIMS method and the calculations were performed with the Complex Kohn Variational method.

Cynthia S. Trevisan
California State University, Maritime Academy

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