

Abstract Submitted
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Molecular Frame Photoelectron Angular Distributions for Core Ionization of CF_4 and $\text{C}_2\text{H}_2\text{F}_2$ ¹ C.S. TREVISAN, CSU, Maritime Academy, J.B. WILLIAMS, A.J. MENSSEN, Frankfurt University, T.N. RESCIGNO, Lawrence Berkeley National Lab, R. DORNER, Frankfurt University, C.W. MCCURDY, UC Davis, Lawrence Berkeley National Lab — We present experimental and theoretical results for the angular dependence of electrons ejected from the core orbitals of tetrafluoromethane (CF_4) which display a tendency to avoid molecular bonds if averaged over directions of polarization of the incident X-ray beam, in contrast to earlier cases (CH_4 , H_2O and NH_3) studied by the same methods. To investigate whether the imaging effect can be used to detect the creation of core holes by photoionization from one of two atoms of the same type in a molecule, we computed and measured MFPADs of difluoroethylene ($\text{C}_2\text{H}_2\text{F}_2$). Good agreement with the experimentally measured angular distributions show that the MFPADs contain the clear signature of the core-hole origin of the photoelectron, and validate the use of computed MFPADs as promising tools for the interpretation of such experiments. Our measurements employ the COLTRIMS method and the calculations were performed with the Complex Kohn Variational method.

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