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Angle-resolved Two-Dimensional Photoelectron Spectroscopy of van-der-Waals Clusters DANIEL ROLLES, HUAIZHEN ZHANG, ANTONY WILLS, RENE BILODEAU, Physics Department, Western Michigan University, Kalamazoo, MI, 49008, USA, EDWIN KUKK, Department of Physics, University of Turku, 20014 Turku, Finland, BRUCE RUDE, GLEN ACKERMAN, JOHN BOZEK, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, 94720, USA, NORA BERRAH, Physics Department, Western Michigan University, Kalamazoo, MI, 49008, USA — We have performed angle-resolved photoelectron spectroscopy on the outer and inner-valence shells of Ar, Kr and Xe van-der-Waals clusters and have collected an extensive data set using two-dimensional photoelectron spectroscopy. The measurements in small photon energy steps show the evolution of the photoelectron angular distribution, partial cross sections and branching ratios. They allow direct comparison between the photoionization of clusters and that of free atoms. Our results show that while the overall behavior of the partial and differential cross sections of the clusters is, in general, very similar to that of the corresponding independent atoms, some distinct differences in the angular distribution and spin-orbit branching ratios point at cluster-size dependent effects and highlight the influence of the cluster field produced by the surrounding atoms on the valence electrons.

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