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Native frames: Separating sequential from concerted three-body fragmentation[1] T. SEVERT, B. JOCHIM, P. FEIZOLLAH, KANAKA RAJU P., J. RAJPUT, B. BERRY, B. KADERIYA, F. ZIAEE, D. ROLLES, A. RUDENKO, K. D. CARNES, B. D. ESRY, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Kansas State University, R. STROM, A. L. LANDERS, Auburn University, D. REEDY, B. GRIFFIN, D. CALL, J. B. WILLIAMS, University of Nevada, Reno, W. ISKANDER, K. A. LARSEN, A. GATTON, E. G. CHAMPENOIS, M. M. BRISTER, D. S. SLAUGHTER, T. WEBER, Lawrence Berkeley National Laboratory — During the fragmentation of polyatomic molecules, two or more bonds may break in a sequential manner. To interpret the multi-body breakup, it is beneficial to separate the concerted from the sequential fragmentation contributions. Recently, we proposed the native frames method to accomplish this goal, using the strong-field three-body fragmentation of OCS as an example [PRL **120**, 103001 (2018)]. This method allows us to separate the contributions of sequential breakup in any observable derived from the measured three-dimensional momentum distributions by exploiting the rotation of the intermediate moiety. In this poster, we will highlight results from a few polyatomic molecules using strong-field ionization as well as single-photon double ionization.

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Travis Severt
Kansas State University

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