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A Novel Method to Analyze Four-Body Break-Up Processes MICHAEL SCHULZ, University of Missouri-Rolla, DANIEL FISCHER, Stockholm University, THOMAS FERGER, ROBERT MOSHAMMER, JOACHIM ULLRICH, MPI Heidelberg — Numerous kinematically complete experiments on a variety of atomic break-up processes have been performed in recent years. The fully differential cross sections (FDCS) extracted from such measurements provide the most sensitive tests of theory. However, one drawback of the FDCS is that they do not show a comprehensive physical picture of the process, but rather only for one specific kinematical setting at a time usually covering only a small fraction of the total cross section. Less differential data can be presented in conventional one- or two-dimensional plots without losing any part of the total cross section. However, for processes involving more than two particles these spectra are integrated over at least one fragment. Recently, we demonstrated that for single ionization (three bodies) Dalitz plots are a powerful tool to present data as a function of all three fragments simultaneously in a single spectrum without loss of any part of the total cross section[1]. Here, we report on a generalization of Dalitz plots to four-body break-up processes. By using a tetrahedral coordinate system it has become possible for the first time to present measured data as a function of all four fragments simultaneously. [1]M. Schulz et al., J. Phys. B37, 4055 (2004)

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