

Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Native frames: Analyzing three-body fragmentation of CO₂¹
PEYMAN FEIZOLLAH, T. SEVERT, BETHANY JOCHIM, BEN BERRY,
KANAKA RAJU P., M. ZOHRABI, JYOTI RAJPUT, U. ABLIKIM, B.
KADERIYA, FARZANEH ZIAEE, A. RUDENKO, D. ROLLES, K. D. CARNES,
B. D. ESRY, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Department of Physics,
Kansas State University, Manhattan, KS 66506 USA — Three-body fragmentation of
molecules, and methods to analyze and interpret the results, have drawn much atten-
tion during the past several years. In this work, we employ the novel native-frames
method to analyze and understand three-body fragmentation processes in CO₂. In
our measurements, 3D momentum imaging is used to study different fragmenta-
tion channels resulting from the interaction of intense laser pulses with polyatomic
molecules such as CO₂ and its ions . We demonstrate that, using the native-frames
method, one gains access to detailed information about the fragmentation process
by completely separating the concerted and sequential breakup contributions. We
present the branching ratios of different competing processes as well as the angular
dependence of the breakup channels. Also, the kinetic energy release in the fragmen-
tation process is used to identify the states, of the parent or intermediate molecule,
that are involved in the breakup.

¹Supported by the Chemical Sciences, Geosciences, and Biosciences Division, Office
of Basic Energy Sciences, Office of Science, U.S. Department of Energy under Award
DE-FG02-86ER13491.

Peyman Feizollah
J. R. Macdonald Laboratory, Kansas State University

Date submitted: 07 Feb 2018

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