

Abstract Submitted  
for the DAMOP08 Meeting of  
The American Physical Society

**Molecular** **Fragmentation**  
**in the CH<sub>2</sub>XY Family of Halomethanes**<sup>1</sup> SARAH NICHOLS, Stony Brook University, BRETT PEARSON, Dickinson College, TAMAS ROZGONYI, Institute of Structural Chemistry, Hungarian Academy of Sciences, THOMAS WEINACHT, Stony Brook University — There is substantial interest in controlling wavepacket dynamics in molecular states with ultrafast pulses. We demonstrate control over the dissociation of CH<sub>2</sub>Br<sub>2</sub>, CH<sub>2</sub>BrI, and CH<sub>2</sub>I<sub>2</sub> molecules. Time dynamics of the dissociations show signatures of parent ion vibrations. Ab initio structure calculations confirm these signatures with strong quantitative agreement. We explore wavepacket dynamics on the parent ion potential energy surface, and use them to control population transfer from the bound parent ion to the dissociative states.

<sup>1</sup>This research was carried out with support from National Science Foundation.

Sarah Nichols  
Stony Brook University

Date submitted: 01 Feb 2008

Electronic form version 1.4