

Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Applying Principle Control Analysis to Optical Pulse Shapes Optimized for Selective Fragmentation of Clusters¹ K. J. BETSCH, E. WELLS, Department of Physics, Augustana College, Sioux Falls, SD 57197 — Principal control analysis has been applied to the results of a learning algorithm search that optimized optical pulse shapes for selective fragmentation of S_8 clusters. This technique reduces the control dimensions needed for pulse shape optimization for this multiphoton process. Pulse shapes optimized for ionization/fragmentation generally require more control directions than the stimulated Raman scattering processes explored by White *et al*². Thus, despite using principal control analysis, it still appears difficult to extract information about the quantum dynamics of higher order processes from the optimized pulse shape.

¹Data obtained in collaboration with C.W.S. Conover and R.R. Jones at the University of Virginia.

²J. L. White, B. J. Pearson, and P. H. Bucksbaum, *J. Phys. B* **37**, L399 (2004).

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Date submitted: 27 Jan 2005

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