

Abstract Submitted
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Strong-field optimal control with 2D learning algorithms GUAN-YEU CHEN, BEN CRIST, WENDELL T. HILL, III, University of Maryland — Several years ago we introduced the first 4p-image spectrometer for studying strong-field dissociative-ionization processes (e.g., Coulomb explosion) in small molecular systems. We now employ imaging and this spectrometer, in conjunction with pulse-shaping and learning algorithms, to investigate strong-field control of dynamics with a two- dimensional fitness function. As an example, focusing on various patterns on images has allowed us to isolate for control a particular molecular mode to control, such as bending in carbon dioxide [1]. Two- dimensional fitness functions provide access to the dynamics that are either difficult to access or unrevealed through scalar fitness functions. As a consequence, exploiting these additional degrees of freedom is enabling us to make steps towards deciphering optimal control fields. In this poster we will provide details of image-based learning algorithms. We will give examples of using multi- dimensional fitness functions and discuss how they can be used to control molecular dynamics.

[1] G.-Y. Chen, Z. W. Wang, and W. T. Hill III, PRA 79, 011401 (R), 2009

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