

Selected Abstracts from Other Physical Review Journals

Abstracts of papers that are published in other Physical Review journals and may be of interest to Physical Review E readers are printed below.

Optimal control of molecular motion expressed through quantum fluid dynamics Bijoy K. Dey Herschel Rabitz *Department of Chemistry, Princeton University, Princeton, New Jersey 08540* Attila Askar *Department of Mathematics, Koc University, 80860 Istanbul, Turkey* (Received 2 April 1999; published 16 March 2000)

A quantum fluid-dynamic (QFD) control formulation is presented

for optimally manipulating atomic and molecular systems. In QFD the control quantum system is expressed in terms of the probability density ρ and the quantum current j . This choice of variables is motivated by the generally expected slowly varying spatial-temporal dependence of the fluid-dynamical variables. The QFD approach is illustrated for manipulation of the ground electronic state dynamics of HCl induced by an external electric field. [Phys. Rev. A **61**, 043412 (2000)]