

Meeting: 1003, Atlanta, Georgia, SS 12A, AMS-SIAM Special Session on Stochastic, Large-Scale, and Hybrid Systems, I

1003-49-1185 **N. G. Medhin*** (ngmedhin@unity.ncsu.edu), Department of Mathematics, North Carolina State University, Raleigh, NC 27695. *On optimal control of the dynamics of a model quantum mechanical system.*

An analysis of the control of the dynamics of a model quantum mechanical system under the influence of an electric field is studied. We consider the dynamics of a particle in a potential field that includes an external electric field perturbed by white noise. The purpose of studying the model problem is to gain insight into the problem of designing an appropriate pulse to achieve a specific dissociation of desired amount in a diatomic molecule. The analysis of the model problem provides an opportunity to analyze and gain some insight into the interplay between the constituent parameters of the pulse, its energy, duration, and the mathematical difficulty inherent in the problem. (Received October 04, 2004)