Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Accurate treatment of doubly-excited Rydberg resonance states and dc-field ionization rates of two-electron systems[1] JOHN HESLAR, SHIH-I CHU, Department of Chemistry, University of Kansas — We present a complex-scaling (CS)-generalized pseudospectral (GPS) method in hyperspherical coordinates (HSC) for *ab initio* and accurate treatment of the electron structure and quantum dynamics of two-electron systems [1]. The GPS method allows non-uniform and optimal spatial discretization of the two-electron Hamiltonian in HSC with the use of only a very modest number of grid points. The procedure is applied for the precision calculation of the energies and widths of doubly-excited Rydberg resonance states as well as the ionization rates of He atoms in intense dc fields. [1] J. Heslar and S. I. Chu, Phys. Rev. A (submitted).

[1]Support by NSF

John Heslar

Date submitted: 26 Jan 2006 Electronic form version 1.4