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***Ab Initio* Calculation of Double Photoexcitation of Rydberg Resonance States of Helium below the N=2 Threshold in a Strong DC Electric Field** JOHN HESLAR, SHIH-I CHU, Dept. of Chemistry, Univ. of Kansas, Lawrence, KS 66045 USA — We present a complex-scaling (CS)-generalized pseudospectral (GPS) method in hyperspherical coordinates (HSC) for *ab initio* accurate treatment of the electron structure and quantum dynamics of two-electron systems. The GPS method allows non-uniform and optimal spatial discretization of the two-electron Hamiltonian in HSC with the use of only 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 the He atom in an external dc electric field of 84.4 kV/cm. The effects of dc-field ionization rates on the $1S^e$, $1P^o$, and $1D^e$ states for n= 10-20 have been identified and studied in detail.

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