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Using the Feynman-Kac Path Integral Method in Computing Eigenvalues for Hydrogenic Quantum Systems J.M. REJCEK, N.G. FAZLEEV, Department of Physics, University of Texas at Arlington — The Feynman-Kac path integral method is applied to several hydrogenic quantum systems for the purpose of evaluating ground state eigenvalues. These are computed by random walk simulations on a discrete grid. The systems studied include free hydrogen, hydrogen in a confined spherical well and an antiproton and electron confined to the same spherical well. In addition, a method using symmetry is presented that allows higher order eigenstates to be computed. The method provides exact values in the limit of infinitesimal step size and infinite time for the lowest eigenstates.

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