

Abstract Submitted
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Autoionization resonance states of two-electron atomic systems with finite spherical confinement¹ YEW KAM HO, Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan, SUMANA CHAKRABORTY, Indian Association for the Cultivation of Science, Kolkata, India — We investigate the lowest-lying *S*-wave resonant states of two-electron atoms confined by spherical quantum dots under the framework of the stabilization method. Extensive Hylleraas type wave functions taking into account of the correlation effects between all the charged particles are used in the present investigation. A finite oscillator potential is used to represent the spherical quantum dot confinement potential. We have obtained resonance energies and widths for the quantum confined two-electron atoms with different depths and various ranges of the quantum dot potentials. Oscillation in the resonance width as the dot size changes is observed, a result of quantum dot size effect similar to the phenomenon of the electric-field effect on hydrogenic impurity in a spherical quantum dot [1].

[1] S. Sahoo, Y. K. Ho, Phys. Rev. B **69**, 165323 (2004); S. Sahoo, Y.C. Lin, Y. K. Ho, Physica E **40**, 3107 (2008)

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