

Quantum Rings with Two Deeply Bound Electrons under a Magnetic Field

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Abstract: A model is proposed to study the quantum rings with two deeply bound electrons under a variable magnetic field. The emphasis is placed to clarify the effect of the size (diameter) and the width of the ring on the fractional Aharonov-Bohm oscillation. It was found that the reduction of size will lead to a very strong oscillation in the ground state energy and in the persistent current. The electronic correlation has also been demonstrated by showing the nodal structures of wave functions.

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Key words: quantum ring, fractional Aharonov-Bohm oscillation, persistent current

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