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Perturbation Theory for Interacting Electrons in a Quantum Dot under Strong Magnetic Field

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Abstract: The quantum spectrum of interacting electrons confined in a parabolic dot in two dimensions is obtained by employing the perturbation theory. Comparison with the existing analytical results has been made. We show that while the widely used second-order perturbation significantly underestimates the ground state energies, the results including higher orders of perturbation are highly accurate within the B-field range of experimental interest.

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