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标题: Optical control of entangled states in semiconductor quantum wells

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摘要: We present theory and calculations for coherent high-fidelity quantum control of many-particle states in semiconductor quantum wells. We show that coupling a two-electron double quantum dot to a terahertz optical source enables targeted excitations that are one to two orders of magnitude faster and significantly more accurate than those obtained with electric gates. The optical fields subject to physical constraints are obtained through quantum optimal control theory that we apply in conjunction with the numerically exact solution of the time-dependent Schrodinger equation. Our ability to coherently control arbitrary two-electron states, and to maximize the entanglement, opens up further perspectives in solid-state quantum information.

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