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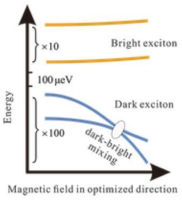

EDITORS' SUGGESTION | LETTER

Eliminating the confined dark-exciton qubit precession using an externally applied magnetic field

Zu-En Su, Dan Cogan, Ido Schwartz, Ayal Beck, and David Gershoni

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Quantum dots host short- and long-lived bright and dark excitons (DEs). The long-lived DEs form coherent integer-spin qubits that can be written, controlled, read, and reset using single picosecond optical pulses. These qubits enable the deterministic generation of multi-entangled photon clusters, crucial for quantum communication. With nondegenerate eigenstates, DEs exhibit a natural precession in their coherent superposition, which can challenge qubit control. The authors present here experimental and theoretical methods to reduce and eliminate this precession, while discovering the polarization of this optically inactive qubit.

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