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Detection and measurement of the Dzyaloshinskii-Moriya interaction in double quantum dot systems¹ SUCISMITA CHUTIA, MARK FRIESEN, ROBERT JOYNT, Department of Physics, UW-Madison — Spins in quantum dots can act as qubits for quantum computation. In this context we point out that spins on neighboring dots will experience the Dzyaloshinskii-Moriya interaction, which mixes the spin singlet and triplet states. This will have a strong influence on spin-dependent tunneling. We show that the effects of this interaction depend strongly on the direction of the external field, and demonstrate how to detect and measure the effect.

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