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Measurement of topological invariants with spin qubits in diamond JUNGHYUN LEE, KEIGO ARAI, Massachusetts Inst of Tech-MIT, CHINMAY BELTHANGADY, RONALD WALSWORTH, Harvard Smithsonian Center for Astrophysics — We present our measurements on topological invariants using spin qubits. The ground states of nitrogen-vacancy (NV) color centers in diamond are used as an ideal qubit whose states can be fully controlled by microwave frequency detuning, amplitude and relative phase. Manipulating these parameters on a closed manifold, we study the robustness of topological invariants against surrounding paramagnetic spins at room temperature. We also discuss how these measurements can be extended to qutrit or multi-qubit systems.

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