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**Transient and stationary leakage current through a double quantum dot in the Pauli spin blockade regime** FARZAD QASSEMI MALOOMEH, WILLIAM A. COISH, FRANK K. WILHELM, Institute for Quantum Computing and Physics Department, University of Waterloo — We have calculated stationary and transient leakage current through a double quantum dot in the Pauli spin blockade regime. Quite remarkably, even in systems with inhomogeneous hyperfine coupling, we find that the leakage current is often controlled by spin-flip cotunneling processes with the leads. Our calculations show that these processes can be suppressed for one of the spin-triplet states by applying a small magnetic field, allowing for the preparation of a pure spin triplet. We have also found the transient effective charge passing through the double dot between blocking events, which can be strongly modified due to the spin-flip cotunneling processes. These results may explain features observed in several experiments.

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