

Abstract Submitted
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Electron transport in double quantum dots: Pauli spin blockade and an ultrasmall magnetic field effect JEROEN DANON, Niels Bohr Institute
— We consider electron transport in a double quantum dot tuned to the Pauli spin blockade regime. We revisit the role of the random nuclear fields in the two dots and develop a theory going beyond the usual master-equation approach. This allows us to take into account a dark state that forms when the average effective field in the two dots is zero. We show that this small-field dark state can survive averaging over the random fields, most noticeably at intermediate interdot tunnel coupling strength. Besides deepening our understanding of the electron dynamics in double quantum dots, our results might help explaining a so-called ultrasmall magnetic field effect observed in some organic semiconductors.

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