

Abstract Submitted  
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**Charge motion near metallic single electron transistors on oxidized Si substrates** K. R. BROWN, L. SUN, B. E. KANE, University of Maryland — Many proposals for spin qubits in semiconductors rely on spin-charge conversion combined with charge measurement for determination of the final state. In pursuit of such a measurement for donor spins in Si we have performed systematic experiments using Al-AlO<sub>x</sub>-Al single electron transistors (SETs) on doped, oxidized Si substrates. One of the first priorities has been to identify other sources of charge motion that could disguise or overwhelm the signals from donors. We have identified reproducible peaks in the ac susceptibility of our samples as a function of electric field, similar to the response that would be expected from donor electrons moving between two different states. Nevertheless, preliminary results indicate that these peaks are associated with defects above the interface and not with charge motion in the Si itself. We will discuss planned device refinements to eliminate these and other defects and to isolate donor electron signals.

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