

Abstract Submitted
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Probing simulated 1D quantum materials using single quantum channels¹ MEGAN KIRKENDALL, PATRICK IRVIN, JEREMY LEVY, University of Pittsburgh, HYUNGWOO LEE, SANGWOO RYU, CHANG BEOM EOM, University of Wisconsin - Madison — Quantum simulation of strongly correlated electronic systems remains an important long-range goal in the field of quantum information. Thus far, much progress has been made with ultracold atomic simulators which can resolve individual atoms and a variety of interesting phases. Nanoscale control of the metal-insulator transition at the $\text{LaAlO}_3/\text{SrTiO}_3$ interface², combined with the wide variety of phenomena this system exhibits such as superconductivity and magnetism, provides an alternate approach to solid-state quantum simulation. Our research currently focuses on measuring the properties of 1D simulated materials at the $\text{LaAlO}_3/\text{SrTiO}_3$ interface, at high magnetic fields, using quantum point contacts as well-defined probes.

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²Cen, C. *et al.* Nature Mater. **7**, 298–302 (2008).

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