

Abstract Submitted
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**Weak Antilocalization and Spin-Orbit
Coupling in LaAlO₃/SrTiO₃ Nanostructures**¹ CHENG CEN, DANIELA F.

BOGORIN, JEREMY LEVY — Recently, nanoscale control of the metal-insulator transition at the interface between LaAlO₃ and SrTiO₃ is demonstrated to be capable of making nanostructures exhibiting various functional electrical properties.^{2,3} We performed low temperature magneto-transport measurement on straight and L-shaped nanowire channels. Strong geometry dependence of weak antilocalization (WAL) due to spin-orbit (SO) coupling is observed. A sharp feature around $B=0$ T of non-local voltage is measured 12 μm away from current carrying channel. Temperature and external magnetic field orientation dependences of WAL signatures are studied. The potential to explore spin degree of freedom with interfacial nanostructures opens new possibilities for novel oxide spintronic devices.

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