

Abstract Submitted
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Energy Spectra and Spin Properties of Electrons in Spin-Orbit Superlattice Quantum Wires¹ VANITA SRINIVASA, JEREMY LEVY, University of Pittsburgh — We calculate the energy spectra of electrons in quantum wires with spatially uniform and modulated spin-orbit coupling. The effects of Rashba spin-orbit coupling arising from asymmetric confinement in perpendicular and lateral directions with respect to the plane containing the wire are considered. We investigate the resulting interplay of strong lateral confinement, a periodic one-dimensional superlattice potential, and spin-orbit coupling in two orthogonal directions. The implications for the spin-dependent properties of electrons confined within these quantum wires are discussed. A potential realization of such systems within narrow nanowires at the interface of $\text{LaAlO}_3/\text{SrTiO}_3$ heterostructures is also described.

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