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Spin-Orbit Coupling Effects in Strongly-Confined Electron Systems[1] VANITA SRINIVASA, JEREMY LEVY, CHENG CEN, University of Pittsburgh — We investigate theoretically spin-orbit coupling effects in low-dimensional electron systems. The consequences of introducing Rashba spin-orbit coupling into a two-dimensional electron system in the presence of additional strong lateral confinement and an external magnetic field are explored. The nature of the spin-orbital states in these systems and the resulting Berry phase effects are studied as a function of confinement geometry. The implications of these results are discussed in the context of recent experimental measurements of the properties of electrostatically-defined nanostructures in $LaAlO_3/SrTiO_3$ systems.

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