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Localization and Polarization in Graphene Systems with Edges JASON HILL, HONGKI MIN, TAMI PEREG-BARNEA, University of Texas at Austin, NIKOLAI SINITSYN, Center for Nonlinear Studies and Computer, Computational and Statistical Sciencess, LANL, ALLAN MACDONALD, University of Texas at Austin — The properties of localized states (especially states localized at the edge of ribbons) will be presented for various graphene systems. The orientation dependence of the properties will be discussed. Methods for devising appropriate boundary conditions for Dirac ribbons will be reviewed. Localization at zero field due to finite size effects, applied magnetic fields, and spin-orbit coupling will be discussed. Tendencies toward true spin and pseudospin polarizations in graphene ribbons will also be examined.

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