

Abstract Submitted
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Spatial correlations in chaotic nanoscale systems with spin-orbit coupling¹ ANH NGO, Department of Physics, Ohio University, EUGENE KIM, Instituto de Física Teórica, UAM-CSIC, Madrid 28049, Spain, SERGIO ULLOA, Department of Physics, Ohio University — We investigate the statistical properties of wave functions in two-dimensional chaotic nanostructures with spin-orbit interactions. We are especially interested in the role that spin-orbit coupling plays on the spatial correlations of eigenfunctions. Numerical results obtained from a scattering formalism [1] for a chaotic stadium billiard are compared with analytic results from random matrix theory. We present results for the evolution of the wave function statistics as the spin-orbit interaction is varied. We also discuss consequences of these results on spin-polarized tunneling experiments.

[1] M. G. E. da Luz, A. S. Lupu-Sax, and E. J. Heller. Phys. Rev. E 56, 2496 - 2507 (1997).

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