

Abstract Submitted  
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**Spin polarized current generation from quantum dots without magnetic fields**<sup>1</sup> JACOB J. KRICH, BERTRAND I. HALPERIN, Harvard University — An unpolarized charge current passing through a chaotic quantum dot with strong spin-orbit coupling can produce a spin polarized exit current without magnetic fields or ferromagnets. If there is only one channel in the output lead, no spin polarization can be produced. We use random matrix theory to estimate the typical spin polarization as a function of the number of channels in each lead, finding rms spin polarizations up to 45% with one input channel and two output channels. Finite temperature and dephasing both suppress the effect, and we include dephasing effects using a new variation of the third lead model.

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