

Abstract Submitted  
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**Spontaneous Spin Polarization in Quantum Wires**<sup>1</sup> A. D. KLIRONOMOS, J. S. MEYER<sup>2</sup>, K. A. MATVEEV<sup>3</sup>, Materials Science Division, Argonne National Laboratory, Argonne IL, 60439, USA — A number of recent experiments report spin polarization in quantum wires in the absence of magnetic fields. These observations are in apparent contradiction with the Lieb-Mattis theorem, which forbids spontaneous spin polarization in one dimension. We show that sufficiently strong interactions between electrons induce deviations from the strictly one-dimensional geometry and indeed give rise to a ferromagnetic ground state in a certain range of electron densities. At higher densities, more complicated spin interactions lead to a possibly novel ground state.

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