

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Aharonov-Casher Effect in One-Dimensional Wigner Crystals

YAROSLAV TSERKOVNYAK, University of California, Los Angeles, MARKUS KINDERMANN, Georgia Institute of Technology — We theoretically study the effects of spin-orbit coupling on spin exchange in a low-density Wigner crystal. In addition to the familiar antiferromagnetic Heisenberg exchange, we find general anisotropic interactions in spin space if the exchange paths allowed by the crystal structure form loops in real space. In particular, it is shown that the two-electron exchange interaction can acquire ferromagnetic character. Tserkovnyak and Kindermann, Phys. Rev. Lett. 102 (2009) 126801.

Yaroslav Tserkovnyak
University of California, Los Angeles

Date submitted: 19 Nov 2009

Electronic form version 1.4