Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Theory of conducting electrons in textured antiferromagnets RAN CHENG, QIAN NIU, The University of Texas at Austin — The dynamics of conducting electrons in antiferromagnetic texture is shown to exhibit an SU(2) geometric phase in the iso-spin that characterizes a locked spin-sublattice degree of freedom. The iso-spin rotation is purely geometrical and can be expressed in terms of the flux of a novel Berry curvature jointing the real and momentum space, a crucial quantity that has been overlooked in conventional transport theory. We provide an example of one dimensional domain wall, where the iso-spin rotation is topologically quantized. Scattering by skyrmion centers in two dimensions are also discussed, where a Mott like scattering of the iso-spins is predicted.

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Date submitted: 11 Nov 2011 Electronic form version 1.4