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Fermi Surface Induced Scalar Chiral Stripes in the Kondo Lattice Model on a Square Lattice RYO OZAWA, Department of Applied Physics, University of Tokyo, KIPTON BARROS, GIA-WEI CHERN, SHI-ZENG LIN, Theoretical Division and Center for Nonlinear Studies, Los Alamos National Laboratory, MASAFUMI UDAGAWA, YUKITOSHI MOTOME, Department of Applied Physics, University of Tokyo, CRISTIAN BATISTA, Theoretical Division and Center for Nonlinear Studies, Los Alamos National Laboratory — The stability and controllability of emergent nano/mesoscale spin structures are one of the central issues for spintronics. The possibility of stabilizing non-coplanar spin structures in chiral magnets (e.g. skyrmion crystals) is opening a new avenue for controlling transport properties with small magnetic fields. An electron moving in a loop picks up a Berry phase proportional to the net scalar spin chirality of the underlying spin configuration that is enclosed by the loop. In other words, the scalar spin chirality acts as an effective magnetic field that couples to the electronic orbital motion. By solving the Kondo lattice model on a square lattice, we will show that mesoscale chiral stripes emerge in the vicinity of a Lifshitz transition of the Fermi surface. Our unbiased results are obtained by applying a novel algorithm which allows for very efficient simulations based on Langevin dynamics.

Ryo Ozawa
Department of Applied Physics, University of Tokyo

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