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Vortex Crystals with Chiral Stripes in Itinerant Magnets RYO OZAWA, Dept. of Appl. Phys., Univ. of Tokyo, SATORU HAYAMI, KIPTON BARROS, Theoretical Devision and CNLS, Los Alamos National Lab., GIA-WEI CHERN, Dept. of Phys., Univ. of Virginia, YUKITOSHI MOTOME, Dept. of Appl. Phys., Univ. of Tokyo, CRISTIAN D. BATISTA, Theoretical Devision and CNLS, Los Alamos National Lab. — Noncoplanar spin textures in itinerant magnets are generating increasing interest because of the associated spin Berry phase, which induces a tremendous effective magnetic field on the itinerant electrons. Such noncoplanar spin textures appear frequently in itinerant magnets, even with vanishingly small spin-orbit coupling. We explore a generic condition for noncoplanar spin ordering, with a focus on "frustration" in itinerant magnets, that is characterized by multiple global maxima in the magnetic susceptibility. In a simple square Kondo lattice model, we find that a noncoplanar vortex-antivortex crystal with a one-dimensional modulation of spin scalar chirality becomes stable in a wide range of electron filling fraction [1]. The unexpected result is obtained by careful analyses of higher-order terms in the perturbative expansion in terms of the Kondo exchange coupling and the degree of noncoplanarity, as well as numerical simulation based on the Langevin and stochastic Landau-Lifshitz-Gilbert dynamics with the kernel polynomial method. [1] R. Ozawa, S. Hayami, K. Barros, G.-W. Chern, Y. Motome, and C. D. Batista, preprint (arXiv:1510.06830).

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