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Title:	Microscopic magnetic Hamiltonian for exotic spin textures in metals
Authors:	Kathyat, D.S. (/jspui/browse?type=author&value=Kathyat%2C+D.S.) Mukherjee, A. (/jspui/browse?type=author&value=Mukherjee%2C+A.) Kumar, Sanjeev (/jspui/browse?type=author&value=Kumar%2C+Sanjeev)
Keywords:	Hamiltonians Textures Dzyaloshinskii-Moriy Anisotropic interaction
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Abstract:	We derive and study a microscopic spin Hamiltonian on a lattice for Rashba-coupled double exchange metals. The Hamiltonian consists of anisotropic interactions of the Dzyaloshinskii-Moriya and pseudodipolar form, in addition to the standard isotropic term. We validate the spin Hamiltonian by comparing results with those on the exact spin-fermion model, and present its phase diagram using large-scale Monte Carlo simulations. In addition to ferromagnetic, planar spiral, and flux states, the model hosts skyrmion crystal and classical spin-liquid states characterized, respectively, by multiple peaks and a diffuse ring pattern in the spin-structure factor. The filamentary domain-wall structures in the spin-liquid state are in remarkable agreement with experimental data on thin films of MnSi-type B20 metals and transition metals and their alloys.
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