Title:	Electronic mechanism for nanoscale skyrmions and topological metals
Authors:	S. Kathyat, Deepak (/jspui/browse?type=author&value=S.+Kathyat%2C+Deepak) Mukherjee, Arnob (/jspui/browse?type=author&value=Mukherjee%2C+Arnob) Kumar, Sanjeev (/jspui/browse?type=author&value=Kumar%2C+Sanjeev)
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Abstract:	We report a microscopic electronic mechanism for nanoscale skyrmion formation and topological metalicity originating from Rashba and double-exchange physics. The results are based on hybrid simulations in a model that explicitly retains itinerant electronic degrees of freedom. A simple physical picture is provided via an effective short-range spin model. We identify hexagonal and square lattice arrangements of skyrmions in two different regimes of the parameter space. Sparse skyrmions emerge at finite temperatures as excitations of the ferromagnetic phase. The skyrmion states are characterized as topological metals via explicit calculations of the Bott index and the Hall conductivity. Oscillations in local density of states are shown to arise from a combination of confinement effects and emergent gauge-fields. We also emphasize the importance of a consistent treatment of spin-orbit coupling for calculating electronic properties of metals hosting unconventional magnetic textures such as skyrmions
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