Title:	Electronic route to stabilize nanoscale spin textures in itinerant frustrated magnets
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Abstract:	We unveil novel spin textures in an itinerant fermion model on a frustrated triangular lattice in the limit of low electronic density. Using hybrid Monte Carlo simulations on finite clusters we identify two types of nanoscale spin textures in the background of 120◦ order: (i) a planar ferromagnetic cluster, and (ii) and a noncoplanar cluster with spins oriented perpendicular to the 120◦ plane. Both these textures lead to localization of the electronic wave functions and are in turn stabilized by the concomitant charge modulations. The noncoplanar spin texture is accompanied by an unusual scalar chirality pattern. A well defined electric charge and magnetic moment associated with these textures allow for their easy manipulation by external electric and magnetic fields—a desirable feature for data storage. We identify a localization-delocalization behavior for electronic wave functions which is unique to frustrated magnets and propose a general framework for stabilizing similar spin textures in spin-charge coupled systems.
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