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Title:	Antiferromagnetic skyrmion crystals in the Rashba Hund's insulator on triangular lattice
Authors:	Mukherjee, Arnob (/jspui/browse?type=author&value=Mukherjee%2C+Arnob) Kathayat, Deepak S. (/jspui/browse?type=author&value=Kathayat%2C+Deepak+S.) Kumar, Sanjeev (/jspui/browse?type=author&value=Kumar%2C+Sanjeev)
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Abstract:	Motivated by the importance of antiferromagnetic skyrmions as building blocks of next-generation data storage and processing devices, we report theoretical and computational analysis of a model for a spin-orbit coupled correlated Hund's insulator magnet on a triangular lattice. We find that two distinct antiferromagnetic skyrmion crystal (AF-SkX) states can be stabilized at low temperatures in the presence of external magnetic field. The results are obtained via Monte Carlo simulations on an effective magnetic model derived from the microscopic electronic Hamiltonian consisting of Rashba spin-orbit coupling, as well as strong Hund's coupling of electrons to classical spins at half-filling. The two AF-SkX phases are understood to originate from a classical spin liquid state that exists at low but finite temperatures. These AF-SkX states can be easily distinguished from each other in experiments as they are characterized by peaks at distinct momenta in the spin structure factor which is directly measured in neutron scattering experiments. We also discuss examples of materials where the model as well as the two AF-SkX states can be realized.
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