

Abstract Submitted
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Z_2 -vortex lattice in the ground state of the triangular Kitaev-Heisenberg model¹ MARIA DAGHOFER, IOANNIS ROUSOCHATZAKIS, ULRICH K. ROESSLER, JEROEN VAN DEN BRINK, IFW Dresden — Investigating the classical Kitaev-Heisenberg Hamiltonian on a triangular lattice, we establish the presence of an incommensurate non-coplanar magnetic phase, which is identified as a lattice of Z_2 vortices. The vortices, topological point defects in the $SO(3)$ order parameter of the nearby Heisenberg antiferromagnet, are not thermally excited but due to the spin-orbit coupling and arise at temperature $T \rightarrow 0$. This Z_2 -vortex lattice is stable in a parameter regime relevant to iridates. We show that in the other, strongly anisotropic, limit a robust nematic phase emerges.

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