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Frustrated magnetic phases of ultracold atoms

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Summary

We study a frustrated coupled Ising-XY model on a triangular lattice under the influence of an artificial gaugefield. In recent experiment [1], this model was implemented using ultracold Rubidium-87 atoms in an optical lattice and the artificial gauge-field was created via lattice shaking. Here, we use a semiclassical model to describe both the frustrated phases in thermal equilibrium as well as a dynamical quench into that phase (non-equilibrium).

[1]: J.Struck, M.Weinberg, C.Ölschläger, P.Windpassinger, J.Simonet, K.Sengstock, R.Höppner, P.Hauke, A.Eckardt, M.Lewenstein & L.Mathey, "Engineering Ising-XY spin-models in a triangular lattice using tunable artificial gauge fields." Nature Physics (November 2013)

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