

Emergent critical phase and Ricci flow in a 2D frustrated Heisenberg model

Peter P. Orth

Karlsruhe Institute of Technology (KIT), Germany

We introduce a two-dimensional frustrated Heisenberg antiferromagnet on interpenetrating honeycomb and triangular lattices. Classically the two sublattices decouple, and “order from disorder” drives them into a coplanar state. Applying Friedan’s geometric approach to nonlinear sigma models, we show that the scaling of the spin-stiffnesses corresponds to the Ricci flow of a 4D metric tensor. At low temperatures, the relative phase between the spins on the two sublattices is described by a six-state clock model with an emergent critical phase.

P. P. Orth, P. Chandra, P. Coleman, and J. Schmalian, *Phys. Rev. Lett.* **109**, 237205 (2012).