

Abstract Submitted
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Phase-Space Networks of Frustrated spin models YILONG HAN,
Hong Kong University of Science and Technology — We directly studied the phase spaces of two classical frustrated spin models: the antiferromagnet on triangular lattice and the six-vertex model. Their highly degenerated ground states are mapped as discrete networks such that quantitative network analysis can be applied to phase-space studies. The resulting phase spaces of different models under different boundary conditions share some common features and establish a new class of complex networks with unique topology. We proved that the spectral densities of networks approach the Gaussian distribution at the infinite-size limit. The six-vertex model has a one-to-one correspondence to three-dimensional sphere stacks. This work connects a traditional field (frustrated spin models) and a new field (complex network since 1998), and provides some open questions. Reference: Phys. Rev. E 80 051102 (2009).

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