

Potts Antiferromagnetism in Two and Three Dimensions

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The Potts model—a simple statistical-mechanical system—plays an important role in the theory of critical phenomena and finds various applications in condensed-matter physics and beyond. The ferromagnetic Potts model is now well understood, thanks to universality. In this talk, I shall report two recent studies of the q -state Potts antiferromagnet. I shall present argument as well as numerical evidence that the Potts antiferromagnet with arbitrarily large values of q can have a finite-temperature phase transition on some families of two-dimensional lattices. I will also demonstrate that the emergent continuous symmetry can occur in a series of three-dimensional Potts models.