

# **Potts and independent set models on $d$ -regular graphs**

*Nike Sun*  
*Stanford University*

We consider the ferromagnetic Potts on typical  $(2d)$ -regular graphs, and the independent set or hard-core model on typical bipartite  $d$ -regular graphs, with graph size tending to infinity. We show that the replica symmetric (Bethe) free energy prediction applies for all parameter values in these two models. In this talk I will describe some of the proof ideas which will give an indication of the contrast with the anti-ferromagnetic Potts model and the independent set model at high fugacity on non-bipartite graphs, where the Bethe prediction is known to fail.

Based on joint works with Amir Dembo, Andrea Montanari, and Allan Sly.