POTTS AND INDEPENDENT SET MODELS ON d-REGULAR GRAPHS

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We consider the ferromagnetic Potts on typical d-regular graphs, and the independent set model on typical bipartite d-regular graphs, with graph size tending to infinity. We show that the replica symmetric (Bethe) prediction applies for *all* parameter values in these two models. In this talk I will describe some of the proof techniques, 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.

This is joint work with Amir Dembo, Andrea Montanari, and Allan Sly.