First order phase transition for the Random Cluster model with $q > 4$

Ioan Manolescu [1]

[1] Fribourg

This talk aims to prove that the phrase transition of the planar random cluster model (and that of the associated Potts model) is discontinuous when $q > 4$. The result is obtained by computing rigorously the correlation length of the critical random cluster model using a correspondence with the six vertex model. The latter may be expressed using the transfer matrix formalism; the Perron-Frobenius eigenvalues of the diagonal blocks of the transfer matrix may then be computed using the Bethe ansatz.