# GIBBS FORMALISM FOR RANDOM PERMUTATIONS

STEFAN ADAMS

We will introduce a whole range of problems related to random permutations whose motivation goes back to the Bose-Einstein condensation in quantum statistical mechanics. After reviewing standard probabilistic approaches we will introduce a Gibbs formalism for random bijections of the planar integer lattice. Under certain energy assumptions we show the existence of Gibbs measures and discuss possible characterisation of different phases and address the problem of finite and infinite cycles in bijections of the planar integer lattice.