GIBBS MEASURES ON PERMUTATIONS OF THE INTEGERS

MAREK BISKUP

(UCLA and University of South Bohemia)

ABSTRACT

I will present a solution to an instance of the problem that I learned from Daniel Ueltschi some three years ago. Consider a probability distribution on the set of all permutations of the integers that weighs a permutation by the exponential of the negative sum of the squares of the displacements between the integers and their images under the permutation. This distribution arises as a caricature to Feynman's representation of interacting Bose gases. One of the key issues that preclude a detailed understanding of Bose gases in this language is that the representation is *a priori* defined only in finite volume and it is not at all clear how to set up (and control) the infinite volume version.

I will outline a solution to this problem in spatial dimension one. Specifically, I will show how to formalize the above description in terms of infinite-volume Gibbs measures and then provide a full classification of all such measures by means of the quantity called a flux. In particular, all Gibbs measures are translation invariant and there is exactly one that has only finite cycles, almost surely. The talk is based on joint work – and a paper under preparation – with Thomas Richthammer (UCLA and Uni Munich).