

Zero-range condensation with random interaction

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Abstract :

We study condensation in zero-range processes where a random perturbation is added to the rates $g(n)=1+b/n^c$. Without this disorder the system exhibits a condensation transition for all values of c in $(0,1)$ which is well understood. For generic perturbations condensation takes place only if c takes values in $(0,1/2)$. We give rigorous bounds on the quenched free energy of the disordered system and show that there exists a finite critical density in the thermodynamic limit. We also provide detailed numerical results and an expansion to predict the system's behaviour for small perturbations.

This is joint work with Luis Garcia and Paul Chleboun.