ON THE MULTIPLE OVERLAP FUNCTION OF THE SK MODEL

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Abstract

In this note, we prove an asymptotic expansion and a central limit theorem for the multiple overlap \(R_{1,...,s}\) of the SK model, defined for given \(N, s \geq 1\) by \(R_{1,...,s} = N^{-1} \sum_{i \leq N} \sigma_i \ldots \sigma_i^s\). These results are obtained by a careful analysis of the terms appearing in the cavity derivation formula, as well as some graph induction procedures. Our method could hopefully be applied to other spin glasses models.

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