

Combinatorics and Probability Seminar

Replica Symmetry Breaking for the mixed p -spin model

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Abstract: The idea of replica symmetry breaking (RSB) was introduced by Giorgio Parisi in physics to study the Sherrington-Kirkpatrick (SK) model around 1980. By breaking the symmetry of replicas infinitely many times at low temperature, he predicted a solution for the SK model. Mathematically, the level of RSB corresponds to the number of points in the support of the Parisi measures. In this talk, we will show that the level of RSB for the more general mixed p -spin model will diverge as the temperature goes to zero. On the other hand, we will show that there exist two-step RSB spherical mixed p -spin glass models at zero temperature, which are the first natural examples beyond the replica symmetric, one-step RSB and Full-step RSB phases.

This talk is based on joint works with Antonio Auffinger (Northwestern University) and Wei-Kuo Chen (University of Minnesota).

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| Monday, October 14 at 3:00 PM in 612 SEO |
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