

1172-60-346

Jinho Baik and **Elizabeth Collins-Woodfin***, elicolli@umich.edu, and **Pierre Le Doussal**
and **Hao Wu**. *Spherical spin glass model with external field.*

We analyze the free energy and the overlaps in the 2-spin spherical Sherrington Kirkpatrick spin glass model with an external field for the purpose of understanding the transition between this model and the one without an external field. We compute the limiting values and fluctuations of the free energy as well as three types of overlaps in the setting where h (the strength of the external field) goes to zero as N grows. Our methods involve a contour integral representation of the partition function along with random matrix techniques. We use our results to comment on the geometry of the Gibbs measure and how this geometry changes in the transition from a system with an external field to a system without an external field. (Received August 31, 2021)