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Philippe Soso*, psosoe@math.cornell.edu, and **Benjamin Landon**. *Fluctuations of the overlap in 2-spin spherical spin glasses*.

In a series of recent papers, J. Baik and J. O. Lee have used a contour integral representation for the partition function of the 2-spin spherical Sherrington-Kirkpatrick model to analyze its fluctuations via random matrix theory, including in the low temperature phase. Such results remain largely inaccessible for general p-spin models and the SK model with Ising spins.

Using a similar representation for functions of overlaps between replicas, we study the fluctuations of the overlap between two replicas in the 2-spin spherical SK model. We prove a quenched CLT for the overlaps in the high temperature phase but close to the critical temperature. We also show that the fluctuations of the overlap in the low temperature phase are of order $N^{-1/3}$ and are given by a simple, explicit function of the eigenvalues of GOE matrix. We show that this quantity converges and describe its limit in terms of quantities from random matrix theory. Joint work with B. Landon and V.L. Nguyen. (Received August 17, 2019)