

# The TAP variational principle for the constrained overlap multiple SSK model

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In this talk, we consider spin glass models involving multiple replicas with constrained overlaps. These models are used to obtain the large deviations of overlaps from Gibbs measures. The limiting free energy is known to be given by a Parisi type minimization. In this talk we will discuss how the simpler spherical Sherrington–Kirkpatrick (SSK, i.e. 2-spin) model can also be expressed in terms of a TAP variational principle. The derived variational formula confirms that this model is replica symmetric, a fact which is natural but not obvious from the Parisi formula for the model.

This is joint work with David Belius and Leon Fröber.