Zhou Fan

Title: On orthogonally-invariant spin glasses and linear models with invariant designs

Abstract: I will discuss some recent progress towards the rigorous analysis of the asymptotic mutual information and TAP mean-field equations in linear models with rotationally-invariant designs, and related analyses of an orthogonally-invariant analogue of the SK model with external field. Our results establish the validity of the replica-symmetric predictions for these quantities at sufficiently high temperatures, using an adaptation of a conditional second-moment argument of Bolthausen, where we condition on the filtrations of iterative algorithms that solve the mean-field equations in such models. This is joint work with Yufan Li, Subhabrata Sen, and Yihong Wu.