

Control of the Dyson equation and large deviations for the eigenvalues of large Hermitian random matrices

Panagiotis Souganidis

University of Chicago

souganidis@math.uchicago.edu

ABSTRACT

The control of the Dyson equation, which is the mean field equation for the eigenvalues of large random Hermitian matrices, leads to the study of a nonlinear Hamilton-Jacobi-type equation with singularities in the set of probability spaces. In the lecture, I will describe how to establish the well-posedness of the solutions of these equations. Then, I will use these results to obtain large deviations for the eigenvalues of large random Hermitian matrices.