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Guilherme Silva* (silvag@umich.edu), 530 Church Street, University of Michigan, Department of Mathematics, Ann Arbor, MI 48108. *Spectral curves and equilibrium problems for random matrix model with external source.*

In this talk we plan to discuss the limiting eigenvalue distribution of the hermitian plus external source random matrix model for arbitrary (that is, non-symmetric) polynomial potentials, when the external source has exactly two distinct eigenvalues. Starting from the existence of an appropriate algebraic equation, known as the spectral curve of the matrix model, we construct a vector of measures that should ultimately describe the limiting eigenvalues distribution of the matrix model. This vector of measures is a saddle point of an energy functional involving three measures and containing both attractive and repulsive interactions, plus appropriate external fields. The first two measures live on the real line and the third measure lives on the so-called S-contour, whose existence is one of our main results.

Also as a consequence of our results, we are able to describe all possible critical behaviors in the matrix model under consideration.

This is a joint work with Andrei Martínez-Finkelshtein (Universidad de Almería - Spain) (Received February 12, 2018)