1135-31-475 **Guilherme Silva*** (silvag@umich.edu), East Hall 1859, 530 Church Street, Ann Arbor, MI 48108. *Vector critical measures and the hermitian plus external source random matrix model.*

It has been known for some time that the average characteristic polynomial of the hermitian random matrix model with external source is a multiple orthogonal polynomial (MOP) on the real line, with weights whose difference is linear and connected to the eigenvalues of the source.

Although this connection has been explored in the literature, the results available so far are always obtained under strong symmetry assumptions on the potential and on the source.

In this talk we plan to shed some light on the hermitian plus external source matrix model for arbitrary (that is, non-symmetric) potentials. Starting from the existence of an appropriate algebraic equation, known as the spectral curve of the matrix model, we construct a vector critical measure that should ultimately describe the limiting zero distribution of the aforementioned MOP's. This vector critical measure is the solution of an electrostatic model that involves three measures and interactions of both Nikishin and Angelesco types. 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.

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