

BOULDER PROBABILITY SEMINAR

**NON-NORMAL RANDOM MATRICES AND
CONVERGENCE TO A RING**

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We study the empirical measure L_{A_n} of the eigenvalues of non-normal square matrices of the form $A_n = U_n D_n V_n$ with U_n, V_n independent Haar distributed on the unitary group and D_n real diagonal. We show that when the empirical measure of the eigenvalues of D_n converges, and D_n satisfies some technical conditions, L_{A_n} converges towards a rotationally invariant measure on the complex plane whose support is a single ring, even if the support of D_n consists of several disjoint intervals. In particular, we provide a complete proof of Feinberg-Zee single ring theorem.

(Joint work with Alice Guionnet and Manjunath Krishnapur)