

THE GINIBRE RANDOM MATRIX ENSEMBLE WITH POINT INSERTIONS: DROPLETS AND  
MOTHER BODIES

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A basic result of random matrix theory is the circular law: the eigenvalues of complex matrices with i.i.d. entries fill out a disk as the size of the matrices increases. In the case of the Ginibre ensemble with point insertions there is a repulsion of eigenvalues away from the inserted points. In the large size limit fill out a region known as the droplet, that is different from a disk.

The zeros of the average characteristic polynomial tend to a certain contour inside the droplet, and their limiting zero counting measure is called the mother body. We study the behavior of the droplet and the mother body in some simple cases. The aim is to characterize the droplet and its changes in topology.

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