



Local Eigenvalue Density for General MANOVA Matrices

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We consider random $n \times n$ matrices of the form $(XX^* + YY^*)^{-1/2} YY^* (XX^* + YY^*)^{-1/2}$, where X and Y have independent entries with zero mean and variance one. These matrices are the natural generalization of the Gaussian case, which are known as MANOVA matrices and which have joint eigenvalue density given by the classical Jacobi ensemble. We show that, away from the spectral edge, the eigenvalue density converges to the limiting density of the Jacobi ensemble even on the shortest possible scales of order $1/n$ (up to $\log n$ factors). The result is the analogue of the Wigner semicircle law and the Marchenko-Pastur law for general MANOVA matrices.

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