On Cramer-von Mises statistic for the spectral distribution of random matrices

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Abstract: Let F_n and F be the empirical and limiting spectral distributions of an n by n Wigner matrix. The Cramer-von Mises (CvM) statistic is a classical goodness-of-fit statistic that characterizes the distance between F_n and F in l^2-norm. In this talk, we will consider a mesoscopic approximation of the CvM statistic for Wigner matrices, and derive its limiting distribution. The distribution fits well the heuristic prediction given by the log-correlated Gaussian field approximation for the stochastic filed of $F_n(t)$. This is a joint work with Yukun He.