Beyond the Strong Szegö Limit Theorem

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In random matrix theory it is well-established that the Strong Szegö Limit Theorem for Toeplitz determinants implies a CLT for linear statistics for eigenvalues of a CUE matrix. The purpose of this talk will be to discuss an extension of the Strong Szegö Limit Theorem to determinants of truncated exponentials of banded matrices such as Jacobi and CMV matrices. This extension shows that the second term in the Strong Szegö Limit Theorem is universal, providing a general CLT for more general classes of determinantal point processes including orthogonal polynomial ensembles on the real line and unit circle. A time-dependent analogue can be used tot establish Gaussian Free Field fluctuations in certain non-colliding process and random tilings of planar domains. The talk aims to present an overview of various results based on this idea.