

DISCRETE PAINLEVÉ EQUATIONS AND RANDOM MATRICES

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Abstract

Random matrices and orthogonal polynomials have been, for more than a decade, one of the principal sources of the important analytical ideas and exciting problems in the theory of discrete Painlevé equations. In the lecture series, the main focus will be put on the Toeplitz and Hankel determinants appearing in the theory of random matrices. The principal methodological point will be the treatment of these determinants as the discrete dynamical systems of Painlevé type. The relevant Riemann-Hilbert problems will be used for the evaluation of the related critical asymptotics and the analysis of the associated universality classes in matrix models.