



DEPARTAMENTO
DE MATEMÁTICA
TÉCNICO LISBOA

COLLOQUIUM DE MATEMÁTICA

From Toeplitz matrices to black holes, and beyond

Cristina Câmara, IST

What do Toeplitz matrices, random matrix models, orthogonal polynomials, Painlevé transcendents, the KdV equation, and black holes, seemingly very unrelated subjects, have in common? These, and a variety of other mathematical problems, can be studied by means of the so called Riemann-Hilbert method. In this talk we briefly describe what a Riemann-Hilbert problem is and present several recent applications, from the spectral properties of Toeplitz operators to exact solutions of Einstein field equations.

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