Faculdade de Ciências da Universidade de Lisboa

SEMINÁRIO DO GRUPO DE FÍSICA MATEMÁTICA

Dia 27 de Abril (sexta-feira), às 11h00, sala 6.2.33

Toeplitz matrices and Schur polynomials

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Abstract: Toeplitz matrices are ubiquitous and enjoy attractive computational properties, for which its study has captured the interest of many mathematicians in the last century.
In the first part of this talk, we review some necessary properties of Schur polynomials. We start a well known tool, Vieta's formulas, from which naturally arise the elementary symmetric polynomials, then we study other families of symmetric polynomials: complete homogeneous symmetric polynomials, Schur polynomials, and skew Schur polynomials. We also recall a formula that expresses the product of Schur polynomials in terms of skew Schur polynomials.
In the second part, we give relations between Schur polynomials and Toeplitz banded matrices, for instance, we express determinants and minors of Toeplitz matrices through Schur polynomials.
The results presented here have been obtained jointly with Egor Maximenko; they are based on some ideas by William F. Trench and Per Alexandersson.
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