

REGIONS OF ORTHOGONALITY OF GENERALIZED CHEBYSHEV POLYNOMIALS AS SEMI-ALGEBRAIC SETS

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ABSTRACT

The theory of root systems allows to define a variety of generalized multivariate Chebyshev polynomials that have connections to topics such as Fourier analysis and representations of Lie algebras. Their domains of orthogonality, which are the images of R^n under the generalized cosines, have intriguing shapes and singularities. In this talk we shall describe them as basic semi-algebraic sets, providing the polynomial inequations that define them as the locus of positivity of some explicit symmetric matrices for the families A_n , B_n , C_n , and D_n . This is joint work with Evelyne Hubert (Inria Méditerranée) and Cordian Riener (Arctic University, Tromsø).

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