On a certain system of Diophantine equations and Gaussian designs

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Abstract

In this talk we first introduce a certain system of Diophantine equations, originally designed as Hausdorff's simplification of Hilbert's solution of Waring problem, and then describe a close connection with quasi-Hermite polynomials in special function theory, Gaussian designs in algebraic combinatorics and Christoffel-Darboux kernels in functional analysis. We show some nonsolvability theorems for our equations. This is a joint work with Yukihiro Uchida (Tokyo Metropolitan University).