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On Equiangular Tight Frames

Abstract

A family of lines through the origin in a Euclidean space is called equiangular if the absolute value of the inner product of each pair of lines is a constant. A $d \times n$, $d < n$ matrix F with real entries is a Frame if the absolute value of the off-diagonal entries of $F^T F$ is a constant. A $d \times n$ Frame is Tight if the rows are pairwise orthogonal and it is Flat if the absolute value of the entries stays the same. A new construction method makes use of Block Shapiro-Golay pairs. Applications lead to a class of Quasi-symmetric designs and Self-Complementary Codes attaining Grey-Rankin Bound.

This is joint work with Thomas Pender and Sho Suda.