
RAJESH PEREIRA, University of Guelph

Correlation Matrices: The Inverse Eigenvalue and Other Problems.

We examine some problems relating to the convex hull of the rank one correlation matrices. One key problem we look at is the problem of determining the set of all possible spectra of matrices in the convex hull of the real rank one correlation matrices. We show relations between this problem and other areas of mathematics such as the geometry of polynomials and the existence of Hadamard matrices.

We also examine the relationship between the convex hull of $n \times n$ rank one correlation matrices and the set of all $n \times n$ correlation matrices. Relations between this problem and other areas of mathematics such as the theory of positive definite functions on groups and Grothendieck's inequality are explored.