

Optimization and Equilibrium Seminar

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Title: Completely mixed linear games and irreducibility concepts for Z-transformations over self-dual cones.

Abstract:

In the setting of a self-dual cone in a finite-dimensional real inner product space (in particular, over a symmetric cone in an Euclidean Jordan algebra), we consider zero-sum linear games. Motivated by dynamical systems, we concentrate on Z -transformations (which are generalizations of Z -matrices). It is known that a Z -transformation with positive (game) value is completely mixed (thus yielding uniqueness of optimal strategies). The present talk deals with the case of value zero. Motivated by the matrix-game result that a Z -matrix with value zero is completely mixed if and only if it is irreducible, we formulate our general results based on the concepts of cone-irreducibility and space-irreducibility. While the concept of cone-irreducibility for a positive linear transformation is well-known, we introduce space-irreducibility for a general linear transformation by reformulating the irreducibility concept of Elsner. Our main result is that for a Z -transformation with value zero, space-irreducibility is necessary and sufficient for the completely mixed property.

We also present some results specialized to Euclidean Jordan algebras.

Miércoles 25 de septiembre de 2024, a las 16:15 hrs.

Sala de Seminarios John Von Neumann del Centro de Modelamiento Matemático (Beauchef 851, Edificio Norte, Piso 7).

