METU Mathematics General Seminar

A Minimax Theorem for Convex Optimization on Moment Polytopes

Mahmut Levent Doğan
Ludwig-Maximilians-Universität (Munich, Germany)

Abstract

Strassen's asymptotic spectrum offers a framework for analyzing the complexity of tensors. It has found applications in diverse areas, from computer science to additive combinatorics and quantum information. A long-standing open problem, dating back to 1991, asks whether Strassen's support functionals are universal spectral points, that is, points in the asymptotic spectrum of tensors.

In this talk, we answer this question in the affirmative by proving that the support functionals coincide with the quantum functionals - universal spectral points that are defined via entropy optimization on entanglement polytopes. We obtain this result as a special case of a general minimax formula for convex optimization on entanglement polytopes (and other moment polytopes) that has further applications to other tensor parameters, including the asymptotic slice rank. Our proof is based on a recent Fenchel-type duality theorem on Hadamard manifolds due to Hirai.

Date: Thursday, 14 May 2026
Time: 15:40
Place: Gündüz İkeda Seminar Room