



# ODTU-Bilkent Algebraic Geometry

## Nonlinear algebra in game theory

By

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**Abstract:** In 1950, Nash published a very influential two-page paper proving the existence of Nash equilibria for any finite game. The proof uses an elegant application of the Kakutani fixed-point theorem from the field of topology. This opened a new horizon not only in game theory, but also in areas such as economics, computer science, evolutionary biology, and social sciences. It has, however, been noted that in some cases the Nash equilibrium fails to predict the most beneficial outcome for all players. To address this, generalizations of Nash equilibria such as correlated and dependency equilibria were introduced. In this talk, I elaborate on how nonlinear algebra is indispensable for studying undiscovered facets of these concepts of equilibria in game theory.

**Date:** 15 November 2024, Friday

**Time:** 15:40 (GMT+3)

**Place:** Zoom

To request the event link, please send a message to [sertoz@bilkent.edu.tr](mailto:sertoz@bilkent.edu.tr)