Boğaziçi
MATH COLLOQUIUM

The van der Waerden conjecture and real stable polynomials

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Abstract:

The van der Waerden conjecture was famous long standing open problem in combinatorial linear algebra till it was settled in 1981 by Falikman and separately by Egorycheff. The conjecture stated that the averaging matrix was the unique minimizer of the permanent. In 2008 Leonid Gurvits gave a remarkable new proof that exploited the properties of the so called Real Stable polynomials. Real stability is a higher dimensional generalization of real rootedness and has found several recent applications.

In this talk I will explain the van der Waerden conjecture, a natural generalization of the conjecture due to Bapat and Gurvits' proof. I'lll then talk about real stability in general and end with the description of a problem I am currently working on that deals with the question of unique minimizers for an important class of polynomials called mixed characteristic problems that were introduced in the proof of the Kadison-Singer problem by Marcus, Spielman and Srivastava in 2013.

The talk will be completely elementary and all that will be needed to follow it is a basic knowledge of linear algebra.

Date : Wednesday, February 17, 2016
Time: 15:00
Place: TB 240, Boğaziçi University