

Flag Algebras

Alexander Razborov

Department of Computer Science
University of Chicago

A substantial part of extremal combinatorics studies relations existing between densities with which given combinatorial structures (fixed size “templates”) may appear in unknown (and presumably very large) structures of the same type. Using basic tools and concepts from algebra, analysis and measure theory, we develop a general framework that allows to treat all problems of this sort in an uniform way and reveal mathematical structure that is common for most known arguments in the area. The backbone of this structure is made by commutative algebras defined in terms of finite models of the associated first-order theory.

In this talk I will give a general impression of how things work in this framework, and we will pay a special attention to concrete applications of our methods.