Prof. Dr. Martin Otto
Dr. Vince Barany

Logikseminar SoSe 2012

Algebraic Graph Theory, Combinatorics, and Logic (of course)

Graph theory provides an area of contact between several branches of mathematics: it is a branch of discrete mathematics, a core topic in combinatorics, is of great interest for complexity theory and in finite and algorithmic model theory, and it has strong methodological ties to algebraic methods.

In this seminar we want to start out from the combinatorial and algebraic perspective, explore some standard methods, and discuss some specific applications with a view to definability in logics, model-theoretic games and the graph isomorphism problem. For a wealth of material, and as a source for some seminar topics, you may want to take a look at these books:

Godsil, Royle: Algebraic Graph Theory
Godsil: Tools from Linear Algebra (in Handb. of Comb.)
Alon: Tools from Higher Algebra (in Handb. of Comb.)
Scheinermann, Ullman: Fractional Graph Theory

Other sources (in particular journal articles devoted to more specific topics) will be made available in due course. It is envisaged that up to 12 participants present small thematic units from the above books and/or other sources. Besides the oral presentation, a handout and written summary are typically required. The seminar is available at Bachelor and Master levels.

For the further planning of the seminar and schedule it is essential that all prospective participants contact one of the organisers as soon as possible:

barany@mathematik.tu-darmstadt.de
otto@mathematik.tu-darmstadt.de

The seminar is also open for registration in TUCaN.

A first meeting for organisatorial purposes is scheduled for
Wednesday, April 11, 15:00 in room 201.