A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Donnerstag, 22. Januar 2015, 11.00 Uhr

Ort: Seminarraum, ZIB, Takustr. 7, 14195 Berlin

Disputation über die Doktorarbeit von

Herrn Dennis Clemens

Thema der Dissertation:

Two-player games on graphs

Thema der Disputation:

Reiher's Clique Density Theorem

Die Arbeit wurde unter der Betreuung von **Prof. T. Szabó, PhD** durchgeführt.

Abstract: One of the most classic results in Extremal Graph Theory is Turán's Theorem, which guarantees the existence of cliques of given order r in a graph G, provided that its edge density d exceeds a certain threshold. Naturally, one may wonder how many such cliques must necessarily be contained in G when the edge density d becomes larger than this threshold. Lovász and Simonovits [1] conjectured their number to be at least F_r(d)n^r + O(n^{r-2}), where F describes a certain piecewise concave function. After some partial results in the last decades, the conjecture was proven by Christian Reiher [2] recently, by using weighted graphs and Lagrange multipliers which help to transfer this discrete problem into a continuous setting. In the talk we will see a construction showing that the above bound is tight asymptotically and then we will see an overview on the proof by Christian Reiher.

[1] L. Lovász and M. Simonovits: On the number of complete subgraphs in a graph II, Studies in pure mathematics, pages 459-495, Birkhäuser, 1983.

[2] C. Reiher: The Clique Density Theorem, Hamburger Beiträge zur Mathematik 462, pages 1-25, 2012.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. T. Szabó, PhD