

FREIE UNIVERSITÄT BERLIN  
Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

## DISPUTATION

**Montag, 23. November 2015, 16.00 Uhr**  
**Ort: Raum 005, Takustr. 9, 14195 Berlin**

Disputation über die Doktorarbeit von

**Herrn Manh Tuan Tran**

Thema der Dissertation:  
**On Problems in Extremal Combinatorics**

Thema der Disputation:  
**Bootstrap percolation in the hypercube**

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

Abstract: The  $r$ -neighbor bootstrap process on a graph  $G$  starts with an initial set  $A$  of "infected" vertices and, at each step of the process, a healthy vertex becomes infected if it has at least  $r$  infected neighbors (once a vertex becomes infected, it remains infected forever). If every vertex of  $G$  eventually becomes infected, then we say that  $A$  percolates.

The main extremal problem in bootstrap percolation is to determine the minimum size of a set which percolates under the  $r$ -neighbor bootstrap process on  $G$ . When  $G$  is the  $d$ -dimensional hypercube, Balogh and Bollobás (2001) gave a conjectural asymptotic formula for this number as  $d$  tends to infinity. The conjecture has recently been confirmed by Morrison and Noel (2015). Their proof uses linear algebra methods. In this talk I will sketch the proof

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