

## FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

# DISPUTATION

**Montag, 6. November 2017, 16.00 Uhr**

**Ort: Raum 005, Takustr. 9, Institut für Informatik, FU Berlin**

**Disputation über die Doktorarbeit von**

**Herrn Clément Requilé**

**Thema der Dissertation:  
Asymptotic study of regular planar graphs**

**Thema der Disputation:  
Connectivity in bridge-addable graph classes:  
the McDiarmid-Steger-Welsh conjecture**

Die Arbeit wurde unter der Betreuung von **Prof. J. J. Rué Perna, PhD** durchgeführt.

**Abstract:** A class of graphs is bridge-addable if given a graph  $G$  in the class, any graph obtained by adding an edge between two connected components of  $G$  is also in the class. A conjecture of McDiarmid, Steger and Welsh (2006) says that if  $\mathcal{G}_n$  is any bridge-addable class of graphs on  $n$  vertices, and  $G_n$  is taken uniformly at random from  $\mathcal{G}_n$ , then  $G_n$  is connected with probability at least  $e^{-1/2} + o(1)$ , when  $n$  tends to infinity. This lower bound is asymptotically best possible since it is reached for forests, as proved by Rényi (1959).

McDiarmid, Steger and Welsh (2005) proved the lower bound of  $e^{-1} + o(1)$ , which was later improved to  $e^{-0.7983} + o(1)$  by Balister, Bollobás and Gerke (2008), then to  $e^{-2/3} + o(1)$  by Norin in an unpublished draft.

In this talk, we will discuss a proof of the conjecture, due to Chapuy and Perarnau (2015), which is based on local doublecounting.

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. J. J. Rué Perna, PhD