

# INVITATION TO THE DOCTORAL SEMINAR

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**Federico Battista, MSc.**

Università di Roma "Sapienza"

**“The Maximum Stable Set Problem and Semidefinite Relaxations”**

📍 HS 3

📅 Wednesday, 30 March 2022

🕒 11:00 a.m.

## Abstract

In this talk we will introduce the maximum stable set problem on a graph  $G$ , a well-known NP-Hard problem in combinatorial optimization. We will review the classical linear programming formulation, along with a real world application which led to a semidefinite relaxation for this problem, known as the Lovász Theta function of a graph  $\theta(G)$ . Then we will discuss about a further strengthening of  $\theta(G)$  proposed in literature, which turned out to be computationally demanding in the general case. Our contribution relies on the application of the lift-and-project operator  $N_+$  introduced by Lovász and Schrijver, in order to obtain a new SDP relaxation for the maximum stable set problem in the attempt to both improve the bound given by  $\theta(G)$  and keep its tractability in practice.

Angelika Wiegele and the Department of Mathematics look forward to seeing you at the talk!