UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

DOTTORATO DI RICERCA / PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Seminar announcement

Wednesday 15th October 2025, Time: 15:00 - 16:00
Historic Library - Piazzale Tecchio, 80 - 80125 – Napoli

Prof./Dr. Martin Schmidt

Trier University, Trier, Germany

Department of Mathematics

Email: martin.schmidt@uni-trier.de

A Gentle and Incomplete Introduction to Bilevel Optimization

Abstract Bilevel optimization is a field of mathematical programming in which some variables are constrained to be the solution of another optimization problem. As a consequence, bilevel optimization is able to model hierarchical decision making processes. This is appealing for modeling real-world problems, but it also makes the resulting optimization models hard to solve in theory and practice. The scientific interest in computational bilevel optimization increased a lot over the last decade and is still growing - in particular due to many applications. In this tutorial, we discuss the most important aspects that render bilevel problems more challenging than single-level optimization problems and present the basic structural theory for linear bilevel models as well as the basic techniques for solving them. After these basics, we will also discuss some exemplary recent contribution in the field.

Lecturer short bio: *Martin Schmidt is a professor of nonlinear optimization at Trier University, Germany. His research interests include bilevel optimization, optimization under uncertainty, equilibrium models, and applications in energy markets. He is the speaker of the research training group Algorithmic Optimization at Trier University, a fellow of the Energy Campus Nuremberg, and a member of the International Scientific Committee of the Instituto Universitario de Investigación de Matemáticas y Aplicaciones of Universidad de Zaragoza. Martin currently serves on the editorial board of Optimization Letters and he is an associate editor of the Journal of Optimization Theory and Applications, OR Spectrum, and the EURO Journal on Computational Optimization, as well as a technical editor of Mathematical Programming Computation. Among his recent achievements, Martin (together with his co-authors) was awarded the Optimization Letters Best Paper Award, the Marguerite Frank Award for the best EURO Journal on Computational Optimization paper, and the Mathematical Methods of Operations Research Best Paper Award, all in 2021.*

For information: Prof. Maurizio Boccia (DIETI, UniNA) – maurizio.boccia@unina.it *(organizer)*
Prof. Claudio Sterle (DIETI, UniNA) – claudio.sterle@unina.it *(organizer)*
Prof. Adriano Masone (DIETI, UniNA) – adriano.masone@unina.it *(organizer)*