

IWR Colloquium

Summer Semester 2022

July 27, 2022 • 16:15
Mathematikon • Conference Room / 5th Floor

Speaker:

Prof. Stefania Petra

Mathematical Imaging Group, Institute of Applied Mathematics, Heidelberg University

Title:

“Geometric Multilevel Optimization”

Abstract:

In this talk I will present a geometric multilevel optimization approach choosing as case study a regularised inverse problem. In particular, the approach is motivated by variational models that arise as the discretization of some underlying infinite dimensional problem. Such problems naturally lead to a hierarchy of discretized models. We employ multilevel optimization to take advantage of this hierarchy: while working at the fine level we compute the search direction based on a coarse model. By utilising concepts of information geometry in our formulation, we propose a smoothing operator that only uses first-order information and incorporates constraints smoothly. We show that the proposed algorithm is well suited for ill-posed reconstruction problems and demonstrate its efficiency on several large-scale examples.

Website Prof. Petra:

www.stpetra.com

Website IWR Colloquium:

www.iwr.uni-heidelberg.de/events/iwr-colloquium