Dr. rer. nat. Daniel Gerth

Technische Universität Chemnitz
Fakultät für Mathematik, Professur Numerische Mathematik

A short introduction to Tikhonov regularization for ill-posed problems

Inverse and ill-posed problems appear in many applications such as medicine, optics or non-destructive testing, to name a few. In this talk, we first introduce the topic with some examples and discuss the most important properties and the resulting difficulties in solving them.

We then proceed with a brief survey of Tikhonov regularization, a basic method for the proper solution of inverse problems. The standard theory for the regularization of inverse problems is not easily understood since it is based on technical proofs. Instead, we present here a new way of analysing Tikhonov regularization where we interpret regularization as an approximation problem. This allows not only to recover the well-known theoretical results, but the derivation gives an understanding of the fundamental principle of regularization that also naturally connects the infinite dimensional analysis with the discrete numerical practice. At the end of the talk we hint at some generalizations.

Ort: Zoom Videokonferenz	Zeit: Mittwoch, 09.06.2021, 14:00 Uhr

Zu diesem Vortrag laden wir Sie herzlich ein.
You are cordially invited to this lecture.

gez. Prof. Dr. Alfio Borzì
gez. Prof. Dr. Frank Werner