ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

A fractional time stepping method and adjoint based gradient computation in an inverse problem for a fractionally damped wave equation

Anna Schlintl | Universität Klagenfurt

Chaired by Barbara Kaltenbacher | Department of Mathematics

Wednesday, 5 May 2021 | 10:00–10:30

classroom.aau.at/math-stat

ABSTRACT

In this talk we consider the inverse problem of identifying the initial data in a fractionally damped wave equation from time trace measurements on a surface, as relevant in photoacoustic or thermoacoustic tomography. We derive and analyze a time stepping method for the numerical solution of the corresponding forward problem. Moreover, to efficiently obtain reconstructions by minimizing a Tikhonov regularization functional (or alternatively, by computing the MAP estimator in a Bayesian approach), we develop an adjoint based scheme for gradient computation. Numerical reconstructions in two space dimensions illustrate the performance of the devised methods.

We hope to see you there!