ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

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

classroom.aau.at/math-stat

Wednesday, 5 May 2021

10:00 a.m.

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.

Barbara Kaltenbacher and the Department of Mathematics look forward to seeing you at the talk!