ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

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"Regularization of ill-posed problems with non-standard penalty and data-fitting terms"

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Abstract

Inverse problems amount to finding causes for observed effects. We refer here to inverse problems, modelled by operator equations of the form Au=f, which are ill-posed in the sense that the solution does not depend continuously on the data f. Special techniques, so-called regularization methods, have to be used in order to obtain stable approximations of the solution. To this end, we focus on the study of variational regularization, that consists in solving a minimization problem which employs two functions - a data fidelity and a penalty term. Firstly, choices for the former are presented, in connection with the noise recorded while collecting the data. Afterwards, we provide a short overview of the convergence rates which are derived under various assumptions, known as source conditions. Subsequently, we highlight some examples of penalties which promote different particularities of the regularized solution. Last but not least, we pose some open questions and indicate directions for future research.

Elena Resmerita and the Department of Mathematics look forward to seeing you at the talk!