ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

Diana Elena Mirciu
University of Klagenfurt

"Higher order error estimates for regularization of inverse problems under non-additive noise"

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Abstract

Inverse problems amount to finding causes for observed effects. We refer here to inverse problems, modeled 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. The choices for the former are made in connection with the noise recorded while collecting the data. We will focus here on error estimates. They can be derived under additional assumptions on the solution, called source conditions. We derive higher order error estimates for inverse problems distorted by non-additive noise, having the Kullback-Leibler divergence as data fidelity. The results are obtained by means of a novel source condition, inspired by the dual problem. In this framework, we provide an interpretation of the new source condition and

we show that this approach can be extended to variational regularization that incorporates more general convex data fidelities.

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