

Inverse Problems for Ill-posed Variational and Quasi-Variational Inequalities

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Abstract

Applied models frequently lead to variational problems involving parameters characterizing physical features of the model. The direct problem in this setting is to solve the variational problem. By contrast, an inverse problem seeks the identification of the parameters from a measurement of a solution of the variational problem. In recent years, the field of inverse problems emerged as one of the most vibrant and expanding branches of applied mathematics. Probably the main reason behind this is the increasing number of real-world situations that are being modeled and studied in a unified framework of inverse problems. However, the theoretical aspects of inverse problems are also quite challenging and require a delicate blending of various branches of mathematics. In this talk, we will discuss the inverse problem of parameter identification in variational and quasi-variational inequalities. We will discuss various aspects of this inverse problem including a treatment of variational and quasi-inequalities with multi-valued maps. We will also consider the case of non-coercive maps. The impact of data perturbation will also be discussed. Some applications and numerical examples will be shown.

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