

Unique continuation in partially known domains by variational methods

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November 14, 2007

We aim to reconstruct, in a partially known domain, a harmonic function u from its Cauchy data on a known part of the boundary, while we assume that on the unknown part of the boundary u satisfies a homogeneous Neumann condition. We shall show how such a problem arises from an inverse problem of crack or defects determination, and we shall propose a variational method for the numerical reconstruction of u . The method is justified by a convergence analysis result. Moreover, it takes into account the fact that the Cauchy data might be noisy and that the problem is ill-posed, through the use of a regularization term related to the so-called Mumford-Shah functional.

The talk will be in Vincent Hall 570 at 3:35 pm