

A MESHLESS FADING REGULARIZATION METHOD FOR INVERSE BVPs IN ELASTICITY

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Abstract

We investigate the numerical reconstruction of the missing displacements (Dirichlet data) and tractions (Neumann data) on an inaccessible part of the boundary in the case of a linear isotropic elastic material from the knowledge of over-prescribed noisy measurements taken on the remaining accessible boundary part. This inverse problem is solved using the fading regularization method, originally proposed by Cimetière et al. (2000, 2001) for the Laplace equation, in conjunction with a meshless method, namely the method of fundamental solutions (MFS). The stabilization of the numerical method proposed herein is achieved by stopping the iterative procedure according to Morozov's discrepancy principle.

This is a joint work with Franck Delvare (University of Caen) and Alain Cimetière (University of Poitiers).