

On the Numerical Solution of the Generalized Time Fractional IHCP

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Introduction

The numerical solution of the generalized time fractional inverse heat conduction problem (GTFIHCP) on a finite slab is investigated in the presence of measured (noisy) data when the time fractional derivative is interpreted in the sense of Caputo. The GTFIHCP involves the simultaneous identification of the heat flux and temperature transient functions at one of the boundaries of the finite slab together with the initial condition of the original direct problem from noisy Cauchy data at a discrete set of points on the opposite (active) boundary. Stability results are provided together with numerical examples illustrating the accuracy of the new procedure.

Keywords

Generalized Time Fractional Inverse Heat Conduction, Finite Differences, Regularization, Mollification Method.

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