

SOLUTION OF INVERSE DESIGN PROBLEM OF COOLING OF ANNULUS BY THE METHOD OF FUNDAMENTAL SOLUTIONS

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Abstract

In recent years the Cauchy problem for a two dimensional Laplace equation was considered by many authors. As the review of the available literature shows, the method of fundamental solutions is the method used the most frequently to solve the Cauchy problems due to its numerous advantages essential for this type of issue. The basic advantages of MFS are the continuity of solution and its derivatives of any order, as well as the exact solutions of the heat conduction equation. However, this method has not been used for a Cauchy problem in the multiconnected region as of yet. Our paper attempts to consider exactly that. The method is tested in annular region for which exact solution is known. The influence of the disturbances of data and the distances of source contour from boundary contour is presented in the series of graphs. By numerical experiments it is found that solution considered inverse problem could be obtained without regularization for moderate disturbances of data.