NUMERICAL SOLUTION OF INVERSE HEAT EXCHANGE PROBLEMS
BY PARAMETER ESTIMATION OF ORDINARY DIFFERENTIAL EQUATIONS

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Several inverse problems for the nonlinear heat one-dimensional equations are considered. They are: coefficient inverse problem, boundary value inverse problem and determination of moving bound in the melting problem.

All these inverse problems are reduced, by a finite element method, to parameter estimation of ordinary differential equations (ODE's). The algorithm, developed by the author, is applied to parameter estimation of ODE's systems. This algorithm is based on sensitivity analysis and allows effective solution the specified inverse problems. Some results of numerical experiments are given.