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# A Numerical Approximation to the Solution of an Inverse Heat Equation

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The aim of this talk is to study the parabolic inverse problem of determination of the leading coefficient in the heat equation with an extra condition at the terminal. After introducing a new variable, we reformulate the problem as a nonclassical parabolic equation along with the initial and boundary conditions. The uniqueness and continuous dependence of the solution upon the data are demonstrated, and then finite difference methods, backward Euler and Crank–Nicolson schemes are studied. It is proved that both numerical schemes are stable and convergent to the real solution. The results of some numerical examples are presented, which demonstrate the efficiency and rapid convergence of the methods.