Numerical Approximation of Parabolic Equations with Nonlocal Boundary Condition

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Abstract

This paper provides a survey of numerical methods for a non-standard class of boundary value problems with nonlocal integral conjugation conditions in disjoint domains. After presenting the mathematical formulation and the main theoretical properties, including existence and uniqueness of weak solutions, we review various numerical approaches for their approximation. Particular attention is devoted to the comparison of methods and their convergence properties.

Keywords: transmission problems, interface conditions, weak solution, Sobolev spaces, a priori estimates, finite difference methods, finite element methods

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