Nonclassical semilinear boundary value problem for parabolic pseudodifferential equations in Sobolev spaces

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Abstract: A nonclassical nonlinear boundary value problem for parabolic pseudodifferential equations in the Sobolev spaces is considered. The problem is reduced to a boundary value problem for an elliptic equation by applying the Laplace Transforms. The existence of a solution is proved by using the Schauder theorem. The Laplace transform is used to solve parabolic pseudodifferential equations in the Sobolev spaces. The proof is substantially simplified by applying the Schauder theorem.

Index Keywords: Boundary conditions; Differential equations; Problem solving; Theorem proving; Elliptic equation; Pseudodifferential equations; Schauder theorem; Sobolev spaces; Nonlinear equations

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