

## A numerical algorithm for the involutory parabolic problem with Neumann condition

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**Abstract:** Parabolic and elliptic type partial differential equations with involution in  $x$  have been investigated in papers [1]-[2]. In [3], the theory of the basis property of eigenfunctions of second order differential operators with involution was investigated, on this basis the Fourier method was justified for solving direct and inverse problems for one dimensional parabolic equations with involution in  $x$ . The existence and uniqueness of the solution of a mixed problem for a parabolic equation with an involution in  $x$  in the form of a Fourier series were established. The questions of solvability of inverse problems for the heat equation and their fractional analogues were investigated. Solvability of inverse problems for a parabolic equation with an involution in  $x$  was proved. In the present paper, the first and second order of accuracy difference schemes for the numerical solution of the initial boundary value problem for one dimensional parabolic type involutory partial differential equation with Neumann condition are presented. Numerical results are provided.

**Keywords:** Involutory parabolic equation, difference schemes, numerical experience.

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## References

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