On numerical solution of the Schrödinger-parabolic equations

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Abstract: The nonlocal boundary value problem for Schrödinger-parabolic equation is considered. The stability estimates for the solution of the given problem is established. The first and second order of difference schemes are presented for approximately solving a specific nonlocal boundary problem. The theoretical statements for the solution of these difference schemes are supported by the result of numerical examples.

Keywords: Nonlocal boundary value problem, Difference scheme, Stability.

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References

[1] Y. Ozdemir and M. Alp, AIP Conf.. Proc. **1611**, 221-224 (2014).
[2] B. Hicdurmaz and A. Ashyralyev, Numer. Func. Anal. Opt. **38**, 1215-1225 (2017).
[3] A. Ashyralyev and Y. Ozdemir, Taiwan. J. Math. **4**, 1075-1089 (2007).
[4] A. Ashyralyev, AIP Conf. Proc. **1880**, (2017).
[5] A. Ashyralyev and O. Gercek, Discrete. Dyn. Nat. Soc. **2008**, 1-16 (2008).
[6] A. Ashyralyev and B. Hicdurmaz, Kybernetes **40**, 736-750 (2011).
[7] A. Ashyralyev and Y. Ozdemir, Comput. Math. Appl. **50**, 1443-1476 (2005).
[8] P. E. Sobolevskii, *Difference Methods for Approximate Solution of Differential Equations*, Izdatelstvo Voronezhskogo Gosud Universiteta, Voronezh, 1975, (in Russian).