FOURTH ORDER OF ACCURACY KRANC-NICKOLSON TYPE DECOMPOSITION SCHEME FOR AN EVOLUTION PROBLEM

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Abstract

In the present work symmetrized sequential-parallel type decomposition difference scheme of the fourth degree precision for the solution of Cauchy abstract problem is offered. The fourth degree precision is reached by introducing the complex parameter $\alpha = \frac{1}{2} \pm i\frac{1}{2\sqrt{3}}$ and by the approximation of the semigroup through the rational approximation. For the considered scheme, the explicit a priori estimate is obtained.

Key words and phrases: Decomposition method, Operator split, Semigroup, Trotter formula, Cauchy abstract problem, Rational approximation.

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