HIGH ORDER ACCURACY SPLITTING FORMULAS FOR COSINE OPERATOR FUNCTION AND THEIR APPLICATIONS

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In the present work the high order accuracy rational splitting for cosine operator function is constructed. On the basis of this formula, the fourth order of accuracy decomposition scheme for homogeneous abstract hyperbolic equation with operator *A* is constructed. This operator is a self-adjoint, positive definite operator and is represented as a sum of the same type operators. Error of approximate solution is estimated. In the work a method for constructing any order accuracy splitting formula for cosine operator function is also introduced.