Summary: A linear barycentric rational collocation method (LBRCM) for solving Schrödinger equation (SDE) is proposed. According to the barycentric interpolation method (BIM) of rational polynomial and Chebyshev polynomial, the matrix form of the collocation method (CM) that is easy to program is obtained. The convergence rate of the LBRCM for solving the Schrödinger equation is proved from the convergence rate of linear barycentric rational interpolation. Finally, a numerical example verifies the correctness of the theoretical analysis.

MSC:

65M70 Spectral, collocation and related methods for initial value and initial-boundary value problems involving PDEs

35Q55 NLS equations (nonlinear Schrödinger equations)

Full Text: DOI

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