Zhou, Ting; Xiang, Xinmin


Summary: We study the numerical solution of the semi-linear strongly damped wave equation on the whole space. We construct a fully discrete Chebyshev rational spectral scheme and give a priori estimates of the approximate solution. At the same time, we discuss their error estimates and the existence of approximate attractors $A_N$.

MSC:

65M70 Spectral, collocation and related methods for initial value and initial-boundary value problems involving PDEs
35L71 Second-order semilinear hyperbolic equations
65M15 Error bounds for initial value and initial-boundary value problems involving PDEs

Keywords:

semi-linear strongly damped wave equation; Chebyshev rational spectral methods; approximate global attractor; error estimate