

Zero-dissipative semi-implicit hybrid method for solving oscillatory or periodic problems

ABSTRACT

In this paper, a new semi-implicit two-step hybrid method with fifth algebraic order is derived for the integration of second-order oscillatory initial value problems. The new method possesses dispersion of order eight and dissipation of order infinity. Numerical experiment reveals the superiority of the new method for solving oscillatory or periodic problems over several methods of the same algebraic order in the literature.

Keyword: Oscillatory solution; Dispersion; Dissipation; Hybrid method; Initial value problem; Oscillatory problem