

A fifth order phase-fitted Runge-Kutta-Nyström method for periodic initial value problems

ABSTRACT

A new Runge-Kutta-Nyström (RKN) method with phase-lag of order infinity for solving second order periodic initial value problems possessing oscillating solutions is derived in this paper. The derivation of phase-fitted four stage explicit RKN method with algebraic order five is discussed. The numerical results show that the new method is much more efficient than the existing methods in the literature.

Keyword: Runge-Kutta-Nystrom methods; Phase-fitted; Oscillatory solutions