Fifth order predictor-corrector methods for solving third order delay differential equations

ABSTRACT

This paper will consider the implementation of predictor-corrector methods of Adams-Moulton type to solve third order delay differential equations (DDEs) directly without transform the equations into system of first order DDEs. We are using fifth order one point and fifth order two-point block method in the form of Adams-Moulton methods. The two-point block method will compute the numerical solution at two points simultaneously. Both methods are implemented in predictor-corrector (PECE) mode. The methods will approximate the solutions for retarded DDEs of constant and pantograph type by using constant step size. Numerical results are presented to show that the proposed methods are suitable for solving third order DDEs. The two points block method is better than one point method in term of lesser total step and function call.

Keyword: Block method; Delay differential equations; Direct method