Solving second order delay differential equations using direct two-point block method

ABSTRACT

This paper will consider the implementation of direct two-point fourth and fifth order multistep block method in the form of Adamsï Moulton method to solve second order delay differential equations (DDEs) directly without transforming the equations into system of first order DDEs. The proposed methods will compute the numerical solutions at two points simultaneously which are implemented in predictorï corrector (PECE) mode. The formulation and stability analysis of the block method are discussed. The block method will approximate the computing solutions using constant step size. Numerical results are presented to show that the proposed methods are suitable for solving second order DDEs compared with the existing methods.

Keyword: Delay differential equations; Block method; Direct method