

An accurate block hybrid collocation method for third order ordinary differential equations

Abstract

The block hybrid collocation method with two off-step points is proposed for the direct solution of general third order ordinary differential equations. Both the main and additional methods are derived via interpolation and collocation of the basic polynomial. These methods are applied in block form to provide the approximation at five points concurrently. The stability properties of the block method are investigated. Some numerical examples are tested to illustrate the efficiency of the method. The block hybrid collocation method is also implemented to solve the nonlinear Genesio equation and the problem in thin film flow.

Keyword: Block hybrid collocation; Third order ordinary differential equations