

Variable order block method for solving second order ordinary differential equations

ABSTRACT

This paper proposed 2-point block backward differentiation formulas (BBDF) of order 3, 4, and 5 for direct solution of second order ordinary differential equations. These methods were derived via backward difference interpolation polynomial with two solutions are produced simultaneously at each step. All the three different orders of 2-point BBDF is implemented in variable order scheme. The scheme utilizes the local truncation error, which is generated by the single order of 2-point BBDF method. Numerical results are presented to illustrate the validity of the proposed scheme.

Keyword: Block method; Initial value problem; Second order ODEs; Variable order