Modification of Newton Method in Two Point Block Backward Differentiation Formulas

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Abstract : In this paper, we present modified Newton method as a new strategy for improving the efficiency of Two Point Block Backward Differentiation Formulas (BBDF) when solving stiff systems of ordinary differential equations (ODEs). These methods are constructed to produce two approximate solutions simultaneously at each iteration The detailed implementation of the predictor corrector BBDF with PE(CE)2 with modified Newton are discussed. The proposed modification of BBDF is validated through numerical results on some standard problems found in the literature and comparisons are made with the existing Block Backward Differentiation Formula. Numerical results show the advantage of using the new strategy for solving stiff ODEs in improving the accuracy of the solution.