STEFFENSEN TYPE METHODS FOR APPROXIMATING SOLUTIONS OF DIFFERENTIAL EQUATIONS

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The implicit methods for numerical solving of ODEs lead to nonlinear equations which are usually solved by the Newton method. We study the use of a Steffensen type method, and we give conditions under which this method provides bilateral approximations for the solution of these equations; this approach offers a more rigorous control of the errors. Moreover, the method can be applied even in the case when certain functions are not differentiable on the definition domain. The convergence order is the same as for Newton method.

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