Stabilized Extended One-Step Schemes for Stiff and Non-Stiff Delay Differential Equations

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The importance of delay differential equations (DDEs), in modelling mathematical biological, engineering and physical problems, has motivated searchers to provide efficient numerical methods for solving such important type of differential equations. Most of these types of differential models are stiff, and suitable numerical methods must be introduced to simulate the solutions. In this paper, we provide a reliable computational technique, based on a class of extended one-step methods for solving stiff and non-stiff DDEs. The efficiency and stability properties of this technique are studied. Numerical results and simulations are presented to demonstrate the effectiveness of the methodology.