

***A pair of two-step hybrid block methods using a variable
stepsize formulation for integrating third-order
Lane-Emden-Fowler equations.***

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In this talk, a variable step-size formulation of a pair of two-step hybrid block methods will be proposed and efficiently applied for integrating linear and nonlinear third-order Lane-Emden-Fowler model equations using large integration intervals. The basic properties of the new schemes will be theoretically analysed. The proposed methods will be implemented in an adaptive mode by adapting the number and position of the nodes utilised in the approximation to assure that the truncation error is kept and saved within a specified bound. The reliable and accurate performance shall be observed for the introduced methods based on reasonable error estimation and adaptive strategy presented in this talk. Finally, some models third-order Lane-Emden-Fowler problems will be numerically solved to assess the performance and efficiency of the proposed techniques.