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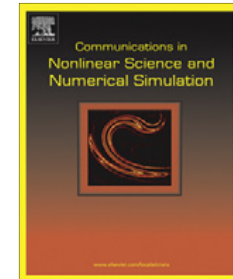
A Jacobi–Gauss collocation method for solving nonlinear Lane–Emden type equations

A.H. Bhrawy *, A.S. Alofi

Department of Mathematics, Faculty of Science, King Abdulaziz University, Jeddah, Saudi Arabia

A R T I C L E   I N F O

A B S T R A C T

In this paper, a shifted Jacobi–Gauss collocation spectral method is proposed for solving the nonlinear Lane–Emden type equation. The spatial approximation is based on shifted Jacobi polynomials $P_{T,n}^{(\alpha,\beta)}(x)$ with α, $\beta \in (-1, \infty)$, $T > 0$, and n is the polynomial degree. The shifted Jacobi–Gauss points are used as collocation nodes. Numerical examples are included to demonstrate the validity and applicability of the technique and a comparison is made with existing results. The method is easy to implement and yields very accurate results.