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A Third-Order Differential Equation Modelling Stellar Pulsation¹ RONALD MICKENS, Department of Physics, Clark Atlanta University, Atlanta, GA 30314, 'KALE OYEDEJI, Department of Physics, Morehouse College, Atlanta, GA 30314, ANTHONY AFUWAPE, Departmento de Matematicas, Universidad de Antioqua, Colombia, South America — We investigate the properties of the solutions to a third-order nonlinear ODE modeling the radial oscillations of a star. A summary of previous work on this equation has been presented by Cox [1]. Their calculations are based on the use of a two-time perturbation method to determine the possible existence and stability of limit-cycles. We demonstrate that the application of phase-space techniques and the Hopf bifurcation theorem gives results that differ from those reported by Cox. [1] J. P. Cox, Theory of Stellar Pulsation (Princeton University Press, 980), section 13.4.

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