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Mahmoud Najafi, Ashtabula, OH , and **D Wayne Fincher*** (dfincher@kent.edu), 6058 Lake St, Kingsville, OH 44048. *Treatment for Analytical Solution of Nonlinear Oscillation System Via Decomposition Method.*

In this work, the attempt have been made to illustrate analytical approximate closed form solutions of oscillating systems which are represented by

$$m\ddot{u} + f(u, \dot{u}, c, k) = 0,$$

i.e., Duffing and Van der Pol equations. To this end, the Adomian Decomposition Method (ADM) has been employed to accomplish analytical solutions to these differential equations. The results are compared with accurate numerical computations; i.e., Runge-Kutta, which show that ADM is a high performance and accurate method to use for the analytical solution of nonlinear physical problems. (Received June 26, 2014)