Abstract

The prime focus is on a Van der Pol-Duffing oscillator in this paper. A newly proposed method, namely; the Perturbation Iteration Algorithm (PIA) and an Alternative Variation Iteration Method (AVIM) is used to solve governing equations. The study outlines the significant features of the two methods. The beauty of the paper lies in the error analysis between exact solutions and approximate solutions obtained by these two methods which proves that approximate solutions obtained by Alternative Variation Iteration Method converge very rapidly to the exact solutions. Both methods provide analytical solution in the form of a convergent series with components that are easily computable, requiring no linearization or small perturbation.

References


Index Terms

Computer Science

Signal Processing

Keywords

Van der Pol-Duffing oscillator, Perturbation Iteration Algorithm, Alternative Variational Iteration Method, Convergent Series, Efficient, Convergence