LVIM for nonlinear oscillators in Microelectromechanical system

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Abstract

A nonlinear oscillator arising in a micro-electro-mechanical system (MEMS) is difficult to be solved analytically due to the zero conditions. so the main objective of this work is to analyze the mathematical model of this system, and its approximate analytical solution is solved via the coupling Variational Iteration method and Laplace transform(LVIM). This method provides an efficient way to obtain the approximate nonlinear frequency and approximate solutions of MEMS. Moreover, LVIM also approximates the pull-in threshold in terms of model parameters. Finally, the results are compared with the exact one and a good result is obtained.

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