

# Variational Iteration Method for Nonlinear Age-Structured Population Models Using Auxiliary Parameter

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In this paper, we apply He's variational iteration method (VIM) coupled with an auxiliary parameter which proves very effective to control the convergence region of an approximate solution. Moreover, a convenient way is considered for choosing a suitable auxiliary parameter via a residual function. The proposed algorithm is tested on some nonlinear age-structured population models, and numerical results explicitly reveal the complete reliability, efficiency, and accuracy of the suggested technique. It is observed that the approach may be implemented on other nonlinear models of physical nature.

*Key words:* Variational Iteration Method; Auxiliary Parameter;  
Nonlinear Age-Structured Population Models.