Solving Polluted Lakes System by using Perturbation-Iteration Method

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Abstract

Water pollution is a major global problem that requires ongoing evaluation and revision of water resource policies at all levels, in order to create a healthy living environment. Differential equations are an effective way to analyze such situations. In this paper a system of linear equations with interconnecting pipes is considered for analyzing the pollution of system of lakes through differential equations. Perturbation-iteration method is used to compute an approximate solution of three input models i.e. periodic, linear step model and exponentially decaying model. The fourth order Runge-Kutta method (RK4) numerical solution of the lakes system problem is used as a reference to compare with the analytical approximations showing the high accuracy of the results.
References


Index Terms

Computer Science
Applied Mathematics

Keywords

Water Pollution  Pollution of System of Lakes  Perturbation Iteration Method  Analytical Approximations