

A STUDY ON UNSTEADY FLOW OF GAS THROUGH A POROUS MEDIUM

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ABSTRACT

In this paper, we apply and compare the iterative method for finding the analytical solution of unsteady flow of gas through a porous medium. The suggested algorithm is quite efficient and is practically well suited for use in such problems. The proposed iterative scheme finds the solution without any perturbation, discretization, linearization or restrictive assumptions. The diagonal Pade approximants are effectively used in the analysis to capture the essential behavior of $y(x)$ and to determine the initial slope $y'(0)$. The fact that the iterative method solves nonlinear problems without using Adomian's polynomials is a clear advantage of this technique over the decomposition method.

Keywords: Iterative method; nonlinear problems; unsteady flow of gas; Pade approximants; porous medium

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