A COMPARATIVE STUDY OF THE FINITE ELEMENT AND FINITE DIFFERENCE METHODS FOR AN UNSTEADY FLUID FLOW PROBLEM WITH FREE CONVECTION AND CHEMICAL REACTION

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Abstract

This paper considers the fluid flow problem studied in 2010 by Reddy and Reddy in [5]. The authors investigated the unsteady free convective flow of a viscous fluid with chemically reacting species in the presence of a magnetic field and thermal radiation using Galerkin's finite element method. The flow problem with simplifying assumptions and the associated governing equations and corresponding initial and boundary conditions are given. Details of the finite element and finite difference procedures for solving this problem are shown and the finite element and finite difference methods are compared using solution plots and error computations.

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