ANALYTICAL AND NUMERICAL METHODS FOR SOLVING MAGNETOHYDRODYNAMIC FLOW PROBLEM

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Abstract

In this article we present some analytical and numerical methods for solving magnetohydrodynamic (MHD) flow past an impulsively started infinite horizontal flat plate in a rotating system. An exact solution based on Laplace transform has been presented. This method has shown to be very efficient in solving these types of problems. For the numerical handing of the problem we have employed the finite difference method. Numerical results have shown to be in a good agreement with the exact solution. Expressions for the primary and secondary velocity fields are obtained. The effects of M (Hartman number), Ω (rotation parameter) and m (Hall parameter) on the primary and secondary velocities have been studied and their profiles are shown graphically.

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