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current topics in MATHEMATICS

A Peer reviewed research book

Editor
Dr. Priya Dev Goswami
Dr. Amitav Doley



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Current Topics in Mathematics

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ANALYSIS OF HEAT TRANSFER FOR THE UNSTEADY MHD FLOW OVER A STRETCHING PLATE OF POROUS MEDIUM

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ABSTRACT

The objective of this investigation is to compare and analyse the problem of unsteady fluid-flow over a porous stretching plate under the influence of a magnetic field. By adopting the similarity transformation, the governing boundary layer equations are transformed into non-linear ODE's. Furthermore, by using bvp4c in the MATLAB software, the equations are numerically solved. The effect of various parameters has been observed on Velocity, Temperature Distribution, Skin Friction Coefficient and for Nusselt Number. The results have been presented in graphical as well as in tabular form to intricate the flow-pattern.

Keywords: Unsteady flow, magnetic field, porous stretching plate, bvp4c, MATLAB software, velocity, temperature.

1. INTRODUCTION

Heat transfer phenomena and flow over a stretching plate were extensively focused by many researchers beyond few many years due to their significance in engineering and industrial tactics. It owes to the ampleness of sensible packages in chemical and production tactics, together with polymer extrusion, drawing of copper wires, glass fibres, paper production and casting of metals.

Flow past a flat plate with a uniform free stream was reported by Blasius [5] which was later solved numerically by Howarth [15]. In