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## Effects of volumetric heat source and temperature dependent viscosity on MHD natural convection flow along a wavy surface

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Conjugate effects of volumetric heat source and temperature dependent viscosity on natural convection flow along a wavy surface in presence of magnetic field have been investigated. The governing boundary layer equations of the present physical problem are first transformed into a non-dimensional form using suitable set of dimensionless variables. The resulting nonlinear system of partial differential equations is mapped into the domain of a vertical flat plate and then solved numerically employing the implicit finite difference method. The numerical results of the surface shear stress in terms of skin friction coefficient and the rate of heat transfer in terms of local Nusselt number, the stream lines as well as the isotherms are shown graphically and in tabular form for a selection of parameters set consisting of viscosity variation parameter , internal heat generation parameter Q of volumetric heat source, Magnetic parameter M and Prandtl number Pr. Some numerical results have been produced using finite element method and compared as well. Numerical solutions near leading edge and asymptotic solution for downstream level are compared with solutions for entire regime.

## **Biography**

M A Alim is Professor, Department of Mathematics, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh. He has done his PhD with specialization in CFD, Combustion and Heat Transfer from School of Mechanical and Manufacturing Engineering, Loughborough University, UK. He is doing research in different types of fields and published more than 250 journal and conference papers. He has supervised 5 PhD and 18 MPhil students, at present around 15 PhD and MPhil students are doing research under his supervision in different universities to complete their degrees. He has evaluated many research proposals, reports and theses, reviewed many papers of more than 40 journals and conferences. He was member of organizing committee of different conferences and academic events.

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