Article Abstract

Title:	**Generalized similarity method in unsteady two-dimensional MHD boundary layer on the body which temperature varies with time**
Author(s):	Dragisa Nikodijevic[1], Zoran Boricic[1], Dragica Milenkovic[1], Zivojin Stamenkovic[1*]
Address(es):	[1]University of Nis, Faculty of Mechanical Engineering, Aleksandra Medvedeva 14, 18000 Nis, Serbia [*]Corresponding Author: e-mail:zikas@masfak.ni.ac.rs
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Abstract:	In this paper, the multiparametric method known as generalized similarity method is used to solve the problem of unsteady temperature two-dimensional MHD laminar boundary layer of incompressible fluid. It is assumed that outer magnetic field induction is function only from longitudinal coordinate. Magnetic field acts perpendicular to the body on which boundary layer forms. Body temperature varies with time. Further, electric field is neglected and value of magnetic Reynolds number is significantly less then one i.e. problem is considered in induction-less approximation. According to temperature differences under 50^{o}C physical properties of fluid are constant. Introduced assumptions simplify considered problem in sake of mathematical solving, but adopted physical model is interesting from practical point of view, because its relation with large number of technically significant MHD flows. Obtained partial differential equations can be solved with modern numerical methods for every particular problem. In this paper, quite different approach is used. In the first place new variables are introduced and then similarity parameters which enable transformation of equations into universal form. Obtained universal equations and corresponding boundary conditions do not contain explicit characteristics of particular problems. Based on obtained universal equations, approximated universal differential equations of described MHD boundary layer flow problem are derived. Aproximated universal equations do not depend on the particular problems.
Keywords:	boundary layer, MHD, generalized similarity method, electroconductive fluid