D5: Yusuf A., Aiyesimi Y. M., Jiya M., and Bolarin G.

HYDROMAGNETIC BOUNDRY LAYER FLOW IN AN INCLINED WAVY PERMEABLE WALL OF A NANOFLUID WITH CONVECTIVE BOUNDARY CONDITION AND SUCTION

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Abstract

The problem of 2- dimensional unsteady laminar fluid flow in an inclined parallel permeable walls with the lower wall assumed to be wavy while the upper wall flat in a nanofluid with magnetic field effect, Soret and Dufour effects with convective boundary conditions and suction has been considered. The model is presented in its rectangular coordinate system and incorporates the effects of Brownian motion, and thermophoresis parameter. Similarity solution is presented which depends on the Magnetic parameter, Darcy number, Prandtl number, Lewis number, Brownian motion, thermophoresis number, Soret number, Dufour number and suction parameter. It is found that, for the fluid temperature to be relatively low, the heat generation parameter has to be kept positive.

Keywords: Adomian Decomposition Method, Nanofluid, Nanopaticles, Thermophoresis, Boundary layer, Channel flow, Soret number, Dufour number.

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ANALYSIS OF BLOOD FLOW IN ONE DIMENSIONAL ELASTIC ARTERY USING NAVIER-STOKES CONSERVATION LAWS

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Abstract

A one dimensional blood flow model in an elastic artery is developed and analyzed in this study. The equations were derived using Navier-stokes conservations laws and the method of characteristics was used to carry out the analysis of the model equations derived. The result of the analysis reviews that pressure and velocity wave fronts propagate forwards (by convention away from the heart) at a speed of and backwards (towards the heart) at a speed of . We solved the model equations derived numerically by using Discontinuous-Galarkin method. The result of the numerical simulations gave us the conditions for smooth blood flow and shock wave form in the artery.

Keywords: Artery, Blood, Wave fronts, Pressure, Velocity, Discontinuous-Galarkin method