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Abstract Details

Title: Three Dimensional Flow of Nanofluid over an Exponentially Stretching Sheet with Chemical Reaction and Activation Energy

Authors: S. Anuradha and M.Yegammai

Abstract: Motive of this paper is to examine the effects of steady three dimensional MHD free convective boundary layer flow of nanofluid over a bi-directional exponentially stretching sheet with chemical reaction and activation energy. The well-dispersed (metallic) nanoparticle at low-volume fractions in liquids is known as nanofluids. They may enhance the mixture's properties and thermal conductivity over the base fluid values. An induced magnetic field can be used to control the movement of an electrically conducting fluid in micro-scale systems used for the transportation of fluids. The mathematical model is framed in such a way that the effects of Brownian motion and thermophoretic diffusion of nanoparticles are considered. It is assumed that the temperature and nanoparticle volume fraction at the sheet are also disseminated exponentially.The solutions for the governing equations are obtained by employing finite difference method. The effects of various controlling parameters on the dimensionless velocity, temperature and nanoparticle volume fraction profiles are discussed graphically.

Keywords: MHD, Nanofluid, Exponentially Stretching Sheet, Binary chemical reaction, Activation energy.