Buoyancy assisting and opposing flow of Jeffrey fluid model with zero mass flux of nanoparticle along a vertically moving surface

Thesis Submitted By

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Abstract

The aim of writing this thesis is to express the concept of Buoyancy assisting and opposing flow of Jeffrey fluid model with zero mass flux of nanoparticle along a vertically moving surface in the following ways. The structure of the thesis is developed in the following pattern. In the first chapter, comprehensive study and literature is discussed for Jeffrey fluid model with Buoyancy assisting and opposing flow due to moving surface. Study of nanoparticle's behaviour and their effective thermal performance for various models are reviewed. Second chapter consists of basic definitions of fluids and fundamental laws. Third chapter is a review chapter work for numerical study of Jeffrey nanofluid flow along a stretching sheet. In this chapter momentum, energy and concentration equations are derived by mean of tensor derivation. Boundary layer approach is applied to obtain the simplified form partial differential equations. Later on, by utilizing suitable boundary layer strategy and similarity transformations, the governing systems of PDE's have been converted into a different cumulative ODE's and then solved numerically. Graphically, the related parameters of non-Newtonian nanofluid are solved numerically for local Nusselt number and Sherwood number. In the fourth chapter, a mathematical model is extended for Buoyancy assisting and opposing flow with active/passive control of nanoparticles. The same procedure is adopted to solve the model as discussed for chapter 3. The conclusion of the entire study is presented in chapter 5.

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