

High Order Slip Flow and Cattaneo-Christov Heat Flux Model for Couple stress fluid

wubshet ibrahim¹ and Abebe Tesfaye²

¹Ambo University

²Affiliation not available

October 31, 2020

Abstract

Computation of the non-linear convective flow of couple stress nanofluid with the effect of fourth order slip flow, Cattaneo-Christov heat flux model subjected to Biot heating and mass transfer condition over the multi-dimensional stretching surface is presented here. Bvp5c is employed for numerical calculation of velocity, temperature and mass distributions under the control of few governing parameters. The results of current paper were judged with the available works in specific situations and better arrangement has been distinguished. On observing of the flow contours the result indicates that the greater amount of slip of high order the lesser the numerical value of skin friction coefficient, whereas, it is enlarged in value as the magnitude of couple stress parameter rises.

Hosted file

Article(Abebe2020)nn last revised.pdf available at <https://authorea.com/users/371816/articles/490017-high-order-slip-flow-and-cattaneo-christov-heat-flux-model-for-couple-stress-fluid>