

عنوان مقاله:

Free Convection Flow of a Jeffrey Fluid through a Vertical Deformable Porous Stratum

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خلاصه مقاله:

Free convective flow of a Jeffrey fluid in a vertical deformable porous stratum is investigated. It is assumed that heat is generated within the fluid by both viscous and Darcy dissipations. The velocity, displacement and the temperature distributions are evaluated using a perturbation method valid for small values of buoyancy parameter. The effects of Jeffrey parameter, and on the flow velocity and solid displacement are discussed in detail. In the absence of Jeffrey parameter, deformable porous parameters and the pressure gradient, all the results reduce to the corresponding results of Rudraiah et al. (1977). Higher skin friction is observed for a given buoyancy force for a non-Newtonian Jeffrey fluid when compared with Newtonian fluid. On comparing deformable and undeformable porous layers of present work and Rudraiah et al. (1977), we conclude that the skin friction gets reduced when the porous material is a deformable one. It is noticed that the effect of increasing Jeffrey parameter is to increase the skin friction in the deformable porous stratum.

کلمات کلیدی:

Jeffrey fluid, Non, Newtonian fluid, free convection, Perturbation method

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