

عنوان مقاله:

MHD Flow and Heat Transfer of an Exponential Stretching Sheet in a Boussinesq-Stokes Suspension

محل انتشار:

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خلاصه مقاله:

An analysis is carried out to study the flow and heat transfer due to an exponentially stretching sheet in a Boussinesq-Stokes suspension. Two cases are studied in heat transfer, namely (i) the sheet with prescribed exponential order surface temperature (PEST-case) and (ii) the sheet with prescribed exponential order heat flux (PEHF-case). The governing coupled, non-linear, partial differential equations are converted into coupled, non-linear, ordinary differential equations by a similarity transformation and are solved numerically using shooting method. The classical explicit Runge-Kutta-Fehlberg ۴۵ method is used to solve the initial value problem by the shooting technique. The effects of various parameters such as the couple stress parameter, Reynolds number and Prandtl number on velocity and temperature profiles are presented and discussed. The results have possible technological applications in the liquid-based systems involving stretchable materials.

کلمات کلیدی:

Exponential stretching, Couple stress parameter, Shooting method

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