

عنوان مقاله:

Three-Dimensional Boundary Layer Flow and Heat Transfer of a Dusty Fluid Towards a Stretching Sheet with Convective Boundary Conditions

محل انتشار:

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خلاصه مقاله:

The steady three-dimensional boundary layer flow and heat transfer of a dusty fluid towards a stretching sheet with convective boundary conditions is investigated by using similarity solution approach. The free stream along z-direction impinges on the stretching sheet to produce a flow with different velocity components. The governing equations are reduced into ordinary differential equations by using appropriate similarity variables. Reduced nonlinear ordinary differential equations subjected to the associated boundary conditions are solved numerically by using Runge-Kutta fourth-fifth order method along with Shooting technique. The effects of the physical parameters like magnetic parameter, velocity ratio, fluid and thermal particle interaction parameter, Prandtl number, Eckert number and Biot number on flow and heat characteristics are examined, illustrated graphically, and discussed in detail. The results indicate that the fluid phase velocity is always greater than that of the particle phase and temperature profiles of fluid and dust phases increases with the increase of the Eckert number.

کلمات کلیدی:

Dusty fluid, Convective boundary condition, stretching sheet, Runge-Kutta-Fehlberg45 mehtod

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