

## عنوان مقاله:

Lie Group Analysis for Boundary Layer Flow of Nanofluids near the Stagnation-Point over a Permeable Stretching Surface Embedded in a Porous Medium in the Presence of Radiation and Heat Generation/Absorption

## محل انتشار:

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## خلاصه مقاله:

This study investigates the influence of thermal radiation and heat generation/absorption on a two dimensional steady boundary layer flow near the stagnation-point on a permeable stretching sheet in a porous medium saturated with nanofluids. The governing partial differential equations with the appropriate boundary conditions are reduced to a set of ordinary differential equations via Lie-group analysis. The resultant equations are then solved numerically using Runge - Kutta fourth order method along with shooting technique. Two types of nanofluids, namely, copper-water and alumina-water are considered. The velocity and temperature as well as the shear stress and heat transfer rates are computed. The influence of pertinent parameters such as radiation parameter  $N_r$ , nanofluid volume fraction parameter  $\phi$ , the ratio of free stream velocity and stretching velocity parameter  $a/c$ , the permeability parameter  $K_1$ , suction/blowing parameter  $S$ , and heat source/sink parameter  $Q_0$  on the flow and heat transfer characteristics is discussed. The present study helps to understand the efficiency of heat transfer transport in nanofluids which are likely to be the smart coolants of the next generation.

## کلمات کلیدی:

Scaling transformations, Stagnation, point flow, Porous media, Nanofluid, stretching sheet

## لینک ثابت مقاله در پایگاه سیویلیکا:

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