

عنوان مقاله:

Investigation of Jeffery-Hamel Flow for Nanofluid in the Presence of Magnetic Field by a New Approach in the Optimal Homotopy Analysis Method

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خلاصه مقاله:

In this article, numerical study of nanofluid flow between two inclined planes is carried out under the influence of magnetic field. Water-based nanofluid with nanoparticle of Copper (Cu) is taken into consideration for the present investigation. An efficient numerical method namely Optimal Homotopy Analysis Method (OHAM) is employed to get an approximate series solution for the related governing differential equation. A new approach is proposed to determine the convergence controller parameters used in OHAM. For the validation of the proposed technique, the convergence of the obtained results is shown for different values of involved parameters. Moreover, residual errors for the different number of terms in the obtained series solution are represented graphically. Obtained numerical results from the proposed method are incorporated with the previous results and they are found to be in very good agreement. Impacts of involved parameters like nanoparticle volume fraction, Hartmann number and Reynolds number on non-dimensional velocity are also discussed.

کلمات کلیدی:

Jeffery-Hamel flow, Nanofluid, Numerical solution, Optimal Homotopy Analysis Method, Non-linear Ordinary Differential Equation

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