

عنوان مقاله:

Effect of Cattaneo-Christov Heat Flux on Radiative Hydromagnetic Nanofluid Flow between Parallel Plates using Spectral Quasilinearization Method

محل انتشار:

مجله مکانیک کاربردی و محاسباتی، دوره 8، شماره 3 (سال: 1401)

تعداد صفحات اصل مقاله: 11

نویسندگان:

Mangwiro Magodora - *School of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, Private Bag X01, Scottsville, Pietermaritzburg-3209, South Africa*

Hiranmoy Mondal - *Department of Mathematics, Brainware University, Barasat, Kolkata-700125, India*

Precious Sibanda - *School of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, Private Bag X01, Scottsville, Pietermaritzburg-3209, South Africa*

خلاصه مقاله:

In this paper, we numerically solve the equations for hydromagnetic nanofluid flow past semi-infinite parallel plates where thermal radiation and a chemical reaction are assumed to be present and significant. The objective is to give insights on the important mechanisms that influence the flow of an electrically conducting nanofluid between parallel plates, subject to a homogeneous chemical reaction and thermal radiation. These flows have great significance in industrial and engineering applications. The reduced nonlinear model equations are solved using a Newton based spectral quasilinearization method. The accuracy and convergence of the method is established using error analysis. The changes in the fluid properties with various parameters of interest is demonstrated and discussed. The spectral quasilinearization method was found to be rapidly convergent and accuracy is shown through the computation of solution errors.

کلمات کلیدی:

Cattaneo-Christov, Hydromagnetic flow, Quasilinearization, Chebyshev spectral collocation, Gauss Lobatto grid points

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1414421>

