

Linear Stability Analysis of a Plane-Poiseuille Hydromagnetic Flow Using Adomian Decomposition Method

Samuel Olumide Adesanya

Abstract: In this paper, the small-disturbances stability of plane-Poiseuille flow of an electrically conducting fluid in the presence of a transverse magnetic field is studied. Using the mode approach, the fourth order differential equation for the flow is derived and solved analytically using Adomian decomposition method (ADM) and the result obtained showed a good agreement with previously obtained result by Multideck asymptotic techniques

Keywords: ADM, Magneto-Hydrodynamics, Stability Analysis, Hartmann's Number