



Heat Transfer and velocity in the squeezing flow between two parallel disks by Gegenbauer Wavelet Collocation Method

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Abstract

In this study, the squeezing flows between parallel disks, which one disk is impermeable and the other is porous, in the presence of magnetic field are investigated by Gegenbauer Wavelet Collocation Method. Appropriate similarity transformations may be used to convert the governing non-linear partial differential equations into non-linear ordinary differential equations. The resultant non-linear ordinary differential equations are transformed into a sequence of linear differential equations by quasilinearization technique. Velocity and temperature fields of squeezing flows between parallel disks have been obtained by Gegenbauer Wavelet Collocation Method. The effects of squeeze number (S), Hartman number (Ha), Prandtl number (Pr), and Eckert number (Ec) and suction/blowing parameter (A) are analysed through graphs for the velocity and temperature profiles. It is observed that present method is convergent even in the case of a small number of grid points. The obtained results of the presented method are in good agreement with the results in literature.

Keywords: Gegenbauer wavelets; Magnetic field; Parallel disk; Quasilinearization technique; Squeezing flow.