

1086-34-1193

Ali Akgul* (aadt3@mst.edu), 400 west 12th street Rolla building, third floor 306, Rolla, MO 65401. *A new application of the reproducing kernel Hilbert space method to solve MHD Jeffery-Hamel flows Problem in non-parallel walls.*

The present paper emphasizes Jeffery Hamel flow: fluid flow between two rigid plane walls, where the angle between them is 2α . Jeffery-Hamel flow has been studied and its strongly nonlinear ordinary differential equation has been solved through the reproducing kernel Hilbert space method (RKHSM). the validity of the reproducing kernel method is set by comparing our results with the homotopy analysis method (ham), the differential transform method (DTM), the homotopy perturbation method (HPM), the spectral-homotopy analysis method (SHAM) and numerical results for different values of h, α and re . the results show that the proposed reproducing kernel method can achieve good results in predicting the solutions of such problems. Comparison between obtained results showed that RKHSM is more acceptable and accurate than other methods. (Received September 23, 2012)