

Numerical Solutions of Peristaltic Flow of a Jeffrey-Six Constant Fluid with Variable Magnetohydrodynamic

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In the present article we have studied the magnetohydrodynamic (MHD) peristaltic flow of a Jeffrey-six constant fluid in an endoscope. We have simplified the governing equations of such a fluid under the assumptions of long wave length and low Reynolds number approximation. The reduced momentum equations are solved by (i) the homotopy analysis method (HAM) and (ii) the shooting method. The comparison of both solutions is presented. Velocity profile, streamlines, and convergence region are discussed graphically for different values of Hartmann number M , and Jeffrey parameter λ_1 and λ_2 .

Key words: Peristaltic Flow; Jeffrey-Six Constant Fluid; Endoscope; HAM Solution; Numerical Solution; Variable MHD.