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Endoscope Analysis on Peristaltic Blood Flow of Sisko Fluid with Titanium Magneto-Nanoparticles

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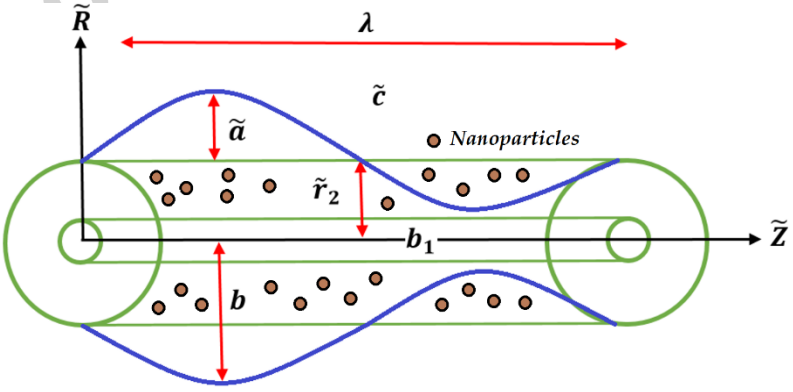
Abstract

In this article, endoscope analysis on peristaltic blood flow of Sisko fluid having Titanium magneto-nanoparticles through a uniform tube has been analyzed. The governing flow problem consists of continuity, linear momentum and thermal energy equations. The effect of magnetic field is also taken into account with the help of ohm's law. With the help of long wavelength and zero Reynolds number approximation, the governing equations are simplified. The reduced resulting nonlinear coupled equations are solved analytically with the help of Homotopy perturbation method (HPM). The impact of all the emerging parameters is discussed with the help of graphs for pressure rise, friction forces for outer and inner tube, velocity profile, temperature profile and pressure gradient. Moreover, numerical computation has been used to evaluate the expression for pressure rise and friction forces. Trapping phenomena is also presented with the help of streamlines. The present study depicts many interesting results that provide further study on different blood flow problems.

Graphical Abstract



Keywords: Endoscope; Magnetic field; Nanofluid; Blood flow; Peristaltic flow

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