

Numerical Solutions of Peristaltic Flow of a Newtonian Fluid under the Effects of Magnetic Field and Heat Transfer in a Porous Concentric Tubes

Sohail Nadeem, Noreen Sher Akbar, and Muhammad Yousaf Malik

Department of Mathematics, Quaid-i-Azam University 45320, Islamabad 4400 Pakistan

Reprint requests to S. N.; E-mail: snqau@hotmail.com

Z. Naturforsch. **65a**, 369–380 (2010); received September 17, 2008 / revised June 4, 2009

In the present article, we have studied the effects of heat transfer on a peristaltic flow of a magnetohydrodynamic (MHD) Newtonian fluid in a porous concentric horizontal tube (an application of an endoscope). The problem under consideration is formulated under the assumptions of long wavelength and neglecting the wave number. A closed form of Adomian solutions and numerical solutions are presented which show a complete agreement with each other. The influence of pertinent parameters is analyzed through graphs.

Key words: Peristaltic Flow; Newtonian Fluid; Magnetic Field; Heat Transfer; Porous Concentric Tubes.