

International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 5 No. III (May, 2011), pp. 403-410

EFFECT OF VELOCITY SLIP ON FLOW OF NEWTONIAN FLUID FLOW IN AN ECCENTRIC ANNULUS

INDIRA R. RAO AND JYAPRAKASH M. C.

Abstract

The flow of a Newtonian fluid in an eccentric catheterized artery is studied analytically and a closed form solution is obtained. The arterial segment is assumed to be straight, arterial wall is rigid and permeable and the flow is fully developed. B J slip is considered at the outer wall. The method involves mapping eccentric circles in $x - y$ plane onto concentric circles in $\zeta - \eta$ plane, using conformal mapping. The solution for velocity distribution and rate of flow are obtained in the closed form and graphically plotted for different values of eccentricity and permeability.

Key Words : *Eccentric annulus, Conformal mapping, B J Slip, Rate of flow.*

©2011 Ascent Publishing House