SECONDARY FLOW OF TWO IMMISCIBLE LIQUIDS IN A ROTATING ANNULAR PIPE OF CIRCULAR CROSS SECTION

¹T. POORNA KANTHA, ²A.S.N. MURTI & ³V.V. RAMANA RAO

¹Assistant Professor, Department of Mathematics, GITAM Institute of Technology, GITAM University, Visakhapatnam, India

²Professor, Department of Mathematics, GITAM Institute of Technology, GITAM University, Visakhapatnam, India ³Professor(Retd), Department of Applied Mathematics, Andhra University, Visakhapatnam, India

ABSTRACT

Ramana Rao and Narayana (1981) studied the flow of two incompressible immiscible liquids occupying equal heights between two parallel plates in a rotating system under the action of constant pressure gradient. They also studied the associated thermal distribution, assuming equal and different plate temperatures. This branch of fluid mechanics has developed rapidly in recent times as an obvious consequence of interest in geophysical flow problems, earth's atmosphere, oceans and core and of stars and galaxies. We considered the flow of two incompressible immiscible fluids occupying equal heights in rotating circular pipe. Immiscible fluids we mean, superposed fluids of different densities and viscosities. The rotating pipe that we consider here has the following physical meaning. If we introduce a pipe in a rotating flow, for example, rotating flow due to earth's rotation, the pipe also rotates.

KEYWORDS: Pressure gradient, Flux