
THIN FILM FLOW DOWN A VERTICAL SUBSTRATE IN THE PRESENCE OF INTERFACE

Gokcen Cekic ^{1,*},

¹*Baskent University, Ankara, Turkey*

ABSTRACT

The hydrodynamics of a multi-layer flow have attracted the attention of many researchers because of the wealth and variety of waves which develop on multiphase interfaces. Besides experimental studies, the modelling of the problem has been widely studied in the literature but modelling of direct numerical simulations have been limited for moving faster wave families on various layer thicknesses for stationary film thickness. The bifurcation analyse of multi-layer flows with free surface is investigated by using approximate wave model. Calculations have been carried out to generate the bifurcation scheme which shows the families of various wave velocities. Examples of nonlinear wave shapes are illustrated at real-life values.

Keywords fluid dynamics · multi-layer flows · thin films · waves · bifurcation

*Corresponding Author's E-mail: gcoztektek@baskent.edu.tr