

ON SOME UNSTEADY MOTIONS OF SECOND GRADE FLUIDS IN A RECTANGULAR EDGE*

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Abstract

A mixed boundary value problem is studied for the unsteady motion of a second grade fluid in a rectangular edge. A part of the boundary applies a shear stress ft^a to the fluid and the other one is moving in its plane with the velocity gt^b . Dimensionless velocity and shear stresses are obtained using integral transforms. They satisfy all imposed initial and boundary conditions and can easily be reduced to constantly accelerating boundary conditions. Finally, some characteristics of the fluid motion are graphically underlined.

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keywords: exact solutions, unsteady motion, second grade fluid, rectangular edge.

1 Introduction

The behavior of many materials such as clay coating, drilling muds, suspensions, certain oils and greases, polymer melts, elastomers and different

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