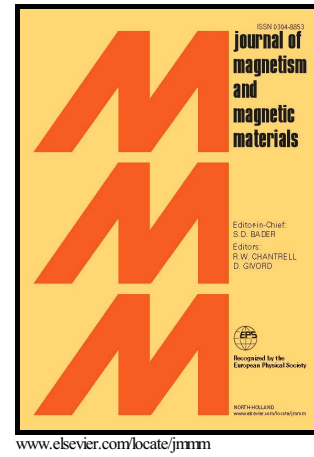


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Unsteady three dimensional flow of Casson liquid film over a porous stretching sheet in presence of uniform transverse magnetic field and suction/injection

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Abstract

Three dimensional flow of thin Casson liquid film over a porous unsteady stretching sheet is investigated under assumption of initial uniform film thickness. The effects of the uniform transverse magnetic field, suction and injection are also considered for investigation. The nonlinear governing set of equations and film evolution equation are solved analytically by using singular perturbation technique. It is found that the film thickness decreases with the increasing values of the Casson parameter. The Hartmann number and porosity parameter resist the film thinning process. It is also observed that the film thickness increases with increasing values of the suction velocity whereas it decreases for increasing values of the injection velocity at the stretching surface.

Key Words:- Stretching surface, Thin film, Casson liquid, Porous sheet, Transverse magnetic field, Asymptotic solutions.

1. Introduction

Flow of thin viscous liquid film over a stretching surfaces has attracted the interest of the research community in the past few decades due to their several applications in many industrial

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