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RIMMING FLOW OF POWER LAW FLUIDS

Armelle S Franklin & Lucija Zubonja

California State University, Chico [Mentor: Sergei Fomin]

Abstract of Poster Presentation: This topic discusses the mathematical modeling of rimming flow of non-Newtonian fluid on the inner surface of a horizontal rotating cylinder. Understanding that the liquid film on the surface of the cylinder is small, an approximate asymptotic mathematical model is developed. Existence of a steady-state solution is proved for a power-law fluid. In the general case the governing equation is solved numerically. In one particular case an analytical solution of steady-state equation for the fluid film thickness is found explicitly. Based on these solutions, different regimes of the flow are determined and analyzed. [FA12134301]

[Joint work with Justin Dennis, Richard P. Hubbard]

Contact: armfrank@temple.edu & luci11@berkeley.edu

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