

Numerical solution of complex flows of complex fluids

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Resumo/Abstract:

In this talk we will discuss some recent trends for constructing numerical methods to solve fluid flows with moving interface (or free surface). In these flows, in addition to the numerical solution of the incompressible Navier-Stokes equations, we need to computationally represent the interfaces, imposing the appropriate boundary conditions in the mathematical modelling. We will denote these problems as "complex flows". The computational simulations will explore the Newtonian fluid flows, but we will also present some results for solving problems with non-Newtonian fluids. Non-Newtonian fluids, encountered in many important industrial applications, possess interesting properties and peculiar behaviours