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**Motion of Rigid Bodies in Newtonian and non-Newtonian Fluids**

ASHWIN VAIDYA, Florida State University — The properties of non-Newtonian fluids, such as normal stress effects and non-constant viscosities are known to result in flow phenomenon which are dramatically different from those of Newtonian fluids. One such interesting difference in the behavior of these kinds of fluids is in their interaction with submerged rigid bodies. In this talk, we will focus on the problem of steady motions of symmetric rigid bodies as they freefall in Newtonian and viscoelastic fluids, modeled by the Navier Stokes, Power Law, Second order and the Generalized Second order fluid models. We will examine how variations in forces and torques in these two kinds of fluids can result in remarkably different phenomenon.

Ashwin Vaidya
Florida State University

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