
MARY PUGH, University of Toronto

Coating flows on slowly rotating cylinders

We consider a horizontal cylinder, rotating about its center. A viscous fluid is on the outside of the cylinder, coating the cylinder as it rotates. We consider a lubrication approximation of the Navier Stokes equations for the regime in which the fluid film is relatively thin and the surface tension is relatively large. The resulting lubrication model may have no steady state, a unique steady state, or more than one steady state. Using both numerics and analysis, we consider the dynamics of this flow, including whether or not solutions can become singular in finite time. This is joint work with Marina Chugunova (University of Toronto) and Roman Taranets (University of Nottingham).