

## Description of contacts in fluid-beam systems

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In this talk we consider a family of systems describing the interactions between a film of fluid deposited on a horizontal substrate and a beam delimiting the upper boundary of the film. The fluid motion is prescribed by solving the incompressible Navier Stokes equations. The beam is assumed to move vertically only, several models are proposed depending on whether damping/viscosity terms are included or not. The coupling between the fluid and the beam is imposed via the continuity of velocity-fields and normal stress.

Such systems have been thoroughly studied in the recent years especially to develop a Cauchy for strong/weak solutions up to the possible first time of contact between the moving beam and the substrate. In this talk, we will focus on the description of beam/substrate contact. We will first discuss finite-time occurrence and then provide a Cauchy theory that handle contacts. This talk is based on collaborations with C. Grandmont (INRIA Paris), J. Lequeurre (Univ. Lorraine) and J-J Casanova (Univ. Paris Dauphine)