

A variational approach to study contacts between solids in a Navier-Stokes flow

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I will report on my recent works based on variational techniques in Fluid Mechanics. The focus will be put on the asymptotics of the Stokes resistance matrix in a simple model of fluid-solid interaction problem where two solids get close to each other in a Stokes or Navier-Stokes flow. Several applications will be given as for instance the estimates of the hydrodynamic forces and the global existence of the flow past a spring-mounted body in a 2D strip. The talk will be based on several works written in collaboration with Bocchi, Hillairet, Patriarca and Sperone.