

Equilibrium configuration of a rectangular obstacle immersed in a channel flow

Denis Bonheure

Francqui Research Professor, Francqui Foundation, Belgium

and Université libre de Bruxelles, Brussels, Belgium

denis.bonheure@ulb.be

Abstract

Fluid flows around an obstacle generate vortices which, in turn, generate lift forces on the obstacle. Therefore, even in a perfectly symmetric framework equilibrium positions may be asymmetric. We show that this is not the case for a Poiseuille flow in an unbounded 2D channel, at least for small Reynolds number and flow rate. We consider both the cases of vertically moving obstacles and obstacles rotating around a fixed pin.

This presentation is based on a joint work with F. Gazzola and P. Galdi.