

**Variational methods for fluid-structure interaction:  
Bulk elastic solids interacting with the Navier Stokes  
equation**

Sebastian Schwarzacher

*Charles University, Prague*

`schwarz@karlin.mff.cuni.cz`

Barbora Benesova

*Charles University, Prague*

`benesova@karlin.mff.cuni.cz`

Malte Kampschulte

*Charles University, Prague*

`kampschulte@karlin.mff.cuni.cz`

We introduce a two time-scale scheme which allows to extend the method of minimizing movements to hyperbolic problems. This method is used to show the existence of weak solutions to a fluid-structure interaction problem between a nonlinear, visco-elastic,  $n$ -dimensional bulk solid governed by a hyperbolic evolution and an incompressible fluid governed by the ( $n$ -dimensional) Navier-Stokes equations for  $n \geq 2$ .