



Fluid structure interaction and Sobolev spaces on changing domains

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Dynamic interaction between fluids and solids occurs everywhere, from a fish swimming in the water to an airplane wing bending in the wind. When studying them, one of the key issues is that finding the domain on which the fluid equations are posed itself is part of the problem. Thus before we can apply all the standard machinery from PDE and the calculus of variations, we must first translate it to work on changing domains. The aim of this talk will be to explore precisely this. On one hand it will be an introduction into fluid structure interaction highlighting some recent results. On the other hand this will be used as an opportunity to illustrate and discuss several old and new methods on how to deal with Sobolev spaces when the domain itself is not fixed. This talk is based on results obtained with S.Schwarzacher and B.Benešová as well as work with N.Evseev and A.Menovschikov.