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Mathematical analysis of the exterior problem of Navier-Stokes using weighted Sobolev spaces

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We are interested in the stationary Navier-Stokes equations describing viscous fluid flow past an obstacle. Because the flow domain is unbounded, we choose to set the problem in a functional framework that uses weight functions to control the behavior at infinity of solutions. To take into account, the wake region behind the obstacle, anisotropic weights are considered. A first indispensable step is the investigation of the Oseen equations that are a linearized version of the Navier-Stokes equations. After presenting the models, we will be interested in the existence and uniqueness results.

Biography

Ulrich Razafison is currently an Assistant Professor at the Laboratoire de Mathématiques de Besançon, Université de Bourgogne Franche-Comté, France. His current research interests are in the mathematical analysis of elliptic problem in unbounded domains with the use of weighted Sobolev spaces, in the numerical simulations of conservation laws with application to traffic flow and epidemiology and he is also interested in numerical methods that allow to reduce computational costs such as reduced basis methods.

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