
Geometric inverse problem for non-stationary Stokes system

Rakia Malek*¹ and Maatoug Hassine*^{†1}

¹Faculté des Sciences de Monastir (FSM) – Université de Monastir Rue Salem BCHIR Skanes 5000
Monastir Tunisie, Tunisia

Abstract

In this work we focus on an inverse problem related to the non-stationary Stokes system. It comes from the detection of an object immersed in a fluid from boundary measurements. We propose an alternative approach based on the Kohn-Vogelius formulation and the topological gradient method. The inverse problem is formulated as a topology optimization one. The topological sensitivity analysis method gives the variation of a criterion with respect to the creation of a small hole in the domain. In the numerical part, we propose a one-shot reconstruction algorithm and we present some numerical results, showing the efficiency and accuracy of our approach.

*Speaker

[†]Corresponding author: maatoug.hassine@fsm.rnu.tn