



香港中文大學
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FIRST IN
CHANGE

Analysis and PDE Seminar

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TITLE: Optimal boundary control for the Cahn Hilliard Navier Stokes Equations

Date : May 19th, 2023 (Friday)

Time : 1pm-2pm (Hong Kong time)

2pm-3pm (Korea time)



Link to ZOOM : <https://unist-kr.zoom.us/j/3170659442>

Meeting ID : 317 065 9442

Password : APDE21

Abstract. The CHNS system defines the equation of motion of an isothermal mixture of two immiscible and incompressible fluids subject to phase separation. It consists of a Navier Stokes equation governing the average fluid velocity field coupled with a convective Cahn Hilliard equation for the relative concentration of the fluids. An optimal control problem is formulated as the minimization of a cost functional subject to the controlled CHNS system where the control acts on the boundary of the Navier Stokes equations in this problem. We first prove that there exists an optimal boundary control. Then we establish that the control to state operator is Frechet differentiable and derive first-order necessary optimality conditions in terms of a variational inequality involving the adjoint system. This is a joint work with Prof. Sheetal Dharmatti and Manika Bag.

All are welcome

This is a joint activity organized by Department of Mathematics, The Chinese University of Hong Kong, Hong Kong; Department of Mathematics, Institute of Mathematical Research, Research Division of Mathematical and Statistical Science, The University of Hong Kong, Hong Kong; and Department of Mathematical Sciences, Ulsan National Institute of Science and Technology, Korea. More details can be found in https://hkumath.hku.hk/~imr/event/CUHK_HKU_UNIST_Analysis_and_PDE/index.php.

