



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of Mathematics**

## **SEMINAR ON PDE**

**Symmetry of Euler flows in cylinders and annuli**

**Prof. Francois Hamel**

Aix-Marseille Universite

### **Abstract**

In this talk, I will discuss some rigidity results for steady incompressible flows away from stagnation in infinite cylinders with tangential boundary conditions. In two-dimensional strips, Euler flows turn out to be parallel flows. In any dimension, Euler or Navier-Stokes potential flows turn out to be constant. I will also discuss various counter-examples without the main assumptions. The case of flows in two-dimensional annuli will also be discussed. The proofs rely on the study of the geometric properties of the streamlines and a combination of ODE and PDE arguments. The talk is based on some joint works with A. Karakhanyan and N. Nadirashvili.

**Date: 16 October 2025 (Thursday)**

**Time: 4:00pm**

**Zoom Meeting: <https://hkust.zoom.us/j/92920911866> (Passcode: 610142)**

*All are Welcome!*