THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF APPLIED MATHEMATICS
應 用 數 學 系

PDE Seminar

Professor Jiajun Tong

Peking University, China

Topic

Steady Contiguous Vortex-Patch Dipole Solutions of the 2D Incompressible Euler Equation

Date| Time

9 January 2025 (Thursday) | 16:00 – 17:00 (HK Time)

Venue

N001

Abstract:

It is of great mathematical and physical interest to study traveling wave solutions to the 2D incompressible Euler equation in the form of a touching pair of symmetric vortex patches with opposite signs. Such a solution was numerically illustrated by Sadovskii in 1971, but its rigorous existence was left as an open problem. In this talk, we will rigorously construct such a solution by a novel fixed-point approach that determines the patch boundary as a fixed point of a nonlinear map. Smoothness and other properties of the patch boundary will also be characterized. This is based on a joint work with De Huang.

ALL ARE WELCOME