The Hong Kong University of Science and Technology

Department of Mathematics

<u>Seminar on PDE</u>

Recent developments in the analysis of coherent structures in two dimensional Euler equation

by

Prof. Hao JIA
School of Mathematics, University of Minnesota

<u>Abstract</u>

It is well known that smooth solutions to the 2d Euler equation remain smooth and are globally defined. However the long time behavior of solutions is not well understood. Numerical simulations and physical experiments have shown that coherent structures such as vortices and shears could form naturally and determine the dynamics for very long time. Such coherent structures also appear in three dimensional flows when two dimensional features dominate, e.g., in the formation of hurricanes. In addition, the mechanism of vortex symmetrization near vortices and merging of same sign vortices is fundamental in 2d turbulence. In this talk, we discuss some recent results in rigorously understanding these phenomena on the nonlinear level.

Date: **Tuesday, 13 August 2019**

Time: **11:00a.m. - 12:00noon**

Venue: **Room 3472, Academic Building (near Lifts 25 - 26), HKUST**

All are welcome!