Liu Bie Ju Centre for Mathematical Sciences
City University of Hong Kong

Mathematical Analysis and its Applications Colloquium

Transonic Shocks and Mixed-Type Equations

by

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Date : 9 November, 2017 (Thursday)
Time : 4:30 pm to 5:30 pm
Venue : Room B6605
Blue Zone, Level 6, Academic 1 (AC1)
City University of Hong Kong

ABSTRACT:

In this talk, I will discuss some progress on multi-dimensional steady compressible flows which are some of the major challenges in the mathematical theory of multi-dimensional conservation laws.

We will survey studies on steady transonic flows in nozzles with variable cross sections with emphasize on flows with transonic shocks with physical boundary conditions. In particular, I will present some recent results on the Courant-Friedrich's transonic shock problem in a class of general 2-dimensional nozzles. This will be a nonlinear free boundary value problem with nonlinear boundary conditions for a mixed type system of equations. Existence of single and multiple transonic shocks will be discussed in terms of the geometry of the nozzle and the given exit pressure. Some key ideas of the analysis will be presented. Some open problems will be discussed.

Light refreshments will be provided before the colloquium from 4:00 pm to 4:30 pm. Please come and join us!

** **All interested are welcome** **