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

Mathematical Analysis and its Applications Colloquium

Organized by Prof. Hui-Hui Dai and Dr. Dan Dai

Nonlinear Asymptotic Stability of the Lane-Emden Solutions for Viscous Gaseous Stars

by

Professor Tao LUO

**Professor, Department of Mathematics
City University of Hong Kong**

**Date   : 20 October, 2016 (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 present some recent results joint with Zhouping Xin and Huihui Zeng on the nonlinear asymptotic stability of the Lane-Emden solutions for spherically symmetric motions of viscous gaseous stars in the setting of vacuum free boundaries capturing the physical behavior that the sound speed is 1/2-Holder continuous across the vacuum boundary. The key issue is to establish the global-in-time regularity uniformly up to the vacuum boundary due to the difficulty caused by the degeneracy and singular behavior near the vacuum states. The main ingredients of the analysis consist of combinations of some new weighted nonlinear functionals and space-time weighted energy estimates.

The constructions of these weighted nonlinear functionals and space-time weights depend crucially on the structures of the Lane-Emden solution, the balance of pressure and gravitation, and the dissipation.

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** **

For enquiry: 3442-9190