



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

**Nonlinearly Exponential Stability of Compressible
Navier-Stokes System with Degenerate Heat Conductivity**

By

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Abstract

In this talk, we consider the large time behavior of strong solutions to the one-dimensional, compressible Navier-Stokes system for a viscous and heat conducting ideal polytropic gas, when the viscosity is constant and the heat conductivity is proportional to a positive power of the temperature. Both the specific volume and the temperature are proved to be bounded from below and above independently of time. Moreover, it is shown that the global solution is nonlinearly exponentially stable as time tends to infinity. Note that the conditions imposed on the initial data are the same as those of the constant heat conductivity case [Kazhikhov- Shelukhin, J. Appl. Math. Mech. 41(1977); Kazhikhov, Boundary Value Problems for Hydrodynamical Equations, 50(1981)] and can be arbitrarily large. Therefore, our result can be regarded as a natural generalization of the Kazhikhov's ones for the constant heat conductivity case to the degenerate and nonlinear one.

Date : 17 January, 2020 (Friday)
Time : 3:00pm – 4:00pm
Venue : Room 4504, Academic Building
(Lifts 25-26), HKUST

All are Welcome!