

Asymptotic Behavior of Solutions to Some Equations of Fluid Dynamics

Huihui Zeng
Georgetown University

September 14, 2009

Abstract

In this talk, I will present some results (Joint with Zhouping Xin) concerning the asymptotic behavior of solutions to several nonlinear equations from fluid dynamics on both mesoscopic and macroscopic levels, including Boltzmann equation, compressible Navier-Stokes equations and the system of viscous conservation laws with positive definite viscosity matrix. The main purpose is to understand the asymptotic behavior of solutions to those equations towards linear and nonlinear waves, such as shock waves, rarefaction waves and contact discontinuities as either the time goes to infinity, or the viscosity and heat conductivity go to zero for the macroscopic equations or the mean free path goes to zero for the mesoscopic equations.