

## 日独共同大学院プログラム Mini-Course

講師： 隠居 良行 Yoshiyuki Kagei (Kyushu University)

講義題目： On asymptotic behavior of solutions of the compressible Navier-Stokes equation around a parallel flow.

Abstract:

In this lecture we consider large time behavior of solutions to the compressible Navier-Stokes equation in an infinite layer of  $\mathbb{R}^n$  around stationary parallel flows.

It is shown that the parallel flow is asymptotically stable under sufficiently small perturbations, if the Reynolds and Mach numbers are sufficiently small. The asymptotic behavior of the perturbation is described by a function satisfying an  $(n-1)$  dimensional heat equation when  $n \geq 3$  and by a function satisfying a one dimensional viscous Burgers equation when  $n=2$ .

We first study the asymptotic behavior of solutions to the linearized problem. Based on the linearized analysis we investigate the nonlinear problem. If possible I also would like to mention the large time behavior of solutions around time-periodic parallel flows.