第２９０回 広島数理解析セミナー （２０２５年度）

Hiroshima Mathematical Analysis Seminar No.290

日時 ： ８月1日（金）１６：３０〜１７：３０

場所 ： 広島大学理学部 Ａ２０１

講師 ： 西畑　伸也 氏 （東京科学大学）

題目 ： Spherically symmetric stationary solutions for the compressible Navier-Stokes equation for outflow/inflow problems

要旨 ： In the present talk, we discuss properties and the asymptotic stability of spherically symmetric stationary solutions to the compressible Navier-Stokes equations in the exterior domain of a unit ball. We study two types of boundary conditions, i.e., inflow and outflow conditions. For both problems, we derive several properties of stationary solutions, especially convergence rates toward far fields. By making use of these rates, we derive a-priori estimate of the perturbation from the stationary solution in the suitable Sobolev space. It shows the asymptotic stability of the stationary solution. In this derivation, the relative energy form plays an essential role. For the outflow problem, we do not have to assume any smallness assumptions on the initial data for the outflow problem if it belongs to the suitable weighted Sobolev space. This result is shown by using the representation formula of the density. We also discuss the asymptotic stability with the non-symmetric initial perturbation from the stationary solution.

本セミナーに参加ご希望の方は，広島数理解析セミナーのホームページ

https://www.math.sci.hiroshima-u.ac.jp/ca/seminar.html

にあるフォームからお申し込みください.

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