

非線型科学

コロキウム

Nonlinear Science

Colloquium

講演者： 小園 英雄

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講演題目： **Liouville type theorem for the Navier-Stokes equations**

In the first part, the 3D homogeneous stationary Navier-Stokes equations in the whole space are discussed.

We deal with solutions vanishing at infinity in the class of the finite Dirichlet integral. By means of quantities on vorticity having the same scaling property as the Dirichlet integral, several new a priori estimates are established.

As an application, we prove the Liouville theorem in the marginal case of scaling invariance.

In the second part, the corresponding question to the nonstationary 3D Navier-Stokes equations is considered.

Introducing a new notion of generalized suitable weak solutions, we prove validity of the energy inequality for such a class of weak solutions to the Navier-Stokes equations. Although a certain growth condition on the pressure is required, we may treat the class even with an infinite energy quantity except for the initial velocity.

It should be noted that our class is larger than Serrin's one which ensures both uniqueness and regularity of Leray-Hopf weak solutions.

Our estimate is also applicable to the Liouville type theorems in the nonstationary case.

These results are based on the joint work with Prof. Yutaka Terasawa at Nagoya University and Prof. Yuta Wakasugi at Ehime University.

日時：**2017年 6月29日(木) 18:00~19:00**

場所：早稲田大学 西早稲田キャンパス
62W号館1階 大会議室

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