

数理解析研究所講究録 2205

RIMS 共同研究 (公開型)

# 非圧縮性粘性流体の数理解析

京都大学数理解析研究所

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数理解析研究所講究録は、京都大学数理解析研究所の共同利用研究集会および共同研究の記録として1964年に刊行が開始されました。当研究所が全国共同利用研究所として発足した翌年のことでしたが、以来半世紀、毎年数十巻を刊行し、2016年には第2000巻が刊行されるに至りました。第1巻から第2000巻までに収録された論文数は29,265編、総頁数は342,960頁という膨大なものであり、最先端の数学・数理科学分野の研究状況を伝えるのみならず、我が国の数学・数理科学の発展の歴史を留める文献として、他に類例を見ない論文集となっています。

講究録の内容は当研究所のウェブサイトおよび京都大学の学術情報リポジトリにおいても公開され、年間の総アクセス数は1,380,032回（2017年度）を数えるなど、多数の方にご利用いただいています。

講究録の使用言語は論文著者の判断に任されていますが、結果的に日本語が多用されていることが特徴の一つとなっています。その結果、講究録は、数学・数理科学の広い領域における最先端の専門知識に母国語でアクセスできるものとして、近年の英語化の流れの中で、重要な文献となりつつあります。

当研究所の共同利用事業に参加し講究録の論文を執筆していただいた多数の方々に対し、講究録を大きく成長させていただいたことを深く感謝いたしますとともに、これからも、当研究所の国際共同利用・共同研究拠点(\*)としての活動にご参加いただき、講究録の発展にご協力いただけますよう心よりお願い申し上げます。

\*数理解析研究所は2018年11月13日、共同利用・共同研究拠点の認定が廃止され、新しく国際共同利用・共同研究拠点に認定されました。

講究録

Kôkyûroku

RIMS Kôkyûroku was started in 1964 as the proceedings of symposia, colloquia and workshops supported by RIMS, the Research Institute for Mathematical Sciences, Kyoto University. It was the next year of the establishment of RIMS as one of the Nationwide Cooperative Research Centers. For half a century since then, several dozen volumes have been issued each year, and the 2,000th volume was issued in 2016. The volumes of Kôkyûroku from the 1st through the 2,000th, containing enormous 29,265 articles and 342,960 pages, not only deliver the latest research activities in mathematics and mathematical sciences but also constitute valuable and incomparable collections of articles that pass down history of progress of mathematics and mathematical science in Japan.

Articles in Kôkyûroku are available on the websites of RIMS and Kyoto University Research Information Repository. They are very frequently accessed on the internet, with a total of as many as 1,380,032 accesses in 2017.

The authors choose the languages to write articles, and many are written in Japanese, which is one of the characteristics of Kôkyûroku. As a result, Kôkyûroku is regarded as a significant and important literature which allows easy access to the latest specialized knowledge in the large fields of mathematics and mathematical sciences written in native language for Japanese readers, while more and more research papers are being written in English in recent years.

We are deeply grateful to many of those who have participated in cooperative research activities of RIMS and greatly developed Kôkyûroku. We heartily ask for your continuous participation in research activities at RIMS as an International Joint Usage/Research Center(\*) and your warm support and cooperation for the fruitful development of Kôkyûroku.

\* RIMS was certified as an International Joint Usage/Research Center on Nov. 13, 2018.

*RIMS Kôkyûroku 2205*

*Mathematical Analysis of Viscous Incompressible Fluid*

*December 7 ~ 9, 2020*

*edited by Yasunori Maekawa*

*December, 2021*

*Research Institute for Mathematical Sciences*

*Kyoto University, Kyoto, Japan*

This is a report of research done at the Research Institute for Mathematical Sciences,  
an International Joint Usage/Research Center located in Kyoto University.  
The papers contained herein are in final form and will not be submitted for publication elsewhere.

RIMS Workshop on  
**Mathematical Analysis of Viscous Incompressible Fluid**

Date: December 7 (Mon) – 9 (Wed), 2020

Venue: Online via Zoom

Organizers: Yasunori Maekawa (Kyoto University)

Yoshihiro Shibata (Waseda University)

This workshop will be held online via Zoom.

To participate in the workshop please register from here:

<https://forms.gle/xFp9NnLbEjUVfJq9>

Deadline for registration: December 4 (Fri), 2020

Zoom URL information will be sent by email to all registrants on December 5 (Sat).

## **Program**

### Monday, December 7

14:00 - 14:50 Masahiro Suzuki (Nagoya Institute of Technology)

Stationary solutions to the Euler–Poisson equations in a perturbed half-space

15:10 - 16:00 Kai Koike (Kyoto University)

Refined pointwise estimates for the solutions to the one-dimensional barotropic compressible Navier–Stokes equations: An application to the analysis of the long-time behavior of a moving point mass

16:20 - 16:50 Yusuke Ishigaki (Tokyo Institute of Technology)

Diffusion wave phenomena and  $L^p$  decay estimates of solutions of compressible viscoelastic system

Tuesday, December 8

10:00 - 10:50 Yasushi Taniuchi (Shinshu University)

On uniqueness of mild solutions on the whole time axis to the Boussinesq equations in unbounded domains

11:10 - 12:00 Takayuki Kubo (Ochanomizu University)

Analysis of non-stationary Navier-Stokes equations approximated by the pressure stabilization method

14:00 - 14:50 Xin Zhang (Tongji University, Shanghai)

The decay property of the multidimensional compressible flow in the exterior domain

15:10 - 16:00 Masashi Aiki (Tokyo University of Science)

On the head-on collision of coaxial vortex rings

16:20 - 16:50 Yuuki Shimizu (Kyoto University)

Current-valued solutions of the Euler-Arnold equation on surfaces and its applications

Wednesday, December 9

10:00 - 10:50 Hideyuki Miura (Tokyo Institute of Technology)

Estimates of the regular set for Navier-Stokes flows in terms of initial data

11:10 - 12:00 Itsuko Hashimoto (Kanazawa University / OCAMI)

Existence of radially symmetric stationary solutions for the compressible Navier-Stokes equation



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2020 年 12 月 7 日~12 月 9 日  
研究代表者 前川 泰則 (Yasunori Maekawa)

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