

数理解析研究所講究録 2171

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

2020年11月

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。

RIMS Kôkyûroku 2171

Mathematical Analysis of Viscous Incompressible Fluid

December 3 ~ 5, 2018

edited by Yasunori Maekawa

November, 2020

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

Organizers: Yasunori Maekawa (Kyoto University)
Yoshihiro Shibata (Waseda University)

Date: December 3 – 5, 2018

Venue: Room 111, Research Institute for Mathematical Sciences, Kyoto University

Program

Monday, December 3

13:20 - 14:10 Giovanni Paolo Galdi (University of Pittsburgh, USA)

On the relation between distributional and Leray-Hopf solutions to the Navier-Stokes equations

14:20 - 15:10 Mads Kyed (TU Darmstadt, Germany)

R-boundedness and time-periodic maximal regularity: Applications to two-phase flows

15:30 - 15:55 Kenji Nakamura (University of Tsukuba, Japan)

Local energy decay estimate for the hyperbolic type Stokes equations.

16:00 - 16:25 Huanyuan Li (The University of Tokyo, Japan)

Blow-up criteria for the density-dependent Navier-Stokes-Korteweg equations

16:30 - 16:55 Hiroyuki Tsurumi (Waseda University, Japan)

On the ill-posedness of the stationary Navier-Stokes equations in scaling invariant Besov spaces

Tuesday, December 4

10:00 - 10:50 Thierry Gallay (Université Grenoble Alpes, France)

Spectral stability of steady vortex columns

11:00 - 11:50 Jacob Bedrossian (University of Maryland, USA)

Vortex filaments in the 3D Navier-Stokes equations

13:40 - 14:30 Gregory Seregin (University of Oxford, UK)

Type I singularities and Liouville type theorems in theory of Navier-Stokes equations

14:40 - 15:30 Ken Abe (Osaka City University, Japan)

Liouville theorems for the Stokes equations with applications to large time estimates

15:50 - 16:40 Yutaka Terasawa (Nagoya University, Japan)

Weak solutions for a diffuse interface model for two-phase flows of incompressible fluids with different densities and nonlocal free energies

Banquet at Rakuyu Kaikan (17:30 ~)

Wednesday, December 5

10:00 - 10:50 Raphaël Danchin (Université Paris-Est Créteil, France)

The well-posedness issue for the compressible Navier-Stokes equations with discontinuous density

11:00 - 11:50 Hirokazu Saito (Tokyo University of Science, Japan)

On a compressible fluid model of Korteweg type in a maximal regularity class

This workshop is supported by RIMS in cooperation with

Mathematics and Physics Unit "Multiscale Analysis, Modeling and Simulation", Top Global University Project, Waseda University.



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非圧縮性粘性流体の数理解析
Mathematical Analysis of Viscous Incompressible Fluid
RIMS 共同研究 (公開型) 報告集

2018 年 12 月 3 日~12 月 5 日
研究代表者 前川 泰則 (Yasunori Maekawa)

目次

1. New results for the Oseen problem with applications to the Navier-Stokes equations
in exterior domains 1
Thomas Eiter Technische U. Darmstadt
Giovanni P. Galdi U. Pittsburgh
2. Local energy decay estimate for the hyperbolic type Stokes equations 16
中村 憲史 (Kenji Nakamura) 筑波大学 (U. Tsukuba)
3. On the blow-up criteria for the strong solutions to inhomogeneous fluids of
Korteweg type 26
李 煥元 (Huanyuan Li) 東京大学 (U. Tokyo)
4. On the ill-posedness of the stationary Navier-Stokes equations in scaling
invariant Besov spaces 39
鶴見 裕之 (Hiroyuki Tsurumi) 早稲田大学 (Waseda U.)
5. LIOUVILLE THEOREMS FOR THE STOKES EQUATIONS
IN EXTERIOR DOMAINS 50
阿部 健 (Ken Abe) 大阪市立大学 (Osaka City U.)
6. Existence of weak solutions for a diffuse interface model for two-phase flows of
incompressible fluids with different densities and nonlocal free energies 57
Helmut Abels U. Regensburg
寺澤 祐高 (Yutaka Terasawa) 名古屋大学 (Nagoya U.)
7. Viscous compressible fluids with only bounded density 76
Raphaël Danchin U. Paris-Est Créteil
Francesco Fanelli U. Lyon
Marius Paicu U. Bordeaux
8. On a compressible fluid model of Korteweg type in a maximal regularity class 87
齋藤 平和 (Hirokazu Saito) 東京理科大学 (Tokyo U. Sci.)

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.