数 理 解 析 研 究 所 講 究 録 2065

ＲＩＭＳ共 同 研 究 (公開型)

非線形解析学と凸解析学の研究

京 都 大 学 数 理 解 析 研 究 所

２０１８年４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．現在の共同利用・共同研究拠点（2010年発足）の前身である，全国共同利用研究所として当研究所が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1,344,499回（2016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．

Nonlinear Analysis and Convex Analysis

August 31 ∽September 2, 2016

edited by Wataru Takahashi,

Shigeo Akashi, Mitsuhiro Hoshino and Satoshi Kodama

April, 2018

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

The International Workshop on Nonlinear Analysis and Convex Analysis

Research Institute for Mathematical Sciences, Kyoto University
Oiwake-town Kita-Shirakawa, Sakyou-ward, Kyoto-city, JAPAN

This Workshop is qualified by Research Institute for Mathematical Sciences as one of the series of important mathematical research activities in 2016. Everyday session begins at 9:05 at Room 420 on the fourth floor in the inside of the building for RIMS.

Directed by Wataru Takahashi(Keio University and Kaohsiung Medical University) and organaized by Shigeo Akashi(Tokyo Univ. of Science) and Mitsuhiro Hoshino(Akita Pref. Univ.)

Please refer to http://www.kurims.kyoto-u.ac.jp/~kyodo/workshop-en.html

August 31 (Wednesday)

9:05 ~ 9:10   Wataru Takahashi*(Keio Univ. and Kaohsiung Medical Univ.)
Opening Address

9:10 ~ 9:55   Hang-Chin Lai*(National Tsing Hua Univ., Taiwan)
Introductory on Optimization Analysis involving Set Variable Functions

9:55 ~ 10:30   Yasunori Kimura*(Toho Univ.)
Resolvents of convex functions and the shrinking projection method on geodesic spaces

10:30 ~ 10:40 Tea Break

10:40 ~ 11:25 Do Sang Kim*(Pukyong National Univ., Korea)
Zhe Hong(Pukyong National Univ., Korea)
Optimality and duality for a class of nonsmooth fractional multiobjective optimization problems

11:25 ~ 12:00 Koji Aoyama*(Chiba Univ.)
An iterative method for generalized split feasibility problems

12:00 ~ 13:10 Lunch Break

13:10 ~ 13:55 Lu-Chuan Ceng(Shanghai Normal Univ., China)
Jen-Chih Yao*(China Medical Univ., Taiwan)
Generalized vector equilibrium-like problems with applications to vector optimization problems

13:55 ~ 14:40 Yeong-Cheng Liou(Kaohsiung Medical Univ., Taiwan)
Ching-Feng Wen*(Kaohsiung Medical Univ., Taiwan)
On generalized vector equilibrium-like problems

14:40 ~ 14:50 Tea Break

14:50 ~ 15:25 Satoshi Suzuki*(Shimane Univ.)

	Daishi Kuroiwa(Shimane Univ.)
	Nonlinear error bounds in terms of generators of quasiconvex functions
15:25 ∼ 16:00	Nobusumi Sagara*(Hosei Univ.)
	Relaxation and purification for nonconvex variational problems in dual Banach spaces: The minimization principle in saturated measure spaces
16:00 ∼ 16:45	Wataru Takahashi*(Keio Univ. and Kaohsiung Medical Univ.)
	Weak and strong convergence theorems for new nonlinear mappings in Hilbert spaces and Banach spaces and applications
18:00 ∼ 20:30	Welcome Party

September 1 (Thursday)

9:05 ∼ 9:10	Announcement
9:10 ∼ 9:55	Sehie Park*(The National Academy of Sciences and Seoul National Univ., Korea)
	The use of weak topologies in the KKM theory
9:55 ∼ 10:30	Fumiaki Kohsaka*(Tokai Univ.)
	Common fixed points of two commutative hybrid mappings in Hilbert spaces
10:30 ∼ 10:40	Tea Break
10:40 ∼ 11:25	Chih Sheng Chuang(National Sun Yat-Sen Univ., Taiwan)
	Lai-Jiu Lin*(National Changhua Univ. of Education, Taiwan)
	Zenn-Tsun Yu(Nan Kai Univ. of Tech., Taiwan)
	The hybrid steepest decent method for some nonlinear problems in Hilbert spaces
11:25 ∼ 12:00	Mitsuhiro Hoshino*(Akita Prefectural Univ.)
	On a learning late factor and extent of ordering in basic self-organizing maps
12:00 ∼ 13:10	Lunch Break
13:10 ∼ 13:55	Jong Soo Jung*(Dong-A Univ., Korea)
	Strong convergence theorems for accretive operators and nonexpansive mappings in Banach spaces
13:55 ∼ 14:30	Takanori Ibaraki*(Yokohama National Univ.)
	Shrinking projection methods with error for fixed point problems
14:30 ∼ 14:40	Tea Break
14:40 ∼ 15:25	Kichi-Suke Saito*(Niigata University)
	Naoto Komuro(Hokkaido University of Education)
	Ryotaro Tanaka(Kyushu University)
	Rotation invariant norms on $\mathbb{R}^2$ and geometric constants
15:25 ∼ 16:00	Sachiko Atsushiba*(Univ. of Yamanashi)
	Common Acute Points and Convergence Theorems for Families of Nonlinear Mappings
16:00 ∼ 16:45	Mau-Hsiang Shih*(China Medical University Hospital, Taiwan)
	Helly numbers for convex sets in topological vector space

September 2 (Friday)

9:05 ～ 9:10   Announcement

9:10 ～ 9:55   Hong-Kun Xu*(Hangzhou Dianzi Univ., China)

                  The Frank-Wolfe algorithm and its generalizations for optimization

9:55 ～ 10:30   Yuto Ogata*(Niigata Univ.)

                  Yutaka Saito(Niigata Univ.)

                  Tamaki Tanaka(Niigata Univ.)

                  Gue Myung Lee(Pukyong National Univ., Korea)

                  Jae Hyoung Lee(Pukyong National Univ., Korea)

                  Generalized alternative theorems based on set-relations and its application

10:30 ～ 10:40   Tea Break

10:40 ～ 11:25   Yi-Chou Chen*(National Army Academy, Taiwan)

                  New Cyclic Contraction Maps on Metric Spaces

11:25 ～ 12:00   Yukio Takeuchi*(Takahashi Institute for Nonlinear Analysis)

                  An iteration scheme finding a common fixed point of commuting two nonexpansive mappings in uniformly convex Banach spaces

12:00 ～ 13:10   Lunch Break

13:10 ～ 13:45   Shoichi Kamada*(Kumamoto Univ.)

                  Koichiro Naito(Kumamoto Univ.)

                  Construction of lattice based cryptosystems by simultaneous approximation problems in p-adic numberlands

13:45 ～ 14:20   Shin-ya Matsushita*(Akita Prefectural Univesity)

                  Li Xu(Akita Prefectural Univesity)

                  On convergence of the fixed point iterations

14:20 ～ 14:30   Tea Break

14:30 ～ 15:05   Toshiharu Kawasaki*(Tamagawa Univesity)

                  Masashi Toyoda(Tamagawa Univesity)

                  Existence of solutions of initial value problems for singular fractional differential equations

15:05 ～ 15:40   Kazuki Seto*(Shimane Univ.)

                  Daishi Kuroiwa(Shimane Univ)

                  An observartion of arcwise connected cone-quasiconvexity for set-valued maps by arcwise connected connected cone-quasiconvexity

15:40 ～ 16:15   Shigeo Akashi*(Tokyo University of Science)

                  Yasushi Kikuchi(Tokyo University of Science)

                  The asymptotic behavior of iterated expansive-mapping systems

16:15 ～ 16:20   Closing Address

非線形解析学と凸解析学の研究
Nonlinear Analysis and Convex Analysis
RIMS 共同研究（公開型）報告集

２０１６年８月３１日〜９月２日
研究提案者　高橋　渉 (Wataru Takahashi)
研究代表者　明石　重男 (Shigeo Akashi)
副代表者　星野　満博 (Mitsuhiro Hoshino)

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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, the preceding system of the current Joint Usage/Research Centers that started in 2010. For half a century since then, about 50 to 60 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 1,344,499 accesses in 2016.

　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 a Joint Usage/Research Center and your warm support and cooperation for the fruitful development of Kôkyûroku.