KODAI MATHEMATICAL JOURNAL

EDITED

BY

DEPARTMENT OF MATHEMATICS
TOKYO INSTITUTE OF TECHNOLOGY

Vol. 17, No. 3, October 1994

© DEPARTMENT OF MATHEMATICS TOKYO INSTITUTE OF TECHNOLOGY

Oh-okayama, Meguro-ku, Tokyo

KODAI MATHEMATICAL JOURNAL

EDITORS

TAKAO FUJITA TAKUO FUKUDA ATSUSHI INOUE KAZUYA KATO

SADAYOSHI KOJIMA NOBUSHIGE KUROKAWA

SHIGEYUKI MORITA MINORU MURATA
TOSHIHIKO NISHIMOTO JUNJIRO NOGUCHI
MUTSUO OKA TOKUZO SHIGA
SHUKICHI TANNO SEIJI UKAI

COOPERATORS

AKITO FUTAKI SHIHOKO ISHII
HIDEKAZU ITO KAZUO MASUDA
REIKO MIYAOKA SHIN-ICHIRO MIZUMOTO

TAKEHIKO MORITA KEN'ICHI OHSHIKA SHIN OZAWA HIROSHIGE SHIGA HAJIME TSUJI KOHEI UCHIYAMA

This journal will appear three times yearly and publish papers in pure and applied mathematics.

Preparation of Manuscripts

- 1. Manuscripts should be submitted in English, and should be typewritten, using double or triple line-spacing, with generous margins.
- 2. All illustrations should be drawn on white paper, using Indian ink, and should be drawn to about twice the required size. Any lettering should be large and bold enough to be legible after the diagram has been reduced for printing.
 - 3. Manuscripts (two copies) should be sent to the Editors,

Kodai Mathematical Journal, Department of Mathematics, Tokyo Institute of Technology, Oh-okayama, Meguro-ku, Tokyo 152, Japan.

Proofs and Reprints

Authors are asked to make clear the address to which correspondence and proofs for correction should be sent. One hundred free reprints of each paper will be provided.

Copyrights

All rights reserved under the universal copyright convention.

Publishing and Subscription Office

Kinokuniya Company Ltd., 17-7 Shinjuku 3-chome, Shinjuku-ku, Tokyo 163-91 Japan.

FOREWORD

Workshop on Geometry and Topology, with an emphasis on Singularities, Low-dimensional Manifolds, Minimal Surfaces and Homotopy Theory, was held alongside of beautiful Ho Tay Lake in Hanoi from March 23 to March 31, 1993. This is the Proceedings of the Workshop.

The Workshop was supported by the Mathematical Society of Vietnam, the Mathematical Society of Japan, the University of Hanoi and the Institute of Mathematics (Hanoi) with nearly thirty mathematicians attending from Australia, China, Finland, Italy, Japan, Mexico, Netherlands, Slovenia and a number of Vietnamese working in these fields from various parts of the country.

This is the first international workshop in these fields which was organized in Vietnam. As Vietnamese mathematicians have been in a relatively isolated situation during last decades, it was difficult for them to participate actively in the formation and the growth in mathematical research of Algebra, Topology and Geometry in the international community. Vietnamese mathematicians continue to do mathematics while facing the problems of lack of international communication, lack of journals, preprints, etc. In spite of these difficulties, some studies have been attempted, contributions have been made and some study groups of specific topics have been formed. Today, considerable efforts are still being made to improve the environment of mathematical research. This Workshop marked a linking point between this community with the rest of the world.

We thank the International Cooperation Committee of the Mathematical Society of Japan, the International Centre of Theoretical Physics (ICTP, Italy), the Taniguchi Foundation (Japan), and the Vietnamese Society of Civil Engineering for their assistance and financial support. We thank the staff of CAMICE for having created an enjoyable atmosphere for the Workshop, and many other people for their vital contribution to its success.

We thank the lecturers of the Workshop and the contributors of the Proceedings. We also thank the Editorial Board of the Kodai Mathematical Journal for having accepted the Proceedings as a special issue of this valuable Journal, and making possible its rapid publication.

Finally, on behalf of the Vietnamese organizers, I wish to thank to my colleagues Y. Matsumoto and M. Oka for their sincere cooperation in carrying out this joint work.

Hanoi, December 20, 1993 Huỳnh Mùi

This Proceeding would not have completed without the help of many people. We would especially like to thank the following people for their support and dedication in making this Proceeding possible: Professors A.S. Verjovsky and D. Repovš for their encouragement and help in communicating with other participants via e-mail, Mr. Araishi for helping us communicate with Vietnam, Dr. K. Hudson and several graduate students in T.I.T. for their help typing the papers in Tex files and the Editor of Kodai Math. Journal for allowing us to publish the Proceeding as a special issue.

Editors of the Proceeding: Mutsuo Oka Yukio Matsumoto Organizing Committee: Yukio Matsumoto (University of Tokyo)

Mutsuo Oka (Tokyo Institute of Technology) Lê Văn Thành (Institute of Mathematics) Lào Trọng Thi (University of Hanoi)

Huỳnh Mùi (University of Hanoi, Chairman).

Secretaries: Pham Anh Minh and Hō Dình Duâ'n (University of Hue).

LIST OF PARTICIPANTS:

AITCHISON, Iain Roderick: Department of Mathematics, University of Melbourne, Parkville 3052, Victoria, Australia, E-mail: iain@mundoe.maths.mu.oz-au, Tel: 344 7163

BRASSELET, Jean-Paul: CIRM Luminy, Case 916, 13288 Marseille Cedex 9, E-mail: jpb@cirm.univ-mrs.fr, Fax: (33) 91412786

DU'O'NG Tân Thàn: Hanoi Institute of Cryptography, Hanoi, Vietnam

DOÀN Quỳnh: Department of Mathematics, Hanoi University of Pedagogy I, Hanoi, Vietnam

FUKUHARA, Shinji: Departent of Mathematicis, Tsuda College, 2-1-1 Tsuda-Machi, Kodaira-shi, Tokyo 187, E-mail: fukuhara@tsuda.ac.jp, Fax: 81-423-41-2444

HÀ Huy Vui: Hanoi Institute of Mathematics, Hanoi, Vietman

HOÀNG Bao Hùng: Department of Mathematics, Hue University of Pedagogy, Hue, Vietnam

HÕ Dình Duâ'n: Department of mathematics, University of Hue, Hue, Vietnam

HUYNH Mùi: Department of Mathematics, University of Hanoi, Hanoi, Vietnam, Fax: 84-4261128

ISHII, Shihoko: Department of Mathematics, Tokyo Institute of Technology, Oh-okayama, Meguro-ku, Tokyo 152, E-mail: shihoko@math.titech.ac.jp, Fax: 3-5734-2738

ISHIKAWA, Goo: Department of Mathematics, Hokkaido University, Sapporo 060, Japan, E-mail: ishkawa@hokudai.math.ac.jp, Fax: 81-11-717-9309

IZUMIYA, Shyuichi · Department of Mathematics, Hokkaido University, Sapporo 060, Japan, E-mail: izumiya@math.hokudai.ac.jp Fax: 81-11-717-9309

JAMBU, Michel: Department of Mathematics, University of Nantes, 2 Rue de la Houssiniere, 44072 Nantes Cedex 03, France, E-mail: jambu@namath.dnet.circe.fr, Fax: 33-40-93-38-78

KIEN Dúc Thành: Department of Mathematics, Hanoi University of Pedagogy, Hanoi, Vietman

KOBAYASHI, Kazuaki: Department of Mathematics, Tokyo Women's Christian University, Zenpukuzi, Suginami-ku, Tokyo 167, Japan, Email: kazuaki@twcu.ac.jp, Fax: 81-3-3397-6567

KOIKE, Satoshi: Department of Mathematics, Hyogo University of Teacher Education, Hyogo 673-14, Japan, E-mail: F50344@JPNKUDPC.BITNET, Fax: 81-0795-44-1061

KOJIMA, Sadayoshi: Department of Mathematical and Computing Sciences, Tokyo Institute of Technology, Oh-okayama, Meguro-ku, Tokyo 152, Japan, E-mail: sadayoshi@is.titech.ac.jp, Fax: 81-3-5734-2754

LE Trong Luc: Hanoi Institute of Mathematics, Hanoi, Vietnam

LÊ Văn Thành: Institute of Mathematics, Hanoi, Vietnam

- LÈ Van Thuyet: Department of Mathematics, Hue Pedogogic University, Hue, Vietnam
- LÊ Dũng Tráng: UFR de Mathématiques et Informatique, Université de Provence, F-13003 Marseille, France, E-mail: ledt@gyptis.univ-mrs.fr
- LI Bing: Department of Mathematics, Changsha Normal Univ. of Water Resources & Electric Power, P.R. China
- LI Jiaxian: Department of Mathematics, Xi'an University, Tobai Road I, Xi'an, P.R. China, Fax: 029 752281
- MATSUMOTO, Yukio: Department of Mathematics, University of Tokyo, Hongo, Bunkyo-ku, Tokyo 113, Japan, Email: c32233@tansei.cc.u-tokyo.ac.jp, Fax: 81-3-3814-9488
- NGÔ Viêt Trung: Institute of Mathematics, Hanoi, Vietnam
- NGUYEN Ngoc Châu: Danang Pedagogic University, Danang, Vietnam
- NGUYEN Tu Curong: Institute of Mathematics, Hanoi, Vietnam
- NGUYEN Viêt Dũng: Institute of Mathematics, Hanoi, Vietnam
- NGUYEN Gia Dinh: Department of Mathematics, University of Hue, Hue, Vietnam
- NGUYEN Huu Dúc: Department of Mathematics, University of Dalat, Dalat, Vietnam
- NGUYEN Viet Dúc: Department of Mathematics, Danang University of Technology, Danang, Vietnam
- NGUYEN Hiru Viet Hung: Department of Mathematics, University of Hanoi Hanoi, Vietnam
- NGUYEN Van Kien: Department of Mathematics, Hanoi University of Pedagogy I, Hanoi, Vietnam
- NGUYEN Van Sanh: Department of Mathematics, Hue Pedagogic University, Hue, Vietnam
- NGUYEN Sum: Department of Mathematics, Quinhon Pedagogic University, Quinhon, Vietnam
- NGUYEN Nang Tâm: Department of Mathematics, Hanoi University of Pedagogy II, Hanoi, Vietnam
- NGUYEN Chánh Tú: Department of Mathematics, Hue Pedagogic University, Hue, Vietnam
- NGUYEN Xuân Tuyén : Department of Mathematics Hue Pedagogic University, Hue, Vietnam
- NGUYEN Khac Viet: Hanoi Institute of Mathematics, Hanoi, Vietnam
- OHNITA, Yoshihiro: Department of Mathematics, Tokyo Metropolitan University, Minami-Ohsawa, Hachioji, Tokyo 192-03, Email: ohnita@math.metro-u.ac.jp, Fax: 81-426-77-2481
- OKA, Mutsuo: Department of Mathematics, Tokyo Institute of Technology, 2-12-1 Ohokayama, Meguro-ku, Tokyo 152, Japan, E-mail: oka@math.titech.ac.jp, Fax: 81-3-5734-2738
- PEKONEN, Osmo: University of Jyväskylä, Department of Mathematics, P.O. Box 35, SF-40351, Jyväskylä, Finland, E-mail: pekonen@jyu.fi, Fax: +385-41-602701
- PHAM Khac: Department of Mathematics, Hanoi University of Pedagogy, Hanoi, Vietnam
- PHAM Ngoc Anh Curong: Department of Mathematics, University of Hanoi, Hanoi, Vietnam
- PHAM Anh Minh: Department of Mathematics, University of Hue, Hue, Vietnam

- REPOVŠ, Dušan: Institute of Mathematics, Physics & Mechanics, P.O. Box 64, 61111 Ljubljana, Slovenia, E-mail: dusan.repovs@uni-lj.si, Fax: 386-61-347997
- SAEKI, Osamu: Department of Mathematics, Faculty of Science, Hiroshima University, Kagamiyama 1-3, Higashi-Hiroshima 724, Email: saeki@math.sci.hiroshima-u.ac.jp, Fax: 81-824-24-0710
- SAITO, Kyoji: RIMS, Kyoto University, Sakyo-ku 606, Kyoto, E-mail: saito@kurims. kyotou.ac.jp, Fax: 81-75-753-7272
- SAKAKI, Makoto: Department of Mathematics, Faculty of Science, Hirosaki University, Hirosaki 036, Japan, Fax: 81-172-38-0983
- STEENBRINK, Joseph: Mathematisch Instituit, Katholieke Universiteit Toernooiveld, 6525ED Nijmegen, The Netherlands, E-mail: compmath@sci.kun.nl
- TAKASAKI, Hiroyuki: Institute of Mathematics, University of Tsukuba, Tsukuba, Ibaraki 305 E-mail: tasaki@math.tsuku ba.ac.jp, Fax: 81-298-53-6501
- TÔN Thất Tri : Department of Mathematics, University of Hue, Hue, Vietnam
- TRÂN Anh Son: Department of Mathematics, University of Hanoi, Hanoi, Vietnam
- TRÂN Dinh Lurong: Department of Mathematics, Quinhon Pedagogic University, Quinhon, Vietnam
- UE, Masaaki Division of Mathematics, Faculty of Integrated Human Studies, Kyoto University, Kyoto 606, Japan, Fax: 81-75-753-6767
- URABE, Tohsuke: Department of Mathematics, Tokyo Metropolitan University Minami-Ohsawa 1-1, Hachioji-shi, Tokyo 192-03, Japan, E-mail: urabe@math.metro-u.ac.jp, Fax: 81-426-77-2481
- VERJOVSKY, Alberto Sola: Departement de Mathematiques, Universite de Sciences et Technologies de Lille, Villeneuve D'Ascq 59655, France, E-mail: Alberto@gat.citilille. fr, Fax: 33 20436993
- ZHANG, Guobin: Department of Mathematics, Zhanjiang Teacher's College, Zhanjiang City, Guangdong 524048, P.R. China, Fax: 86 851 551381