

ICCM NOTICES

Notices of the International
Congress of Chinese
Mathematicians

Volume 1, Number 1 July 2013

ISBN: 978-1-57146-272-5

Editors-in-Chief

Shiu-Yuen Cheng (Hong Kong Univ. of Science & Technology)
Ming-Chang Kang (National Taiwan University)
Kefeng Liu (University of California at Los Angeles)
Chi-Wang Shu (Brown University)
Lo Yang (Chinese Academy of Sciences)
Shing-Tung Yau (Harvard University)

Editorial Board

Ching-Li Chai (University of Pennsylvania)
Jiaxing Hong (Fudan University)
Yizhao Hou (California Institute of Technology)
Sen Hu (University of Science and Technology of China)
Lizhen Ji (University of Michigan)
Tze Leung Lai (Stanford University)
Ka-Sing Lau (The Chinese University of Hong Kong)
Jun Li (Stanford University)
Chang-Shou Lin (National Taiwan University)
Song-Sun Lin (National Chiao Tung University)
Wen-Wei Lin (National Chiao Tung University)
Feng Luo (Rutgers University)
Jason Payne (National Taiwan University)
Yat Sun Poon (University of California at Riverside)
Wing Hung Wong (Stanford University)
Jie Xiao (Tsinghua University)
Zhouping Xin (The Chinese University of Hong Kong)
Hongwei Xu (Zhejiang University)
Horng-Tzer Yau (Harvard University)
Jing Yu (National Taiwan University)
Hongkai Zhao (University of California at Irvine)
Fangyang Zheng (The Ohio State University)
Xiping Zhu (Sun Yat-Sen University)

Secretary of the journal

Chun-Chien Cheng (Taida Institute for Math. Sciences)

The cover photograph of Mount Tai appears by courtesy of Noritsugu Kanegae.

The cover photograph of Jade Mountain appears by courtesy of Lu Hong-Wen (盧宏文).

About the Notices

Foreword by Shing-Tung Yau..... 1

ICCM 2013

ICCM 2013 in Taipei, preview by Jing Yu..... 2

Papers

Juggling Mathematics and Magic
by Ron Graham..... 7

The Wigner-Dyson-Gaudin-Mehta Conjecture
by Horng-Tzer Yau 10

On the Willmore Conjecture for Surfaces
by Shing-Tung Yau..... 14

Open Problems
compiled by Kefeng Liu..... 18

Essays

My Appreciation of Geometry
by Shing-Tung Yau..... 20

Mathematics, Physics, and Calabi-Yau Manifolds
by Shing-Tung Yau and Steve Nadis 36

Why is there No Nobel Prize in Mathematics?
by Lizhen Ji 42

Mathematics in Paradise
by Lizhen Ji 53

Letter from Henryk Iwaniec to S.-T. Yau Regarding
the Work of Yitang Zhang..... 57

Primes are No Longer Lonely: A Tale of Twin Primes and the
Devoted Chinese Mathematician Yitang Zhang
by Lizhen Ji 58

A Note on the Origin of the Twin Prime Conjecture
by William Dunham..... 63

Reviews

Book Review: The Shape of Inner Space,
by Shing-Tung Yau and Steve Nadis
reviewed by Nigel Hitchin 66

ICCM NOTICES

Notices of the International
Congress of Chinese
Mathematicians

History and Biography

| | |
|---|----|
| Comparison of Chinese and Japanese Developments in Mathematics during the Late 19th and Early 20th Centuries by Shing-Tung Yau..... | 68 |
| Shing-Tung Yau and Sixty Years of Calabi's Conjecture by Kefeng Liu..... | 77 |
| A Short Biography of Chia-Chiao Lin by Zuoqiang Shi..... | 82 |
| Pao-Lu Hsu (1910–1970) by Dayue Chen..... | 84 |

Institutes and Centers

| | |
|--|-----|
| The Mathematical Sciences Center of Tsinghua University by Yat Sun Poon..... | 87 |
| The Institute of Mathematical Sciences (IMS) at the Chinese University of Hong Kong by Zhouping Xin..... | 96 |
| The Morningside Center of Mathematics (MCM) by Lo Yang..... | 97 |
| The Taida Institute for Mathematical Sciences (TIMS) by Jing Yu and Ching-Lung Wang..... | 100 |
| The Shing-Tung Yau Center at Chiao Tung University by Song-Sun Lin..... | 103 |

Past ICCM meetings

| | |
|--|-----|
| Reports of ICCM from 1998 to 2010..... | 104 |
|--|-----|

Award listings

| | |
|---|-----|
| Morningside Medals, the Chern Prizes, and the International Cooperation Awards | 113 |
| New World Mathematics Awards | 123 |
| S.-T. Yau Mathematics Awards | 129 |

Submissions to the ICCM Notices. Send to Chun-Chien Cheng, editorial assistant, yassist@tims.ntu.edu.tw. For further information, please visit <http://intlpress.com/iccm>.

The Notices of the International Congress of Chinese Mathematicians (ISBN print 2326-4810, ISBN online 2326-4845) are published semi-annually by International Press of Boston, Inc., 387 Somerville Ave., Somerville, MA 02143, U.S.A., Website: <http://intlpress.com>. Ordering: (+1) 617-623-3016, ipb-orders@intlpress.com.

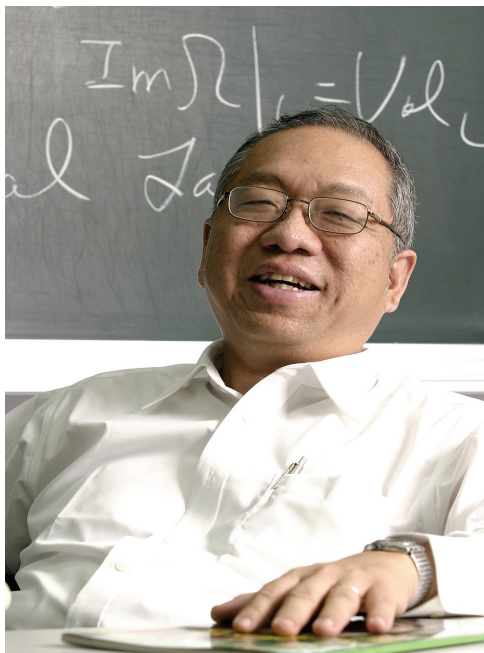
Copyright © 2013 by International Press of Boston, Inc.
All rights reserved.

Foreword

by Shing-Tung Yau

Department of Mathematics, Harvard University

The International Congress of Chinese Mathematicians (or ICCM) was set up in 1998 as a means to communicate ideas among mathematicians of Chinese descent around the world. It has since been held, every third year, in various Chinese cities: The first ICCM was in Beijing, the second in Taipei, the third in Hong Kong, the



Shing-Tung Yau
(photo by Yiyo Ling, reprinted courtesy of
Scientific American, Taiwanese edition)

fourth in Hangzhou, and the last one in Beijing in 2010. This year, it will be held in Taipei again.

Since 1998, the number of participants had grown from 400 to 2000. The quality of the presented papers meets international standards. The number of Chinese research mathematicians all over the world is approaching the total number of members of the American Mathematical Society. Because the organization of the ICCM has grown accordingly and there is strong desire to have a publication similar to the AMS Notices that can be used to report on news and research relevant to the large group of Chinese researchers scattered all over the world. To this end, we are creating a new journal called *Notices of the*

International Congress of Chinese Mathematicians (or *ICCM Notices*, for short), of which this is the first issue.

The *ICCM Notices* supplements the *AMS Notices* by providing a broader coverage of Chinese mathematics. The *ICCM Notices* also provides a unique forum for mathematicians and mathematics educators of Chinese descent in Asia—and for non-Chinese people interested in Chinese mathematics—to share their perspectives on the development of mathematics and mathematics education.

Because of the close ties between the *ICCM Notices* and the ICCM conferences, we hope and believe that the journal will provide a convenient platform for the ICCM to share its exciting activities, and to reach out to the broader mathematics community and the general public around the world.

Eventually, we hope, the *ICCM Notices* will become the major source for people to learn about what is happening in the Chinese mathematics community.

This journal is the fruit of the collaboration among the following institutions: Taiwan University, Chiao-Tung University (Hsinchu), Tsinghua University (Beijing), Morningside Center of Mathematics in the Chinese Academy of Sciences, Mathematics Institute of the Academia Sinica (Taipei), the Institute of Mathematics in the Chinese University of Hong Kong and the Mathematics Institute of Zhejiang University.

There are several components to this journal:

- survey papers on pure and applied mathematics and related fields such as statistics, computer science, engineering, physics, and economics;
- reports on the contributions and lives of prominent mathematicians who may or may not be of Chinese descent;
- mathematical activities that occur in China, such as events related to the ICCM
- opinion pieces by people who may or may not be of Chinese descent;
- essays on education or policies related to mathematics.

In order to foster the development of mathematics, each issue of the *ICCM Notices* includes a section devoted to open problems.

The *ICCM Notices* will publish two issues per year. We invite the readers to submit articles to the journal through Chun-Chien Cheng (yassist@tims.ntu.edu.tw).