特集：中国における数学の研究と教育の現状

Some Aspects of Mathematical Community in China

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The Editor-in-Chief of "Sugaku Tushin" invited me to write an article to explain "Recent Development of Mathematical Community in China". Although this task is beyond my capacity, I am still happy to take this opportunity to write "Some Aspects of Mathematical Community in China" based on my personal knowledge.

In connection with this topic what appears first in my mind is ICM2002, the International Mathematician Congress held in Beijing in 2002. Needless to say that the success of ICM2002 is one of the evidences which witness the recent development of Chinese mathematical community. I would rather pick a small case in ICM2002 to begin with my essay. The small case is the occurrence that the President Jiang Zemin[2] helped Professor S.S.Chern[3] to adjust microphone at the Opening Ceremony of ICM2002. By this small occurrence we tested the high esteem of a mathematician in China, which reveals a strong support of Chinese Government towards the development of Chinese mathematical community. I know that at the Opening Ceremony many mathematicians noticed this small occurrence and admired the behavior of the President Jiang. They treasure up the photo of this scene till now.

ICM2002 was organized by the Chinese Mathematical Society (CMS) under the auspices of the International Mathematical Union (IMU). The history of CMS may trace back to 1935, in the year the Chinese Mathematical Society was founded. Then in the next year (1936), the Chinese Mathematical

[1] 著者の馬志明教授は 2007 年 1 月より IMU 副総裁（脚注は, 漢字表記などについて編集部の責任で追記したものである）

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Society started to publish Journal of Chinese Mathematical Society (later renamed as Acta Mathematicae Sinica), which is the first Mathematical Journal published in China. The Chinese Mathematical Society was reformed and held its first general assembly in 1951. At that time Professor Hua Loo-Keng[4] was elected to be the first president of the CMS council. Prof.Hua chaired the CMS council till 1983. Afterwards the CMS council has regular elections for every four years and the subsequent presidents of the council are respectively WU Wentsun, WANG Yuan, YANG Lo, CHANG Kungching, MA Zhiming and WEN Lan[5] .

In nowadays CMS has developed into an academic society with more than 50000 members all over the mainland China. CMS is also the parent society of four sub-societies: Computational Mathematical Society, Probability and Statistics Society, Uniform Design Society, and History of Mathematics Society. Varied mathematical activities are organized constantly by CMS. The Society presides over two important Awards: Chern Shing-Shen Mathematical Award and Hua Loo-Keng Mathematical Award. Apart from these, Zhong Jia Qing[6] Mathematics Award was also set up by CMS for the outstanding MSc and PhD graduates of Mathematics. Nine acdemic journals are published under the auspices of CMS, including Acta Mathematicae Sinica (both Chinese series and English series), Acta Mathematicae Applicatae Sinica (both Chinese series and English series), Advances in Mathematics, and others. Currently CMS sets up nine working committees. Among them one committee, Mathematical Olympic Committee, is set up specially for the organization of mathematical Olympiad competitions.

In 2005, CMS celebrated its 70th anniversary and organized a celebrating conference with the theme “Mathematics 2005: Opportunity and Challenge”. The conference was held in Weihai, Shandong[7] in July 25-29. More than 400 mathematicians from China and abroad attended the conferences including John M. Ball, President of the International Mathematical Union. Nine invited

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[5] 順に, 呉文俊, 王元, 楊楽, 張恭慶, 馬志明, 文蘭の各教授
[6] 鐘家慶
[7] 山東省威海市

plenary lectures were presented by Noga Alon, John Ball, Jean-Pierre Bourguignon, Martin Groetschel, Nick Katz, Yum-Tong Siu, Gang Tian, Shing-tung Yau, and Efim I Zelmanov, respectively.

In addition to CMS, there are also other academic societies related to mathematics and applied mathematics in China. Among them are the China Society of Industrial and Applied Mathematics (founded in 1990), the Systems Engineering Society of China (founded under its present name in 1980), the Chinese Association for Applied Statistics (founded in 1979), and the Operations Research Society of China (founded under its present name in 1991).

Like other disciplines of science and technology in China, mathematics has developed with accelerated speed and has gotten more and more support from Chinese government under the guide of the reform and opening up policy. In particular, "The Prospect of the 21st Century Mathematics in China Forum" held in August 1988 turned out to be a historic event for the Chinese mathematics, since it inspired Chinese mathematicians ever so hard to develop mathematics with the goal of ranking Chinese mathematics among the advanced ones in the world in the near future. In the spirit of the Forum, a proposal signed by ten leading Chinese mathematicians was sent to the Premier of the State. A few months later, in December 1988 the State approved the proposal and set up a special foundation, Tianyuan Foundation[8] , for the development of mathematics. The name "Tianyuan" follows from an ancient mathematical terminology in China. The Foundation was set up under the management of the Natural Science Foundation of China (NSFC) and was designed to be used under the direction of a special committee, Tianyuan Foundation Committee, consists of senior Chinese mathematicians. The usage of the Foundation is more flexible than usual projects of NSFC. That is, Tianyuan Foundation can be used to support what is not included in the support scope of NSFC, yet Chinese mathematicians regard it important for the development and education of Chinese mathematics. Up to now Tianyuan Fundation has gotten annual budget from Chinese Government and has run very well under the direction of the Tianyuan Fundation Committee.

[8] 天元基金

Although Tianyuan Foundation is a good example that Chinese mathematicians can direct the usage of some fund by themselves, and it has important influence to the development of Chinese mathematics, I should fairly comment that Tianyuan Foundation is only a very small portion among the totality of financial support obtained by Chinese Mathematical community. There are several channels for Chinese scholars to get financial support for their scientific research: the National Natural Science Foundation of China (NSFC), the Ministry of Science and Technology (MOST), the Chinese Academy of Sciences (CAS) and the Ministry of Education (MOE). In the last two decades various projects have been created for the purpose of promoting research and education level in China, such as the Knowledge Innovation Project, the National Basic Research Program, State Key Laboratory, Hundred Talent Project, Yangzhi Outstanding Scholarship, and so on. It is not the purpose of this article to comment the positive influence and the things to be improved of all these projects. But clearly the development of mathematical research and education benefits a lot from these projects.

I myself have been involved in the National Basic Research Program. Therefore I may describe a little more inside about it. The National Basic Research Program is also called 973 Program. The name "973" refers that the program was originated by the suggestion of a group of Chinese scientists proposed in March 1997. The program is organized and implemented by the Ministry of Science and Technology (MOST). It is created on the basis of existing research activities and deployments made by the National Nature Science Foundation and major dedicated pre-studies, with the purpose to organize and implement basic research to meet the major strategic needs of the State. Several projects of the 973 program are implemented mainly by mathematicians. Among them are "Mathematics Mechanization Methods and Applications", "Large-Scale Scientific Computation", and "Some Frontier Problems of Core Mathematics". I myself was involved in the above mentioned last project. The main topics to be studied in this project are number theory and algebraic geometry, representations of groups, modern analysis, stochastic analysis and infinite dimensional analysis, nonlinear partial differential equations, variational calculus and geometric analysis, and dynamical systems. The five-year project was approved in 2000. About 80 mathematicians participated in this

project and the participants got approximately 50 thousands CNY[9] research grand per person per year within this project. The project was successfully completed in 2005. Some mathematicians organized a new 973 project in 2006 with the topics of "mathematics and the intersection between mathematics and other disciplines of science and technology".

The above mentioned 973 program is just one example of additional funds for the Chinese mathematical community. I should emphasize that in the mainland China most of the research grants in mathematics are supported by NSFC. NSFC (the Natural Science Foundation of China) was founded in 1986. Ever since it established, NSFC has continuously strengthened its support to the development of Chinese mathematics through various projects. Over the past 20 years, NSFC raised its annual budget for mathematics approximately eighty times, from 1 million Chinese yuan in 1987 to 80 million Chinese yuan in 2007, by funding totally over 4,000 research projects of various categories. We should note that in China the usage of "research grant" is different from that in other countries. By the present regulation of NSFC, a research grand can not be used to employ post Doctors or research assistants. The Government has special budget for the program of post Doctors. The Ministry of Education has special budget for the program of graduate students.

Mathematical education has also rapidly developed in China. In addition to their undergraduate education, almost all major universities have graduate schools and accommodate a large number of graduate students and post Doctors. The institutes in the Chinese Academy of Science (CAS) have no undergraduate students. But people realize that graduates and post Doctors are indispensable and active researchers, and are important for the future development of science. Therefore the institutes in CAS have their own graduate students and post Doctors. In Beijing we have a Graduate University of CAS (GUCAS). The graduate students in different institutes of CAS should all take courses in GUCAS. Their Ph.D or Master degrees are approved by GUCAS in combining with their institutes. After the Cultural Revolution, there were only 30 persons as the first batch of graduate students enrolled in the Institute of

[9] 1 中国元 = 15.33 円 (2007 年 4 月現在)

Mathematics of CAS in 1978. Nowadays the Institute of Mathematics in CAS has grown to be the Academy of Mathematics and Systems Science (AMSS). At present there are altogether about 450 graduate students and post Doctors enrolled in AMSS.

With the favorable environment, the Chinese mathematical community has made great progress in the last quarter century. Taking an example of the area of Probability and Stochastic Analysis (I confine myself in this area because I am more familiar with it), I am proud of my colleagues such as Jia-An Yan, Mufa Chen, Shige Peng[10] and others. They have made contributions to the development of Probability and Stochastic Analysis, and it is no doubt that they are world wide renown Probabilists in the international academic level. A large number of publications (including articles and monographs) are written by Chinese mathematicians, there are always Chinese mathematicians present their talks at various international academic conferences or workshops, many Chinese mathematicians serve as editors of international academic journals, or serve as members in various academic organizations. All these reveal that the Chinese mathematical community grows rapidly and has made more and more influence in the world. But we know clearly that China is still a developing country, and there is still a gap between the Chinese mathematical community and those in advanced developed countries. The Chinese mathematical community will continuously make its effort to work hard, and to strength its international exchanges and collaborations, with the wish to make more contributions to the development of mathematics in the world.

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