

IAU Beijing Meeting: A Landmark for Chinese Astronomy

By XIN Ling (Staff Reporter)

The year 2012 will probably be one of the most memorable years in the history of Chinese astronomy. In this year, astronomers across the nation celebrated the 90th birthday of the Chinese Astronomical Society. Another highlight is that after having joined the International Astronomical Union (IAU) for 77 years, China was finally successful in hosting its first IAU General Assembly.

For a fortnight in late August 2012, more than 3,000 astronomers from over 76 countries and regions gathered at the China National Convention Center (CNCC) in Beijing's Olympic Green to enjoy eight symposia, seven joint discussions and 18 special sessions at frontiers of diverse astronomical domains. They found important progresses in their own fields and in many others, made friends, and sought new collaboration opportunities. Besides, as a practice passed down from previous assemblies, the Young Astronomers Events and the "Women in Astronomy" special event were held to provide starters and females with an occasion where

they can share experience on their own career development. An exhibition was in place throughout the meeting to showcase major observatories as well as the products of telescope manufacturers from around the globe.

In terms of the organization work, the Beijing meeting was "a great success", as IAU President Robert Williams put it at the press conference on the final day of the meeting. According to IAU General Secretary Ian Corbett, "Every General Assembly is remembered for something... Beijing will be remembered for the unobtrusive but impeccable organization".

"We all have an absolutely excellent impression (about the meeting). Everyone was ready when we came; we are really taken care of. The meeting rooms are pleasant, and the technical devices work well – that doesn't always happen, you know. While we work with highest technical means in telescopes, sometimes we go to meetings and the projector doesn't work", former IAU President Catherine Cesarsky said with a smile.





Credit: IAU/CNCC

Chinese Vice President XI Jinping meets with new President of IAU Norio Kaifu during the IAU meeting.



Credit: IAU/CNCC

Award of the Gruber Cosmology Prize to Charles Bennett during the opening ceremony of the IAU GA 2012.

The organization work was not only widely praised but with a strong Chinese flavor. For instance, as soon as the participants walked into CNCC, they could see an accurate representation of the water-driven astronomical clock tower, which is an invention of more than 900 years ago in China. As the most advanced astronomical instrument at that time and the world’s first astronomical clock, it seemed to remind everyone of the splendid astronomical achievements in ancient China.

The visit of Chinese Vice President XI Jinping at the opening ceremony brought the meeting to a climax. “Astronomy, as the science to explore the Universe, is one of the most important and the most active science frontiers that has pushed forward natural sciences and technology, and led to the advances of modern society”, XI declared.

His words greatly inspired the audience and aroused enthusiastic responses. “XI affirmed his solid support for science and especially astronomy,” said Robert Williams. “We were delighted by the things he said, all highly relevant and encouraging to an astronomy General Assembly”, Ian Corbett commented.

The performances at the opening ceremony were unique in the Chinese way, from drum beating to Tibetan dance and silk acrobatics. In the final dance, when the staff and students from the National Astronomical Observatories of the Chinese Academy of Sciences (NAOC) used silver umbrellas to mock up an optical telescope and radio telescopes, their ingenious design immediately triggered a big round of applause from the audience.

At each IAU General Assembly there is an official daily newspaper which informs the participants of the programs,

activities, notices and other relevant information. This year’s newspaper is filled with Chinese hues, too. In the first place, the name of the newspaper, “Inquiries of Heaven”, was impressive. It was the title of an ancient Chinese verse written about 2,300 years ago by the great poet QU Yuan about his reflections on the cosmos. In the poem, QU proposed a series of questions including how the cosmos had evolved from a shapeless and chaotic origin, how the Sun and the Moon were arranged, where were the stars, etc. He got no answers of course, but some of the questions remain the core of astronomic study even today.

“We thought really hard to name our newspaper, as our predecessors like Czech and Brazil had all came up with very brilliant names for their papers. ‘Inquiries of Heaven’ is a blend of the old and the new, the Chinese and the world, and is full of poetic beauty,” explained WANG Jingxiu, the newspaper’s editor and professor from NAOC.

The contents of the newspaper were also well prepared and professionally presented. Despite of the heavy work and tight schedule, WANG and his colleagues were happy to see their endeavors pay off.

Piles of copies at the newspaper desks ran out quickly, and WANG had to order extra prints. Some participants went directly to WANG’s office for the issue they wanted. “The articles are superb,” wrote a Japanese astronomer in his letter to WANG. And scientists from the Indian Institute of Astrophysics asked for a complete set of the newspaper to treasure up in their library.

Of course, the nation had more important things to impress its visitors with, as astronomers from China strived to show their achievements in the field over the past two



Astronomy communicators during the IAU GA 2012.

Credit: IAU/ONCC



Prof. CUI Xiangqun being interviewed by Dirk Lorenzen on August 23 during the IAU GA 2012.

Credit: IAU/ONCC

decades. As for observational instruments, the Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) built up in 2009 near Beijing and the Five-hundred-meter Aperture Spherical Telescope (FAST) still under construction in southwest China represent the highest level of astronomical instrumentation in the nation at present. Also, China shared with the rest of the world, with pride and confidence, its ambitious plans for Antarctica astronomy and space astronomy, including the establishment of an observatory at Dome A by 2020 and the launch of the Hard X-ray Modulation Telescope (HXMT) between 2014 and 2016.

“The development of astronomy in China for the past 15 to 20 years has been remarkable. You are competitive at the international level in ground-based facilities. In space, although the space missions are yet to be launched, China is ‘on track’,” Robert Williams said. “The fact that we are meeting here is an indication that China has emerged in a short period of time to be competitive on the world stage in the science of astronomy.”

Apart from building powerful telescopes with their own strength, Chinese astronomers are pursuing international collaborations to accumulate experience as soon as possible. During the Beijing meeting, the Chinese Academy of Sciences and Chile's National Commission for Scientific and Technological Research inked an agreement to support their astronomers in jointly applying for observation time of large telescopes in Chile. Another agreement was signed on Sino-Australian joint astronomical research in the Antarctica. Meanwhile, China is playing an active role in some of the world's major astronomical projects like the Thirty Meter Telescope (TMT) and the Square Kilometer Array (SKA).

“It's very exciting to see all of the activities within

China, and the new facilities that Chinese astronomers are building, not only here in China, but also in other countries via international collaborations. I think that's very exciting and very important for the astronomy around the world,” noted Wendy Freeman, director of the Carnegie Observatories.

Though Chinese astronomers have been successful in attracting government's fund in recent years and thus lightened up the future of their science, they stay sober about their status quo and the emerging obstacles.

In astrophysics, China is now among the top ten countries in terms of scientific papers but still has a long way to go before catching up with astronomical powerhouses like the United States, Europe and Japan.

In observational astronomy, the fact is that the Chinese are only at the starting line, according to LIU Xiaowei, acting director of the Kavli Institute for Astronomy and Astrophysics at Peking University and a newly elected IAU Vice President.

“In nature, astronomy is driven by observation, so the acquisition of data is of vital importance to original research,” LIU emphasized. According to him, China's observational astronomy has been lagging behind for many years, and LAMOST is the first large observational instrument China has built with international competitiveness. Though the conception of LAMOST was proposed as early as in the late 1980s and the early 1990s, its construction had not been completed until 2009. The timing was not good enough, because a similar project, the Sloan telescope of the United States, had already been working for over a decade with very outstanding achievements. It would be nearly impossible for LAMOST to surpass Sloan on the whole.

To get something new out of LAMOST, LIU and his colleagues have started a large-scale digital sky survey of the



Credit: IAU/ONCC

The "ESO Hour" in the exhibition area, during the IAU GA 2012.

Milky Way Galaxy. With LAMOST's 4,000 fibers and the help of Europe's GAIA telescope to be launched in 2013, they will hopefully get the spectra of three to four millions of stars in the Milky Way Galaxy within five years from now, and try to answer the question concerning the formation of Galactic stellar population.

The first large-scale digital sky survey conducted in China, this project has overcome many technical difficulties but is now confronted with a major problem in personnel – the lack of young professionals in observation and data calibration. "Building a state-of-the-art telescope does not simply lead to good scientific results. Without accurate calibration, the massive observation data are almost useless," LIU said.

In fact, the lack of young observers is only part of the talent dilemma Chinese astronomy is facing, as was recognized by many Chinese astronomers participating in the meeting. As they pointed out, the talent issue is posing the biggest threat to the prosperity of Chinese astronomy.

For one thing, the professional education in astronomy at Chinese universities is "very insufficient", remarked FU Jianning, director of the Committee on Astronomical Education of the Chinese Astronomical Society and professor from the Department of Astronomy, Beijing Normal University. By the time that the IAU meeting was convened in Beijing, only four, out of 2,000-odd universities all over China, offer major programs in astronomy, and they see off a pathetic total of 100 or so bachelor graduates every year. Although graduate training is stronger with about 500 masters or PhDs coming out annually, this "upside down" reality brought many problems and undermined the quality of talent cultivation.

China's astronomical education in middle schools and primary schools is yet poorer, which, as many identified, is deeply rooted in an examination-oriented social reality. "However, we must keep in mind that astronomy has a fundamental impact upon one's outlook on the world. It is always a convenient tool to stir a young man's curiosity and inspire his scientific pursuit," FU stressed.

And the nation must enhance both the scale and the quality of its astronomical education as soon as possible, he proposed, via enrolling more teachers and students, setting up more astronomical departments, and widely spreading astronomy among teenagers as well as the public.

FU's opinion was echoed by ZHAO Gang, NAOC professor and co-chair of the local organizing committee of the IAU Beijing meeting, who told the state media that "I think at this critical moment, it's more important for the government to make policies to make up the big gap in astronomical education, than anything else."

IAU Presidents also proposed their suggestions for cultivating high-level astronomical talents in China. According to Robert Williams, internationalization is the key – "educating students with international experience ... should be a future emphasis for Chinese astronomy". In the eye of the New IAU President Norio Kaifu, China should "encourage astronomy graduate students to do instrumentation" and "encourage young astronomers to lead important projects and excite students to get them into astronomy".

The IAU meeting in Beijing brought the world to China and China to the world. When Chinese astronomers call the meeting a "landmark", they say it with a twofold meaning: it is not only a glorious success, but the starting point of another scientific odyssey.