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participated in the  
19th IAU/UNESCO/ICSU International School for Young Astronomers  
held in  
Beijing July 19 - August 8 1992

Qi-Bin Li  
Director of the 19th ISYA

Donat G. Wentzel  
Secretary IAU ISYA

The International School for Young Astronomers of Beijing was sponsored by

International Astronomical Union  
UNESCO  
International Council for Scientific Unions  
Beijing Office, The Third World Academy of Sciences  
& Bureau of International Cooperation, Chinese Academy of Sciences  
Chinese National Natural Science Foundation  
Chinese Astronomical Society  
Beijing Astronomical Observatory

**Scientific Organizing Committee**

Qi-Bin Li (China, Chair), Donat G. Wentzel (USA, ISYA secretary),  
Michele Gerbaldi (France, ISYA associate secretary), G. S. D. Babu (India),  
G. S. Bisnovatyi-Kogan (Russia), Jing-Xiu Wang (China), Di-Sheng Zhai (China)

**Local Organizing Committee**

Jin Zhu (Chair), Ai-Ping Zhu, Ying Chen

## The 19th IAU International School for Young Astronomers

held in China July 19 - August 8, 1992

The 19th ISYA was held for two weeks in Beijing and one week at Beijing Observatory's Xinglong Observing Station, situated on a mountaintop at about 1000 meter altitude and about 100 miles northeast of Beijing.

There were 30 participants, including 13 Chinese, 3 from Korea, 2 each from Hong Kong, India, Indonesia, Vietnam, 1 each from Russia, Ukraine, Turkey, Israel, Holland, USA; 9 of them women.

Travel support was provided by the IAU, ICSU, and UNESCO. Due to the devaluation of the Ruble in Russia and difficulty of communicating with Moscow, the Ukraine and Vietnam, travel costs were extremely hard to predict. Fortunately, nearly all faculty and participants succeeded in obtaining special fares, some far below our estimate. Therefore, a substantial number of participants could be offered travel support. Living costs in China were supported by the Third World Academy of Sciences, the Chinese National Natural Science Foundation, the Chinese Astronomical Society, and the Beijing Astronomical Observatory. Professor Li Qibin, Director of the School, sought financial support and selected both the general topic of stellar astronomy and the faculty. Dr. Zhu Jin ably organized the many daily chores inherent in such a school.

Participants' backgrounds ranged from just-finished bachelor's degrees to almost finished doctoral theses, from small universities with essentially no astronomy resources to established research centers. Accordingly, the lectures ranged from simple and didactic presentations up to a graduate-level survey providing mainly "research flavor": G. S. D. Babu (India) on galactic structure, M. Gerbaldi (France) on stellar spectroscopy, Zhai Di-sheng (Beijing Observatory) on evaluation of light curves and models for binary stars, D. Wentzel (USA) on concepts of MHD and solar physics, Wang Jing-Xiu (Beijing Observatory) on solar magnetic observations, and G. Bisnovatyi-Kogan (Russia) on stellar interiors and evolution.

All foreign faculty stayed the entire three weeks, so that all could get to know the background of the participants and there were ample opportunities to meet with participants. All participants except one also stayed the entire period. Questions by participants were encouraged and fairly frequent. Friendly debates among faculty evidently were some of the high points of the lectures.

The lectures were supplemented by two evenings of observing at Xinglong (we were lucky with two clear evenings), some sessions of other practical exercises, tours of the new 2.16 meter, the Schmidt and the infrared telescopes at Xinglong, of Miyun radio station, of Huairou solar station, and of Shahe solar and time-keeping station. Many participants gave short talks about their institutions and/or their research. Students at first too shy to talk English by the third week had lost all hesitancy talking English and made good friends among participants from other countries.

Report to the IAU General Secretary and Executive Committee on  
The 19th International School for Young Astronomers  
held at Beijing July 19 - August 8, 1992,  
by Donat G. Wentzel, secretary for ISYA.

Planning: The announcement for this ISYA appeared in the IAU Bulletin of January 1992 and was distributed both in China and to over two dozen individuals and institutions outside China, throughout the Asian-Pacific region and as far as Egypt. The announced deadline for applications was March 31, 1992. Because of mail delays (Wentzel's IAU Bulletin arrived in March), applications arrived only during April. In the end there were 43 applications, 18 from P. R. China all of whom were offered travel by train (unless already in Beijing), 25 foreign of which 14 were offered full or partial travel support. All applicants were offered to stay free during the ISYA. Result: 30 participants, including 13 Chinese, 17 foreign (3 from Korea, 2 each from Hong Kong, India, Indonesia, Vietnam, 1 each from Russia, Ukraine, Turkey, Israel, Holland, USA); 9 of them women.

Professor Li Qibin, Director of the School, sought financial support, selected the general topic of stellar astronomy (details below), and the following foreign faculty: D. Wentzel (USA, travel from Switzerland), M. Gerbaldi (France), G. Bisnovatyi-Kogan (Russia) and G. S. D. Babu (India). Originally one faculty member from Beijing (Wang Jing-Xiu) was anticipated. All were informed by Wentzel that the anticipated academic levels of the students would be highly varied: they would come from both large and small institutions, some with broad and some with very narrow training, some just finished with Bachelor-level courses, some approaching their doctoral thesis defense. Later another faculty member from Beijing (Zhai Di-Sheng) was added in connection with the observations anticipated at the Xinglong Observing Station.

Due to the devaluation of the Ruble in Russia and difficulty of communicating with Moscow, the Ukraine and Vietnam, travel costs were extremely hard to predict. Fortunately, nearly all faculty and participants succeeded in obtaining special fares, some far below our estimate. Therefore, a substantial number of participants could be offered travel support.

The availability of e-mail at Beijing Astronomical Observatory (an expensive item for the observatory) was essential to coordinating the acceptance of participants, the revision of budgets as travel costs became known, and the practical planning of the ISYA. During April through mid-June (when I left the USA), Zhu Jin and I communicated by e-mail almost daily, and also frequently during the six months before then. I also received advice by e-mail from M. Gerbaldi during this time.

Financial summary (preliminary):

The supporting organizations are listed on the attachment.

## Travel costs, supported by IAU:

\$ 4862	4 foreign faculty
\$ 9888	11 foreign participants fully supported (all by air)
\$ 1250	2 foreign participants (Israel, Holland) partially supported
\$ 500	7 Chinese participants (6 by train, 1 by air) (estimate)
\$ 2400	local transportation (estimate)
\$18900	total
\$19000	allotted by IAU (including grants to IAU)

This support is clearly substantially larger than that of prior ISYA, partly because the IAU contribution was increased and partly because of an extra \$6000 received by the IAU and allocated to this ISYA.

The item for local transportation is dominated by the cost of bus rental for 8 days. 5 days were needed for essential transport to the Xinglong Observing Station (about 100 miles by "direct" road) and other observing stations. 3 days (about 30% of the bus charge) were used for sightseeing at the Great Wall, the emperors' tombs and in Beijing. For travel outside Beijing, a relatively expensive bus suitable for foreign tourists was used. Given the climate and the stop-and-go traffic on nearly all Chinese roads, the quality of the bus was highly appreciated.

Since the currencies of Russia, Ukraine, India and Vietnam are not convertible, we expected to repay travel costs from there in US dollars and/or buy return tickets in Beijing. In fact, several more participants needed to be paid in Beijing, and thus in US dollars, because they borrowed from friends to pay for their travel to Beijing and needed to repay their debts promptly. Thus \$7296 of the above travel costs were paid out in cash. Of that, \$2200 was provided (and more was offered) by the IAU ahead of time. The rest came from the Wentzel's travelers checks and credit card, to be refunded by the IAU.

At the ISYA in Malaysia, some faculty and participants arrived without any convertible money, so that they could not even buy a bus ticket to join others in sightseeing. I avoided this embarrassment by giving each faculty and participant arriving with unconvertible currency some cash for "miscellaneous travel necessities" and included that in the IAU travel cost (\$50 for faculty, \$20 for participants).

Support by Beijing Astronomical Observatory and its sponsoring organisations:

\$16000	room and meals (2 weeks at a local hotel and 1 week at Xinglong)
\$ 3000	fees for a variety of services
\$19000	total

The cost per participant is about \$1300. For comparison, the costs in 1973-1975 ranged from \$333 to \$783 (IAU Trans. XVIA 1 p. 211). Given a factor two inflation and the large distances involved in travel for faculty and most foreign participants, no significant changes in cost have occurred.

Academic activities:

At the opening session, I introduced this ISYA as a chance for everyone to broaden their academic experience. Since many participants think of science as a sequence of "homework problems" with unique answers, I stressed that scientific judgment is necessary for scientific progress, particularly in view of fundamentally unknown processes such as convection and, for astronomy, in view of the evident inhomogeneity of the universe. Since many participants' astronomical experience is dominated by a single professor, I emphasized that each astronomical problem can be seen from many viewpoints. Specifically, questions and even statements like "I don't believe it" are inherent in science; they are meant to elicit the different viewpoints and are not meant as personal criticism.

The faculty often attended each other's lectures and by their questions demonstrated many of the interrelations among these subjects and the value of looking at one subject from many viewpoints. Questions by participants were encouraged and fairly frequent. Friendly debates among faculty evidently were some of the high points of the lectures.

Notes were prepared and distributed for (almost) all lectures. In part this avoided the students' preoccupation with taking notes and provided for them a more permanent record, in part overhead transparencies allowed reading when the spoken English was not understood.

The lecture topics are listed below in order from the simplest and most didactic presentation up to a graduate-level survey providing mainly "research flavor":

Babu on galactic structure (including 2 classroom exercises on galactic data)

Gerbaldi on stellar spectroscopy (including one evening exercise)

Zhai on evaluation of light curves and models for binary stars (including supervision of two nights' observing)

Wentzel on concepts of MHD and solar physics (including one evening exercise using solar photos)

Wang on solar magnetic observations

Kogan on stellar interiors and evolution

The academic activities included:

- 37 90-minute lectures as listed above (7 lectures each faculty except Wang 4, Zhai 5)
  - 2 evening 2-hour practical exercises (stellar data and solar photos)
  - 2 clear evenings at Xinglong (all that could be expected for the month of July) observing the contact binary SW Lac with the 60-cm telescope
  - 6 90-minute sessions (incl. one evening seminar) during which 15 participants outlined their work/research, followed by ample time for discussion
  - 2 evening sessions with 11 participants reporting on their observatory or university
  - 3 tours of the 2.16m, Schmidt and 1.26m infrared telescopes at Xinglong
  - 4 tours of the Beijing observing stations at Miyun (radio), Huairou (solar magnetic field), and Shahe (mostly solar), plus the ancient observatory in Beijing
  - 2 evening talks on the Hubble Space Telescope and an antarctic expedition
  - 1 discussion on astronomy collaborations, jobs and "why do astronomy?"
- plus informal opening and closing sessions. Participants received a certificate, attached.

Non-academic aspects:

The intangibles at these ISYA are at least as valuable as the formal academic aspects. Most importantly, students at first too shy to talk English by the third week have lost all hesitancy talking English. They make good friends among participants from other countries.

The ISYA was structured to encourage personal interactions. At the opening session, each faculty member and participant not only introduced him/herself briefly but identified a single, short and simply pronouncable name by which to be called. The audience carefully repeated each name. A party during the first evening created an informal and friendly atmosphere, with various faculty and participants singing and demonstrating some dances/martial arts. ISYA T-shirts also helped create a team spirit. In addition, where possible, participants from a single country were not assigned to share a room.

A party at Xinglong and one after the closing session were dominated by dancing both of ballroom and of modern style. The Chinese astronomers make elegant dancers! Such an activity was totally new to one participant from a strictly Muslim country.

The academic activities were also broken up by three days of sightseeing in Beijing and at the Great Wall and the emperors' tombs. Since the bus rides between Beijing and Xinglong lasted all day (each including a visit to an observing station), we spent many hours in the bus, but these hours also contributed to good companionship.

Housing and lectures in Beijing were at a local hotel, with double rooms for participants, singles for faculty, each room with bathroom. (Beijing Observatory also generously invited Mrs. Wentzel and provided us an office/sitting room.) At Xinglong we just fit into the classroom; the participants stayed in new dormitories and the faculty at the guest house. Lunch and dinner were Chinese-style. Both the hotel and Xinglong kitchens managed to produce a western-style breakfast after some prompting. All but one person could handle chop-sticks, but it was just as well that there are no strict table manners in China.



Opinions:

All foreign faculty stayed the entire three weeks! This permitted the faculty to plan the lecture program from the beginning and, more importantly, it led to excellent faculty-participant contact, which is quite impossible for a faculty member who stays only one week and hardly even learns the academic background of the participants. Although faculty visitors may help to broaden the ISYA experience, preference in the search for faculty should be given to those who can arrive at the beginning and stay for most of the ISYA.

All participants except one also stayed the entire period. (One encountered visa problems en route.) Beijing Observatory was generous in supporting the hotel costs of all that arrived too early or had to stay later because suitable flights occurred only weekly. Participants staying during the entire ISYA should be strongly encouraged.

Since the personal interactions are so important, it is essential that at least a part of the faculty be strongly concerned with teaching at a fundamental level and have the experience and the time to sit down with many of the individual participants and discuss their academic interests. Of course, some "research flavor" should also be provided, but mainly for perspective and not as a major part of the academic program.

We turned down some applicants for travel support because they had completed their doctoral studies. However, it is essential to include some more advanced students who will set the tone of asking questions. In this ISYA these students turned out to be the (only partially travel-supported) ones from Israel and Holland, but that was by no means obvious from the applications.

Without the generous budgets provided by the IAU and Beijing Astronomical Observatory and their contributors, this ISYA would have had substantially fewer foreign relative to Chinese participants. The breadth of social and academic backgrounds provided by participants from 12 countries (including China) made this a substantially more successful ISYA than could have been accomplished with the IAU budget of about \$10,000 provided to previous ISYA. We stayed within the IAU budget, but the international vagaries of travel costs make it clear that some financial flexibility by the IAU is needed in case the best estimates go awry.

The announcement for the ISYA should make clear that this is a school to broaden young astronomers' experience and not aimed at research-oriented people who have completed their doctoral studies. The announcement should make more clear that both applications to participate and applications and recommendations for travel support must go to both the ISYA secretary and the Director of the School. Numbers for e-mail and fax should be included for both.

The final decision as to when to stay in Beijing and when in Xinglong was made only a few weeks before the ISYA. The decision was made largely on the basis of the limited kitchen facility at Xinglong. Seen from afar, this decision may seem uncomfortably late. But for a low-budget organization like an ISYA, such decisions, including decisions on timing, must be made according to local needs. In many ISYA, staying either at a campus or at an observing station nearly the entire time may be quite appropriate.

Essential for planning an ISYA is a person who can be relied upon to make the many practical decisions at the appropriate time. In this case, Dr. Zhu Jin (in consultation with professor Li Qibin) was an excellent organizer. Even so, Zhu and at least one person from the Observatory's foreign office were kept busy for nearly the entire time of the ISYA with the many chores inherent in running such a school: extending visas, attending to individual needs, reproducing lecture notes, obtaining return travel tickets, etc.

The decision as to the topics of interest and which faculty to be invited must be left largely to the discretion of the director of the school, because the ISYA secretary generally does not know the subject matter or the people in the fields of interest. However, as early as possible, the ISYA secretary should have a clear opportunity to 1) emphasize that at least a substantial fraction of the faculty have considerable experience in teaching at a level appropriate to the ISYA, and 2) in alerting the faculty of each other's topics and the anticipated academic background of the participants, that personal interaction will be important and that there will be no final examination.

In many ISYA including this one, the detailed decisions for the academic program are left largely to the ISYA secretary and the faculty. It is generally the ISYA secretary who must demonstrate the scientific links among faculty and their topics, especially if some faculty cannot stay during the entire ISYA. This is probably the most important justification for the presence at the ISYA of the ISYA secretary (or a suitable representative), even if he/she is not expert in any of the lecture topics of the ISYA.

Respectfully submitted August 31, 1992

*Donald J. Verbal*

Enclosed: certificate received by participants

**Report to the IAU General Secretary and Executive Committee  
on the expenses within China for  
The 19th IAU/UNESCO/ICSU International School for Young Astronomers  
held at Beijing July 19 - August 8, 1992,**

by Jin Zhu, chair of Local Organizing Committee

The detailed descriptions about this ISYA have already been presented by Prof. Donat G. Wentzel, secretary for ISYA, in his report to you. I want to emphasize here that the support from IAU and the many efforts by Prof. Wentzel for this ISYA made the ISYA a very successful one. All the participants enjoyed it very much, they made very good friendship with participants and teachers from different places as well as learned lots of knowledge from the teachers. As part of the result from this ISYA, I know that a student from Indonesia will write an article about this ISYA in her own language, and a Korean student is making efforts to come to Beijing again to observe with telescopes here for her MA thesis.

The local financial summary is as follows:

Exchange rate used: FEC 5.5 = \$1.

Meals and housing for essentially 37 people for 20 days:

Meals and Refreshments: \$ 7,820

Housing at both Beijing and Xinglong: \$ 5,640

Lecture Room: \$ 550

Entrance tickets on tours: \$ 360

Copying material (mostly lecture notes for participants): \$ 1,270

E-mail, fax, letter: \$ 1,820

Travel, itemized below: \$ 2,910

Other expenses: \$ 360

Total: \$ 20,730

The grants we received from outside the observatory till now:

Beijing Office of the Third World Academy of Sciences: \$ 9,580

National Natural Science Foundation of China: \$ 1,450

Chinese Academy of Sciences: \$ 360

Other Observatories in China: \$ 1,380

Total: \$ 12,770

Prof. Wentzel in his report to you estimated the cost to the IAU for travel within China to be \$2900 and within the IAU budget. It would be very appreciated if the \$2910 of local travel could now be granted by IAU. I enclose in this letter a more detailed bill for travel expenses.

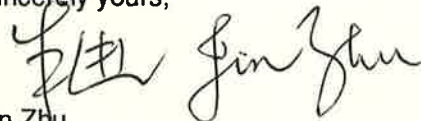
The account number of the observatory is:

Bank of China, 71412366. (Beijing Astronomical Observatory)

The remaining local expenses of \$5050 will be given by the observatory.

With thanks and best regards.

Sincerely yours,



Jin Zhu

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**Bill for local travel expenses of the 19th ISYA (Beijing, 1992)**

1) travel grants to 7 Chinese students \$ 550

2) travel to outside the city \$1,330

this includes travel from the hotel in Beijing to the four stations of the observatory, particularly Xinglong, and to some tourist places (see Prof. Wentzel's report, page 2). It includes the bus unavoidably traveling empty from Xinglong back to Beijing after taking us to Xinglong and later from Beijing to Xinglong to pick us up again after the week we stayed in Xinglong.

3) travel inside the city \$1,030

this includes mainly the transportations between the observatory center and airport, also between the hotel and air-ticket office, etc.

Total: \$ 2,910

A handwritten signature in black ink, appearing to read 'Jin Zhu' with a stylized flourish on the left side.

Jin Zhu (Signature)  
Chair of Local Organizing Committee

Evaluation of the 19<sup>th</sup> ISYA in China in 1992.

April 1997

The survey questionnaire asked participants whether the ISYA influenced their scientific careers, broadened their scientific horizons, provided specific useful scientific knowledge, whether faculty and lectures were appropriate, and asked for suggestions for improvements. There were 13 Chinese participants, of whom 4 responded, and 17 foreign participants, of whom 6 responded.

Summary: Among the foreign participants, the ISYA has produced a small group of active young astronomers in several countries who are still in scientific and personal contact with each other. The ISYA influenced only few Chinese astronomical careers. It did result in international publicity for Beijing Astronomical Observatory and its observing facilities.

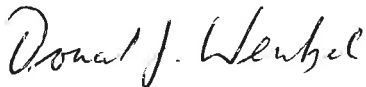
Many participants came from small, relatively isolated astronomical institutions, with e-mail then still essentially unknown. Yet four participants met at the 1995 Asian Meeting on Astronomy in Tokyo and several will meet at the Kyoto IAU General Assembly.

The comments cited below show that ISYA succeeded in broadening participants' scientific horizons. Several participants' careers have been significantly influenced by this ISYA. As in some previous ISYA, the few more advanced students contributed to the ISYA as a role model for less advanced students and, as shown by the individual responses cited below, they provided a stimulation for future scientific and personal contacts possibly more than the faculty did. (The personal interaction is still an essential need during current ISYA, even though nearly all participants now have e-mail.)

Not surprisingly, the comments on lectures ranged from something like "some were too high and too fast but those in the topic .... were extremely useful", given by the beginning students, to "mostly just a review", given by the most advanced. For most, the lectures on galactic structure remained at too low a (college) level, yet one participant designated them as one of the two most useful topics. Several participants requested more discussions and practical sessions, but the range included a request for more theory. (Subsequent ISYA have included more discussions.)

Dr. Jin Zhu, the active local manager of the ISYA, reports that most of the Chinese participants now in China probably benefitted from the experience of exchanging ideas with foreign participants and faculty, but the lectures, being largely unrelated to their specific interests, were of lesser value.

Except for native English-speakers, all responding participants valued the ISYA requiring the practice of speaking English, several particularly because it helped subsequent international communications. (The low response of Chinese participants who are still in China, 2 out of 14) may in part be due to their not speaking much English during the ISYA.)



Donat G. Wentzel  
Secretary for ISYA

Selected comments from participants at the China ISYA relevant to the general evaluation.

Only two of 30 participants have no known address. All addresses in China were available from Dr. Jin Zhu, the local ISYA manager.

Participants Fan and Serena married after meeting at this ISYA.

The two Vietnamese did not respond. Having met them since then, I know that their outlook on astronomy, then 25 years out of date, expanded, but they were only barely "participants".

- 1) Xiaohui Fan, Chinese, now graduate student at Princeton University, USA. "For the first time I could share the love of astronomy". He found at ISYA how to apply previously learned unconnected physics, still collaborates with another participant (Ng).
- 2) Ronghui Liu, Chinese, now math student in Beijing, has a part-time job with an asteroid-searching project of Beijing Astronomical Observatory. She received help from Jin Zhu (ISYA manager) with astronomical software and considers herself an amateur astronomer.
- 3) Mao Ruiqing, Chinese, then staff at Qinghai Radio Station, now graduate student in radio astronomy. "The China ISYA did really provide me new opportunities to advance my professional career." During a visit to Germany for CO observations "I felt the advantage of ISYA's experience". "I have kept a good relation" with many participants.
- 4) Shaohua Liu, Chinese, now student in Electrical Engineering Dept., Northern Illinois Univ., USA. She acquired a much broader outlook on astronomy as a world-wide science.
- 5) Yuen Keong Ng, then student at Leiden, Netherlands, now post-doc at Padua University, Italy. He was convinced by ISYA to work in Asia in the future. He has met and has e-mail contact with several participants and with Thai astronomers, collaborated with one participant (Fan), and appreciated the ample time available at ISYA to meet others so that collaborations can be developed.
- 6) Jin-young (Serena) Kim, Korean, now graduate student in the Astronomy Program, State University of New York at Stony Brook, USA. ISYA convinced her to pursue astronomy. She later collaborated with Beijing astronomers and observed with their 2-meter telescope. "One of my few "the most precious memories" in my life." She is in contact with several participants, met some in Tokyo in 1995.
- 7) D. M. D. Jasinta, then and now Bosscha Observatory / Institute of Technology Bandung, Indonesia. As a newly graduated junior staff member, she learned at ISYA what to do to become a professional astronomer. She has visited Brussels for research on double stars. "Everything I acquire in my work started up after ISYA. I could say that this ISYA really influences my professional career."
- 8) Eliani Ardi, Indonesian, now graduate student in Kyoto, Japan, found it exciting that she could communicate by the international language of science. She benefitted particularly from faculty member Michele Gerbaldi. ISYA stimulated her decision to seek further study. She has met several participants in Indonesia and Japan.
- 9) Sergei Udovichenko, then and now at Astronomical Observatory, Odessa, Ukraine, now pursuing variable star research,. ISYA made a useful contribution for his teaching and work with students. "Unforgettable days in my life".
- 10) Yue Wai-Chun, then and now Hong Kong Astronomical Society, working in a scientific lab. ISYA showed him techniques helpful for his career. He still has good connections with Beijing Observatory and other participants, joined a solar eclipse expedition.

**The Addresses For Participants of 19th International School For Young Astronomers**

Beijing July 19 - August 8 1992

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