

PROBING SOLAR POLAR REGIONS

FORUM HANDBOOK



NOVEMBER 07-08, 2024

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ABOUT ISSI-BJ

The International Space Science Institute in Beijing (ISSI-BJ) was jointly established by the National Space Science Center (NSSC) and the International Space Science Institute (ISSI) with the support of the International Cooperation Bureau and the Space Science Strategic Project of the Chinese Academy of Sciences (CAS). ISSI-BJ is a close cooperation partner of ISSI in Bern. The two institutes share the same Scientific Program Committee, the same study tools, and other information of mutual relevance and interest. However, both use independent operational methods and different funding sources.

ISSI-BJ is a non-profit research institute. Our main mission is to contribute to the achievement of a deeper scientific and technological understanding of future space missions as well as of the scientific results from current and past missions through multidisciplinary research, possibly involving, whenever felt appropriate, ground based observations, modelling, numerical simulation and laboratory experiments, using the same tools as ISSI, i.e. Forums, International

Teams, Workshops, Working Groups or individual Visiting Scientists.

The Program of ISSI-BJ covers a widespread spectrum of space science disciplines, including astrophysics, solar and space physics, planetary science, astrobiology, microgravity science and Earth observation from space.

ISSI-BJ is an independent and politically neutral institute. We offer generous financial support to the scientists that come to Beijing: we offer coffee break, snacks, launch and dinner at our institute, as well as covering travelling and hotel expenses for the conveners of Workshops and Forums, and the leaders of the International Teams. After each meeting, we also offer support in publishing and promoting articles, essays and peer-reviewed papers.



ISSI-BJ CALL FOR PROPOSAL

ISSI-BJ Activities

ISSI-BJ organizes a wide range of activities, such as Forums, Workshops, Working Groups, and International Teams. Applications to join our programs are always welcome. More info available at www.issibj.ac.cn.



International Teams

Annual call in January

Goal: Research focus, 10-15 scientists

Duration: 5 days each time

Result: Publications

Support: Living costs while in Beijing, travel support to team leader



Workshops

Goal: Research focus, 30-40 scientists

Duration: 5 days

Result: Book

Support: Living costs while in Beijing



Forums

Goal: Open discussion among 20-30 scientists

Duration: 2 days

Result: Taikong Magazine

Support: Living costs while in Beijing



Working Groups

Goal: Specific tasks, 8-12 scientists

Duration: As long as needed

Result: Springer ISSI Scientific Report Series (SR)

Support: Living costs while in Beijing, travel support if needed

ORGANIZER

The Forum “Probing Solar Polar Regions” is organized by the International Space Science Institute–Beijing (ISSI–BJ).

Conveners

- Pengfei Chen, Nanjing University, China
- Yuanyong Deng, National Astronomical Observatories, Chinese Academy of Sciences, China
- Fabio Favata, Imperial College London, UK
- Hui Tian, Peking University, China
- Durgesh Tripathi, Inter-University Centre for Astronomy and Astrophysics, India
- Linghua Wang, Peking University, China
- Robert F. Wimmer-Schweingruber, Kiel University, Germany

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FORUM OUTLINE & PROGRAM

Context

The solar polar regions are vital in controlling solar activity and driving space weather, but remain as the least-known mysterious territory on the Sun. The proposed Solar Polar-orbit Observatory (SPO), with an orbit of large solar inclination angle (>80 degrees) and small ellipticity, is expected to make breakthroughs on the top-level scientific objectives: to unveil the origin of the solar cycle, to determine the generation mechanism of the fast solar wind, and to characterize the global origin and heliospheric propagation of space weather processes. In order to pinpoint the scientific objectives and maximize the scientific output of the mission, ISSI-BJ has decided to organize an international forum.

The preliminary scientific objectives and tentatively selected payloads will be introduced in the planned forum. The forum will also serve as a platform to discuss how SPO observations will advance our understanding of the most important questions in solar physics. More importantly, advices and international collaborations regarding the instrument design, science preparation and synergies with other missions will also be discussed during the forum. We expect ~35 scientists from different countries to attend this forum. Besides individual presentations, lively discussions during these presentations will be strongly encouraged.

Objectives

- Discussing science preparation and synergies with other missions
- Identifying key requirements of instrument design and calibration
- Strengthening international collaboration in solar polar region explorations

Program

	Subject	Contributor
Thursday, November 07		
08:30-09:00	Registration	
Introduction (Chaired by Linghua Wang)		
09:00-09:20	Welcome Speech & Introduction to ISSI-BJ	Xiaolong Dong
09:20-09:50	The Solar Polar-orbit Observatory	Yuanyong Deng
09:50-10:00	Group Photo	
10:00-10:20	Coffee Break	
Session 1: Key Science for Solar Polar Exploration (Chaired by Fabio Favata)		
10:20-10:45	What We Know About the Dynamo from Observations & Where Polar Observations Would Help?	Robert Cameron
10:45-11:10	Personal Views on the Roles of Polar Measurements in Understanding the Solar Cycle	Jie Jiang
11:10-11:35	Long-term Variation of the Solar Polar Magnetic Fields at Different Latitudes	Shuhong Yang
11:35-12:00	What We Have Known & What We Will Explore About Polar Magnetic Fields	Chunlan Jin
12:00-12:25	Importance of Polar Field Diagnostics from the Perspective of the Solar Cycle	Dibyendu Nandi (online)
12:25-14:00	Lunch Break	
Session 2: Key Science for Solar Polar Exploration (Chaired by Robert F. Wimmer-Schweingruber)		
14:00-14:25	What Can Helioseismology Do with a Solar Polar Mission?	Junwei Zhao

14:25-14:50	Numerical Study of the Solar Wind Driven by Interchange Reconnection in the Solar Corona	Liping Yang
14:50-15:15	Observations of Transverse Waves in Polar Regions of the Sun & their Role in Solar Wind Acceleration	Vaibhav Pant
15:15-15:40	Lessons & Intriguing Observations from Ulysses High-latitude Passes	Robert F. Wimmer-Schweingruber
15:40-16:00	Coffee Break	
16:00-16:25	From Small-scale Jets to Large-scale Magnetic web: Tracing the Solar Wind Structures from Polar Regions	Pradeep Chitta (online)
16:25-16:50	Solar-Interplanetary 3D modeling & Observational Requirements	Xueshang Feng
16:50-17:15	Promoting Solar Storm Forecasting Research through Solar Polar Observations	Jingjing Wang
18:00	Social Dinner at Second Floor Park Plaza Hotel	

Friday, November 08

09:00-09:25	The Importance of Polar Observations from the Perspective of Global Coronal Modeling	Cooper Downs (online)
Session 3: Instruments & Capabilities Required (Chaired by Yuanyong Deng)		
09:25-09:45	Scientific Requirements & Preliminary Design for Magnetic & Helioseismic Imager	Junfeng Hou
09:45-10:05	Scientific Consideration for SPO's Extreme Ultraviolet Solar Telescope	Hui Tian

10:05-10:25	White-light Coronagraph Observations from the Polar View & their Related CME & Global Magnetic Field Analyses	Li Feng
10:25-10:45	Coffee Break	
10:45-11:05	Out-of-Ecliptic White Light Imaging of the Corona & Heliosphere by SPO's Very Large Angle Coronagraph	Lidong Xia
11:05-11:25	Observing High Energy Signatures in Quiet & Active Corona with the X-ray Imaging Telescope	Yang Su
11:25-11:45	Low Frequency Radio Spectrometer to Explore the Connection between the Sun & Heliosphere	Yihua Yan
11:45-12:05	Scientific Consideration for SPO's In-Situ Measurement Package	Jiansen He/Wenya Li
12:05-14:00	Lunch Break	
Session 4: Synergies with Other Missions/Legacy from Solar Orbiter (Chaired by Hui Tian)		
14:00-14:25	Solar Orbiter/Metis: a Dress Rehearsal for a Polar Mission Coronagraph	Marco Romoli
14:25-14:50	An Update of the Coronagraph Development Ongoing at RAL Space	Jackie Davies
14:50-15:15	Research Activity in Japan on the Deep Solar Survey with Solar Polar Missions	Shin Toriumi
15:15-15:35	Coffee Break	
15:35-16:00	Getting to the Poles with Solar Orbiter – What Will We Learn?	Louise Harra (online)
16:00-16:25	New Views of the Sun from the EU and SPICE Instruments on Solar Orbiter: Insights for SPO	Frédéric Auchère (online)
Wrap-up Session (Chaired by Durgesh Tripathi)		
16:25-17:00	Open Discussion & Forum Summary for the Taikong Magazine	
17:00	End of Forum	

PRACTICAL INFORMATION

Venue

The Workshop will be held in the Saturn Hall (A0418), NSSC building A, 4th Floor.

Address:

N°1 Nanertiao, Zhongguancun,
Haidian District, Beijing, 100190
北京市海淀区中关村南二条一号

ISSI-BJ Office:

The ISSI-BJ office is located at NSSC, Building A, 4th Floor. It is equipped with a printing machine, connected to staff members computers. If you need to print something, you can send the file both via email or USB transfer.

WIFI Access

To access WIFI, please connect to NSSC-Guest, and then fill in the information as shown here down below:



Accommodation

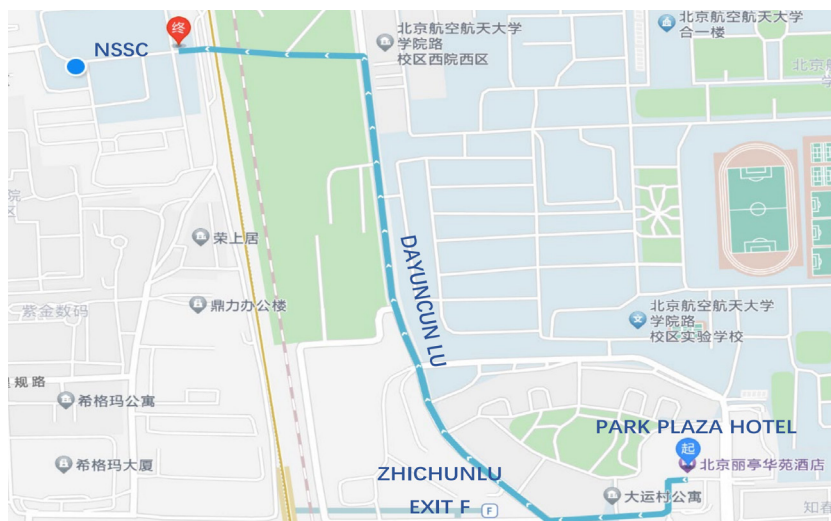
ISSI-BJ covers the cost of the accommodation and breakfast for 3 nights. Please kindly note that all the other expenses in hotel will be deducted from your check-in deposit.

Park Plaza Hotel Beijing Science Park No.25, Zhichun Road, Haidian District, 100083, Beijing China

北京市海淀区知春路25号

Directions: Turn right when going out of Park Plaza Hotel and walk straight for 3 minutes, there is road

“DAYUNCUN LU” (大运村路) in front of the Exit F of ZHICHUNLU (知春路) subway station, then keep going north along “DAYUNCUN LU” (大运村路) for 7-8 minutes, there is JINGZHANG RAILWAY PARK (京张铁路遗址公园) on your left, pass by the football field in the park, and follow the sign (down below) towards the National Microgravity Laboratory Tower, then cross the path, NSSC (国家空间科学中心) is located at the end of the path.



Lunch

Lunch for all participants of the ISSI-BJ forum will be available at

the canteen on the -1 floor of the NSSC Building A.

Coffee Breaks

Coffee breaks will be provided by ISSI-BJ just in front of Earth Hall.

See the Program section to check the coffee break times.

Useful Information

Credit Cards: Credit and debit cards can be used in ATMs displaying the appropriate sign. Credit cards are increasingly becoming accepted in major shopping zones and high level restaurants but keep some cash handy just in case.

You can find an ATM at the NSSC lobby of Building A.

Drinking Water: Avoid drinking tap water directly. Bottled water and mineral water can be found in convenience stores and drink stalls. The price is 2-10 yuan RMB per bottle.

Currency: Chinese Yuan Renminbi (RMB)

(1 USD = approx. 7.2 RMB)

(1 EUR = approx. 7.8 RMB)

Electricity: 220 volts AC

Emergency Contacts in China

Ms. Lijuan EN +86-136 9912 1288

Ms. Francesca GARFAGNOLI +86-195 68739884

Dinner on November 07

Dinner offered by ISSI-BJ on Thursday, November 07 2024 at 18:00.

Restaurant:

Amber 6, 2nd Floor of Park
Plaza Beijing Science Park
丽亭华苑酒店2楼金辉6厅

Address:

No. 25 Zhichun Road,
Haidian District, Beijing
北京市海淀区知春路25号



PARTICIPANTS

No. Name Affiliation

CONVENERS & FORUM LEADERS

1	Pengfei Chen	Nanjing University, China
2	Yuanyong Deng	National Astronomical Observatories, Chinese Academy of Sciences, China
3	Fabio Favata	Imperial College London, UK
4	Hui Tian	Peking University, China
5	Durgesh Tripathi	Inter-University Centre for Astronomy and Astrophysics, India
6	Linghua Wang	Peking University, China
7	Robert F. Wimmer- Schweingruber	Kiel University, Germany

PARTICIPANTS

8	Robert Cameron	Max Planck Institute for Solar System Research, Germany
9	Jackie Davies	Rutherford Appleton Laboratory, UK
10	Li Feng	Purple Mountain Observatory, Chinese Academy of Sciences, China
11	Xueshang Feng	National Space Science Center, Chinese Academy of Sciences, China
12	Weiqun Gan	Purple Mountain Observatory, Chinese Academy of Sciences, China
13	Jiansen He	Peking University, China
14	Junfeng Hou	National Astronomical Observatories, Chinese Academy of Sciences, China
15	Jie Jiang	Beihang University, China

16	Chunlan Jin	National Astronomical Observatories, Chinese Academy of Sciences, China
17	Jiajia Liu	University of Science and Technology of China, China
18	Vaibhav Pant	Aryabhata Research Institute of Observational Sciences, India
19	Krishna Prasad	Aryabhata Research Institute of Observational Sciences, India
20	Marco Romoli	University of Florence, Italy
21	Luis Bellot Rubio	Institute of Astrophysics of Andalusia, Spain
22	Taro Sakao	Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan
23	Tanmoy Samanta	Indian Institute of Astrophysics, India
24	Fang Shen	National Space Science Center, Chinese Academy of Sciences, China
25	Yang Su	Purple Mountain Observatory, Chinese Academy of Sciences, China
26	Shin Toriumi	Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan
27	Jingjing Wang	National Space Science Center, Chinese Academy of Sciences, China
28	Jingxiu Wang	National Astronomical Observatories, Chinese Academy of Sciences, China
29	Lidong Xia	Shandong University, China
30	Xiaoli Yan	Yunnan Observatories, Chinese Academy of Sciences, China

31	Yihua Yan	National Space Science Center, Chinese Academy of Sciences, China
32	Liping Yang	National Space Science Center, Chinese Academy of Sciences, China
33	Shangbin Yang	National Astronomical Observatories, Chinese Academy of Sciences, China
34	Shuhong Yang	National Astronomical Observatories, Chinese Academy of Sciences, China
35	Mei Zhang	National Astronomical Observatories, Chinese Academy of Sciences, China
36	Junwei Zhao	Stanford University, USA
37	Guiping Zhou	National Astronomical Observatories, Chinese Academy of Sciences, China
38	Xiaoshuai Zhu	National Space Science Center, Chinese Academy of Sciences, China

ONLINE

39	Xianyong Bai	National Astronomical Observatories, Chinese Academy of Sciences, China
40	Dipankar Banerjee	Aryabhata Research Institute of Observational Sciences, India
41	Pradeep Chitta	Max Planck Institute for Solar System Research, Germany
42	Cooper Downs	Predictive Science Inc, USA
43	Frédéric Auchère	Space Astrophysics Institute, France
44	Louise Harra	Physikalisch-Meteorologisches Observatorium Davos, World Radiation Center, Switzerland
45	Zhenyong Hou	Peking University, China

46	Wenya Li	National Space Science Center, Chinese Academy of Sciences, China
47	Jiabben Lin	National Astronomical Observatories, Chinese Academy of Sciences, China
48	Dibyendu Nandi	Indian Institute of Science Education and Research Kolkata, India
49	Ming Xiong	National Space Science Center, Chinese Academy of Sciences, China

NOTES

A large, vibrant image of the sun's surface, showing intense orange and yellow flames and solar flares, serving as the background for the entire page.

THE PRIME NETWORKING VENUE FOR SPACE SCIENTISTS IN EAST ASIA

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A black satellite antenna or probe extending from the right edge of the frame, pointing towards the sun.