

国际空间科学研究所-北京

SURVEYING THE HOT BARYONS WITHIN THE MILKY WAY

FORUM HANDBOOK

JUNE 09-10, 2025



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ABOUT ISSI-BJ

INTRODUCTION

The International Science Space 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 Science 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 simulations 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 independent is an and politically neutral institute. We offer generous financial support to the scientists that come to Beijing: we offer coffee breaks, snacks, lunches and dinner at our institute, as well as travel and hotel expenses for the conveners of Workshops and Forums, and the leaders of the International Teams. After each meeting, we also offer support for publishing and promoting articles, essays and peer-reviewed papers.





ISSI-BJ CALL FOR PROPOSALS

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 information available at www.issibj.ac.cn.





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

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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 "Surveying the Hot Baryons Within the Milky Way" is organized by International Space Science Institute-Beijing (ISSI-BJ).

Conveners

- Johan Comparat, Max Planck Institute for Extraterrestrial Physics, Germany
- Junjie Mao, Tsinghua University, China
- Gabriele Ponti, Brera Astronomical Observatory, National Institute of Astrophysics, Italy
- Ping Zhou, Nanjing University, China

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FORUM PROGRAM

Context

The galactic ecosystem is one of the three major themes highlighted in the Astro 2020 Decadal Survey in the US (issued in Nov. 2021). Hot baryons, best observed with X-ray space missions, play a critical role in the galactic ecosystem. They trace the feedback processes from supermassive black holes (SMBH) and stars, which drive the growth of galaxies. Nonetheless, the detailed physics of both feedback processes is poorly understood.

The Milky Way, our mother galaxy, is a critical template for understanding the galactic ecosystem in general. The eROSITA instrument aboard the Russian–German Spectrum-Roentgen-Gamma (SRG) mission provided the best X-ray image of the Milky Way with unprecedented spatial resolution and sensitivity.

The Chinese National Medium-and Long-Term Development Plan for

Space Science (issued in Oct. 2024) prioritized the X-ray study of hot baryons, especially in the roadmap from now to 2027. DIffuse X-ray Explorer (DIXE) is a proposed high-resolution X-ray spectroscopic sky surveyor on the China Space Station (CSS). DIXE will bring high-resolution X-ray spectroscopy to sky survey observations. This enables us to probe the physical properties (e.g., temperature, density, elemental abundances, kinematics) of the hot baryons within the Milky Way, including but not limited to solar wind charge exchange plasmas within the Solar system, local hot bubbles, Galactic supernova remnants, eROSITA bubbles, and circumgalactic medium. DIXE's high-resolution X-ray spectra will complement to high-resolution imaging data provided by eROSITA, SMILE, and Einstein Probe.

Objectives

- Highlight scientific yields on the hot baryons within the Milky Way observed with SRG/eROSITA, XMM-Newton, EP/WX
- Present the scientific goals and instrument features of SMILE and DIXE
- Identify common interests and promote international collaborations





Program

Monday June 09 2025

09:00-09:10	Welcome & Introduction	Xiaolong Dong			
Session 1 (Chair: Wei Cui)					
09:10-09:25	Introduction to Diffuse X-ray Explorer	Junjie Mao			
09:25-09:50	DIXE Collimator Response & Algorithm Implementation of DIXE Imaging	Jiejia Liu			
09:50-10:05	Geant4 Simulation of DIXE Non- X-ray Background	Ruixuan Tian			
10:05-10:20	Open Discussion				
	Session 2 (Chair: Ping Zhou)				
10:40-11:00	The Soft X-ray Background as Observed by eROSITA	Gabriele Ponti			
11:00-11:20	SRG/eROSITA & the First Uncontaminated View of the Diffuse Soft X-ray Sky	Konrad Dennerl			
11:20–11:40	Observing the Local ISM with X-ray Eyes	Michael Yeung			
11:40-12:00	Open Discussion				
12:10-14:00	Lunch Break				
Session 3 (Chair: Li Ji)					
14:00-14:20	SRG/eROSITA Results on the Eastern Galactic Hemisphere	Marat Gilfanov			
14:20-14:40	ART-XC Results on Compact & Extended Sources in the Milky Way	Alexander Lutovinov			

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14:40-15:00	Diffuse X-ray Emission of the Milky Way at Different Spatial Scales	Roman Krivonos
15:00-15:20	Open discussion	
15:20-15:50	Coffee Break	
	Session 4 (Chair: Gabriele Pon	ti)
15:50-16:10	eROSITA Broad Band Maps	Jeremy Sanders (online)
16:10–16:30	eROSITA Narrow Band Maps at the Energies of Soft X-ray Emission Lines	Xueying Zheng
16:30-16:50	The Hot Gas Phase of the Milky Way as Seen by eROSITA	Nicola Locatelli
16:50-17:10	Galactic Magnetized Halo Related to the eROSITA Bubbles	Heshou Zhang
17:10-17:40	Open Discussion	

Tuesday June 10 2025

Session 5 (Chair: Johan Comparat)					
09:00-09:20	Supernova Remnant Study with the Einstein Probe	Ping Zhou			
09:20–09:40	Probe Resonant Scattering & Charge Exchange in the X-ray Emission of Supernova Remnants	Lei Sun			
09:40-10:00	Dissecting the Thermal X-ray Emission from Nearby Supernova Remnants with SRG/eROSITA	Martin Mayer			
10:00-10:20	Open Discussion				
10:20-10:40	Coffee Break				



Session 6 (Chair: Marat Gilfanov)				
10:40-11:00	Charge-exchange Emissions in Stellar wind Interaction with ISM	Guiyun Liang		
11:00-11:20	SMILE: Solar wind Magnetosphere Ionosphere Link Explorer	Yuqi Gong		
11:20–11:40	The Multiphase Diffuse Gas in & Around the Milky Way	Zhijie Qu		
11:40-12:00	Open Discussion			
12:00-14:00	Lunch Break			
	Session 7 (Chair: Yang Chen)			
14:00-14:20	Review the Past Flare of Sgr A* Based on the XRISM Spectrum	Shuinai Zhang		
14:20–14:40	Average Hot CGM X-ray Surface Brightness in Local Universe (z<0.2)	Yi Zhang		
14:40-15:00	The Cross-correlation Between Soft X-rays & Galaxies- A New Benchmark for Galaxy Evolution Models	Johan Comparat		
15:00-15:20	Open Discussion			
15:20-16:00	Coffee Break			
16:00-17:00	Open Discussion			
17:00	End of Forum			

PRACTICAL INFORMATION

Venue

The Forum 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 printer, 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. 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.



Lunches

Lunches for all participants of the ISSI-BJ Forum will be available at

Coffee Breaks

Coffee breaks will be provided by ISSI-BJ in the office (room A0421).

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

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.

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

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 6873 9884

Cash and Electronic Payment:

since cash is not usually accepted, we suggest you to connect your credit card to Wechat and Alipay, which can also be used to purchase subway tickets.

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.



Dinner on June 09

Dinner offered by ISSI-BJ on Monday, June 09, 2025 at 18:00.

Restaura	int:					Address	:		
Amber	6,	2nd	Floor	of	Park	No.	25	Zhichun	Road,
Plaza	Bei	jing	Scienc	ce	Park	Haidian		District,	Beijing
丽亭华苑	范酒	店2楼	金辉6月	Ţ		北京市	海淀区	区知春路25号	



PARTICIPANTS

No.	Name	Affiliation			
CONVENERS					
1	Johan Comparat	Max Planck Institute for Extraterrestrial Physics, Germany			
2	Junjie Mao	Tsinghua University, China			
3	Gabriele Ponti	Brera Astronomical Observatory, National Institute of Astrophysics, Italy			
4	Ping Zhou	Nanjing University, China			
PAR	TICIPANTS				
5	Yang Chen	Nanjing University, China			
6	Wei Cui	Tsinghua University, China			
7	Konrad Dennerl	Max Planck Institute for Extraterrestrial Physics, Germany			
8	Xiaolong Dong	National Space Science Center, Chinese Academy of Sciences, China			
9	Marat Gilfanov	Max Planck Institute for Astrophysics, Germany; Space Research Institute, Russia			
10	Yuqi Gong	National Space Science Center, Chinese Academy of Sciences, China			
11	Yidong Gu	Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China			
12	Li Ji	Purple Mountain Observatory, Chinese Academy of Sciences, China			
13	Roman Krivonos	Space Research Institute, Russia			
14	Guiyun Liang	National Astronomical Observatories, Chinese Academy of Sciences, China			



15	Jiejia Liu	Tsinghua University, China
16	Teng Liu	University of Science and Technology of China, China
17	Nicola Locatelli	Italian National Institute for Astrophysics, Italy
18	Alexander Lutovinov	Space Research Institute, Russia
19	Martin Mayer	Dr. Karl Remeis-Observatory Bamberg, Germany
20	Haiwu Pan	National Astronomical Observatories, Chinese Academy of Sciences, China
21	Zhijie Qu	Tsinghua University, China
22	Jeremy Sanders (<i>online</i>)	Max Planck Institute for Extraterrestrial Physics, Germany
23	Lei Sun	Nanjing University, China
24	Ruixuan Tian	Tsinghua University, China
25	Chi Wang	National Space Science Center, Chinese Academy of Sciences, China
26	Michael Yeung	Max Planck Institute for Extraterrestrial Physics, Germany
27	Heshou Zhang	Italian National Institute for Astrophysics, Italy
28	Shuinai Zhang	Purple Mountain Observatory, Chinese Academy of Sciences, China
29	Yi Zhang	Max Planck Institute for Extraterrestrial Physics, Germany
30	Xueying Zheng	Max Planck Institute for Extraterrestrial Physics, Germany
31	Hongen Zhong	Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

NOTES



Beijing, June 09-10, 2025

Surveying the Hot Baryons Within the Milky Way



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INTERNATIONAL SPACE SCIENCE INSTITUTE BEIJING

THE PRIME NETWORKING VENUE FOR

SPACE SCIENTISTS IN EAST ASIA

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