

# EXPLORING THE JOVIAN SATELLITE SYSTEM: FROM FORMATION TO HABITABILITY

# WORKSHOP HANDBOOK June 3-7, 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 multidisciplinary research, through 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 indipendent and politically neutral institute. We offer generous financial support to the scientists that come to Beijing: we offer coffee break, snacks, lunch and dinner at our institute, and cover 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 peerreviewed 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.





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



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

## ORGANIZERS

The Workshop "Exploring the Jovian satellite system: from formation to habitability" is organized by the International Space Science Institute - Beijing (ISSI-BJ).

#### Conveners

- Blanc Michel, Research Institute in Astrophysics and Planetology, France; National Space Science Center, Chinese Academy of Sciences, China
- Bolton Scott, Southwest Research Institute, USA
- Ding Min, Southern University of Science and Technology, China
- Hao Jihua, University of Science and Technology of China, China
- Ji Jianghui, Purple Mountain Observatory, Chinese Academy of Sciences, China
- Kimura Tomoki, Tokyo University of Science, Japan
- Lainey Valery, Institute for Celestial Mechanics and Computation of Ephemerides, France
- Li Lei, National Space Science Center, Chinese Academy of Sciences, China
- Nimmo Francis, University of California, Santa Cruz, USA
- Prieto Ballesteros Olga, National Institute of Aerospace Technology, Center for Astrobiology, Spain
- Tosi Federico, Institute of Space Astrophysics and Planetology, Italy
- Van Hoolst Tim, Royal Observatory of Belgium, Belgium
- Sotin Christophe, Laboratory of Planetology and Geosciences, France

#### Sponsor





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#### WORKSHOP OUTLINE & PROGRAM

#### **Context & Objectives of the Workshop**

The Jupiter system is the most massive secondary planetary system in the Solar System. Its formation and early evolution had a profound influence on the sculpting of the architecture of the solar system and on the delivery or water and other chemical species to the inner planets. Its satellite system offers a broad diversity of objects whose inventory and characterization are still incomplete. Despite eight years of intensive exploration by NASA's Galileo mission, the formation scenarios, geology, geochemistry, geophysics and potential habitability of the four Galilean moons continue to challenge our understanding. questions" These "big have motivated a "new wave" of space missions to the Jupiter system and its surroundings, one of which is operational (Juno), while others are in development (JUICE, Europa Clipper, and LUCY, to be followed by CNSA's Tianwen-4).

The science of the Jovian satellites, among which the four Galilean moons offer a diversity of analogs to terrestrial planets, is as

interdisciplinary as the study of our Earth-Moon system. To understand their uniqueness and diversity and unravel the mysteries of their origins, workings, mutual couplings and habitability, one must call in a broad spectrum of geoscience astrophysics disciplines: and geology, cosmo- and geochemistry, geophysics, space plasma physics, ocean and atmosphere sciences, astrobiology, astrometry, astrodynamics...

Juno arrival at Jupiter in 2016, 13 years after the end of the Galileo mission, provided a new perspective, addressing important Jupiter and satellite science questions. Now in its extended mission. Juno offers the first close look at Jupiter's satellites and rings since Galileo and Voyager over 20 years ago, and just a decade before the next wave of space missions (Lucy, JUICE, Europa Clipper) reaches the Jupiter system. Holding this workshop on the Jovian satellites in 2023 will ideally serve the preparation of the analysis of the new harvest of observations these missions will return, and help establish the science rationale for new Jupiter system mission initiatives, particularly in China where Tianwen-4, a mission aiming at assembling the puzzle of the scenario of the formation of the Jupiter system is currently under study, and in the U.S. where new missions to the Jovian system are being considered (Europa Lander, Io Observer...).

#### Main Themes of the Workshop

The workshop aims to mainly achieve four goals:

- Review the current status of our understanding of the formation, evolution, workings, and habitability potential of the moons and small bodies (Galilean satellites, inner regular satellites, irregular satellites and Jovian Trojans).
- Review how current (Juno) and developing missions (JUICE, Europa Clipper and Lucy) will address these key questions and identify science objectives and goals for the next set of missions to further our understanding of the Jupiter system.
- Develop a plan for the next steps in exploring the Jovian system.
- Provide a high-level reference book for scientists currently researching the system or developing and planning future Jupiter system missions over the next two decades.





#### Workshop Program

#### Monday, June 03

	Subject	Contributor
08:30-09:30	Registration & Excursion Booking	
09:30-10:00	Welcome Speech & Introduction to the Workshop	Blanc Michel, Dong Xiaolong
Se	ession 1 – Assembling the Puzzle of the	Jupiter System
10:00-10:15	Introduction: the Jupiter System, a Comparative Perspective	Blanc Michel
10:15-10:45	Keynote Talk: Formation & Evolution of the Jupiter System	Stevenson David (online)
10:45-11:00	Questions & Discussion	
11:00-11:15	Coffee Break	
11:15-11:45	The Juno View of the Jupiter System	Bolton Scott
11:45-12:00	The Polar Magnetosphere & its Coupling Processes	Blanc Michel
12:00-12:20	The Jovian Atmosphere	Hartogh Paul
12:20-12:35	General Discussion	
12:35-12:45	Group Photo at First Floor of Building A	A
12:45-14:00	Lunch Break	
14:00-14:20	Rings & Small Inner Moons	Charnoz Sebastien
14:20-14:40	Irregular Moons	Hestroffer Daniel
14:40-15:00	Discussion & Open Questions	
15:00-15:30	Coffee Break	
Session	2 - Internal Structure & Dynamics of t	he Galilean Satellites
15:30-16:00	Overview/Internal Structures	Mc Kinnon William
16:00-16:15	Solid Body Dynamics & Measurements	Ermakov Anton (online)
16:15-16:30	Rotational Dynamics & Measurements	Trinh Antony, Van Hoolst Tim <i>(online)</i>

VORKSHOP

**OUTLINE & PROGRAM** 

16:45-17:00	Tidal Response & Measurements	Nimmo Francis
17:00-17:15	Ocean Dynamics & Measurements	Rovira Navarro Marc
17:15-17:30	Ocean Dynamics	Kang Wanying
17:30-17:45	Future Measurement Prospects	Tobie Gabriel (online)
17:45-18:15	General Discussion	

#### Tuesday, June 04

	Subject	Contributor
Session	a 3 – Geology & Surface Properties of th	e Galilean Satellites
09:00-09:20	Topography of Jovian Icy Moons	Schenk Paul (online)
09:20-09:40	Cratering on the Jovian Satellite Surfaces	Baby Namitha (online)
09:40-10:00	Tectonic Activity of Icy Moons	Rhoden Alyssa (online)
10:00-10:20	Surface Composition of Jupiter's Icy Galilean Moons	Tosi Federico
10:20-11:00	Coffee Break	
11:00-11:20	Ice Petrology: Physical-chemical Properties of Surface Materials	Prieto Ballesteros Olga
11:20-11:40	Hydrothermal Alteration Systems & Cryovolcanism in the Jupiter Moons	Vance Steve (online)
11:40-12:00	Potential for Life in Europa's Ocean	Finkel Pablo (online)
12:00-12:30	General Discussion	
Sessio	n 4 – Tidal/Gravitational Interactions 8	<b>Crbital Evolution</b>
14:00-14:30	Overview: Tides & Observations	Lainey Valéry
14:30-14:45	Tidal Dissipation in Giant Planets	Terquem Caroline
14:45-15:00	Solid-body Dissipation in Satellites	Trinh Antony
15:00-15:15	Ocean Tide Dissipation, Torques & Future Measurements	Hay Hamish



15:15-15:30	Long Term Evolution of the Saturnian Satellites	Tian Zhenliang
15:30-15:45	Long-term Orbital Evolution of the Galilean Satellites	Lari Giacomo
16:15-16:30	Reconstruction of the Past Orbits Over Long-time Spans	Barriot Jean Pierre
16:30-16:45	Ground Based Astrometry of Jovian Moons	Peng Qingyu
16:45-17:00	Future Measurement with Juice & Clipper	Dirkx Dominic (online)
17:00-17:30	General Discussion	
18:30	Social Dinner at Third Floor of Park Pla	za Hotel

#### Wednesday, June 05

	Subject	Contributor
Session 5	- Jupiter-Moon-Magnetosphere Electro	odynamic Interactions
08:30-08:40	Introduction	Kimura Tomoki, Li Lei
08:40-09:00	Moon's Atmosphere & Eruption : Io	Koga Ryoichi
09:00-09:20	Moon's Gas Torus	Tsuchiya Fuminori
09:20-09:40	Correlations Between Electrostatic Wave Activity in the Magnetodisk Monitored by Galileo, Juno & Io Volcanic Activity	Ni Binbin
09:40-10:00	Jupiter's Magnetosphere	Yao Zhonghua
10:30-10:50	Electromagnetic Interaction Between Moons & Jupiter's Magnetosphere	Ye Shengyi
10:50-11:10	Planetary Soft X-ray Emissions	Sun Tianran
11:10-11:30	Moon-magnetosphere Interactions & Moon-induced Aurorae as Revealed by Juno	Hue Vincent (online)

11:30-12:00	General Discussion
12:00-13:30	Lunch Break
13:30-	Free Time

#### Thursday, June 06

	Subject	Contributor
Sess	sion 6 – Origin & Early Evolution of the	Jovian Satellites
09:00-09:30	Overview of Origin & Early Evolution	Nimmo Francis
09:30-09:45	Disk & Satellite Chemistry	Mousis Olivier
09:45-10:00	Satellite Accretion in the Context of Pebbles	Ormel Chris
10:00-10:15	Satellite Accretion	Ogihara Masahiro
10:45-11:15	Satellite Formation & Long-term Evolution	Mc Kinnon William
11:15-11:30	Dynamics of Rings, Moon & Dust	Charnoz Sebastien
11:30-11:45	Satellite Accretion (Jupiter vs Saturn)	Fujii Yuri
11:45-12:00	Io's Long-term Evolution from Isotopes	de Kleer Katherine
12:00-12:30	General Discussion	
14:00-14:20	Currently Planned Missions: JUICE	Witasse Olivier (online)
S	pecial Session – Early Career Scientists	Contributions
14:20-14:35	Trapped & Leaking Energetic Particles in Injection Flux Tubes of Giant Planet's Magnetospheres	Yin Zefan
14:35-14:50	Juno Observations of Jupiter's Magnetodisk Plasma	Liu Zhiyang
14:50-15:05	Simulation of the Plasma Convection in Jovian Inner Magnetosphere Using the Rice Convection Model	Wang Yuxian



15:05-15:20	Unexpected Long-term Variations of Saturn's Ring Current Revealed by Energetic Neutral Atom Imaging	Li Yimeng
15:20-15:35	Statistical Distributions of Plasma Density & Pressure in the Jovian Plasma Sheet	Fu Haobo
16:00 16:15	Jovian Decametric Radio Emissions from Multi-view Observations	Zheng Ruobing
16:15-16:30	Thermal Structure of the Ice Shell of Enceladus	Huang Qian
16:30-16:45	Organics in Icy Moons: Sources, Stability & their Evolution	Liu Can
16:45-17:00	Simulation of Io plasma Torus Around Jupiter: Predictions for Lenghu Observatory	Tan Xiaoyi
17:00-17:15	Combination of Altimetry Crossovers & Doppler Observables for Callisto Geodesy	Desprats William
17:15-18:00	General Discussion – Lessons Learnt, Ke How the Book can Best Address Them	ey Open Science Questions,

#### Friday, June 07

	Subject	Contributor
Session 7 -	- From Planned Missions to Open Ques	tions & New Initiatives
09:00-09:20	Review of Open Science Questions	Titov Dimitri, Bolton Scott
09:20-09:40	Currently Planned Missions: Europa Clipper	Pappalardo Robert (online)
09:40-10:00	Currently Planned Missions: from Hisaki to Lapyuta	Go Murakami <i>(online)</i>

10:00-10:20	Earth-based Monitoring of the Jupiter System for the Next Decade	He Fei
10:50-11:10	Missions Under Study: Europa Lander	Bolton Scott, Hand Kevin <i>(online)</i>
11:10-11:30	Missions Under Study: Io mission(s)	Nimmo Francis, Bolton Scott, McKinnon William
11:30-12:30	Missions Under Study: TianWen-4	Miao Yuanming, Yao Zhonghua, Jing Quan
13:30-14:00	Summary & Discussion: Science Questi Future Missions to the Jupiter System	ons & Mission Drivers for
Session 8 – Wrap-up & Work Plan		
14:00-15:30	Discussion: from Workshop Lessons to E	Book Drafting



## SESSIONS' ABSTRACTS

#### Session 1 – Workshop Opening - Assembling the Puzzle of the Jupiter

System (Chair: Blanc Michel, Bolton Scott, Li Lei)

The purpose of this introductory session is to place the main objects of the workshop - the study of Galilean moons, from formation to habitability - in the broader context of a comprehensive understanding of the Jupiter System. It will first review the observational constraints and physical insight that are currently available on its formation. A short description of the system as a whole and of coupling processes between its objects will naturally lead to describing the overall structure and main goals of the workshop. Then the lessons learnt from the on-going Juno mission on Jupiter itself and its polar magnetosphere will be presented. Finally, more specialized talks will describe the elements of the system that will no longer be discussed in detail during the remainder of the workshop: Jupiter's atmosphere, rings, inner moons and irregular moons.

#### Session 2 - Internal Structure & Dynamics of the Galilean Satellites

(Chair: McKinnon William, Nimmo Francis)

This session will review the current knowledge of the internal structures & dynamics of the Galilean satellites, and how we know them based on past missions, theory, modeling and laboratory data. It will identify some of the future measurements needed to make progress and what new information they will provide.

Session 3 – Geology & Surface Properties of the Galilean Satellites (Chair: Ding Min, Prieto Ballesteros Olga, Tosi Federico)

This session is focused on summarizing our current understanding of the surfaces of Jupiter's icy Galilean satellites and the geological processes that shaped them. We highlight specific geological features, including morphologies and topography, suggesting their origin, and we emphasize surface composition in terms of endogenous and exogenous compounds with implications for the astrobiological potential. Finally, we put forward open questions that will likely need further future robotic exploration to be carried out after Europa Clipper and JUICE.

#### Session 4 – Tidal/Gravitational Interactions & Orbital Evolution (Chair: Lainey Valery, Van Hoolst Tim)

Our knowledge of tidal processes has significantly increased over the last decade, driven by the power of numerical models on the one hand, and recent observational constraints on the other hand. In the context of the Juice and Europa Clipper space missions, we need to take stock of the knowledge acquired to date, and the questions still unanswered that will guide future studies. This session will review the dissipative processes at play in the interior of Jupiter and its moons. The importance of the coupling between internal and orbital dynamics will be discussed, both for the short-term and long-term dynamics of the evolution of the Jovian system. Ground-based observation projects will also be presented, along with what we can expect from future space missions.

#### Session 5 – Jupiter-Moon-Magnetosphere Electrodynamic

#### Interactions (Chair: Kimura Tomoki, Li Lei)

Energy and mass transports in Jupiter's magnetospheric system are controlled by Jupiter's rapid rotation, strong magnetic field, and mass loading from Io's volcano. Io's volcanic gases (e.g., SO2) are dissociated and ionized by collision with the magnetospheric electrons and picked up by Jupiter's magnetosphere, followed by corotation with Jupiter.

The picked-up plasma feels centrifugal force moving it radially outward with the ambient magnetic field via e.g., the interchange instability. The outward transported plasma and magnetic field are pinched off and lost from the magnetosphere via the magnetic reconnection. Return plasma flow triggered by reconnection transports the remnant plasma radially inward experiencing some acceleration and heating process. The accelerated and heated plasmas finally reach the icy moons and irradiate their solid icy surface, driving the radiation chemistry of the surface material and forming their tenuous atmosphere.

Electromagnetic interaction, including the mass and energy transport, between the magnetosphere and icy moons are essential for understanding the surface and atmospheric environments of the icy moons, which are the keys to opening the door to understanding the icy moon's interior water ocean, which is potentially habitable for life.

In this session, we overview the energy and mass transports in Jupiter's magnetospheric system and the electromagnetic interaction between the magnetosphere and icy moons. We are going to summarize what has been unveiled for these essential processes and what should be unveiled to move further in understanding the potentially habitable interior ocean.



#### Session 6 - Origin & Early Evolution of the Jovian Satellites

(Chair: Hao Jihua, Ji Jianghui, Nimmo Francis)

This session will review current models and observational constraints on the origin and early evolution of the Jovian satellites. It will discuss future prospects from ground- and space-based measurements that will make it possible to better constrain the formation scenarios of Galilean moons.

#### Special Session - Early Career Scientists Contributions

(Chair: Hao Jihua, Li Lei)

This session will open the floor to PhD students and Early Career scientists working on different aspects of the Jupiter (and sometimes Saturn) System relevant to the workshop theme. Their presentations will address the science themes of several of the previous sessions. They will be invited to contribute to the different chapters of the ISSI book that will be the outcome of this workshop.

# Session 7 – From Planned Missions to Open Questions & New Initiatives (Chair: Blanc Michel, Titov Dimitri)

This session will review the key open scientific questions on Galilean moons identified during the workshop, based on the presentations and discussions at the different sessions. It will identify the questions which the missions currently in orbit (Juno) or on their way (JUICE, Europa Clipper) are planned to address, and the current plans for new missions beyond these ones. On the basis of this review of mission science plans, based on presentations by the mission leaders or their representatives, the workshop participants will discuss which science questions should and could be addressed in the next two decades or so by new mission concepts and Earth-based observations, and how international collaboration will enable an optimal scientific return from all future observations of the Jupiter System.

#### Session 8 – Wrap-up & Work Plan: from Workshop Lessons to Book Drafting (Chair: Blanc Michel)

This short but important final session will discuss the outline and list of chapters of the Space Science Series of ISSI Book, to be published by Springer, which will be the final outcome of this workshop. It will establish the list of lead authors for each chapter and the timeline for the writing of chapters and delivery of the book.

#### PRACTICAL INFORMATION

#### Venue

The workshop will be held in the Earth Hall (A0423), 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:





#### Accomodation

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 a 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 (京张铁路遺址公 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.



# PRACTICAL INFORMATION

#### Lunch

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

#### Coffee Break

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

at 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 but keep some cash handy just in case. You can find two ATMs 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 Electricity: 220 volts AC (RMB) (1 USD = approx. 7.2 RMB) (1 EUR = approx. 7.8 RMB)

#### **Emergency Contacts in China**

Ms. EN Lijuan +86-136 9912 1288

Ms. GARFAGNOLI Francesca +86-195 6873 9884



#### Dinner on June 4, 2024

Dinner offered by ISSI-BJ on Thursday, June 4, 2024 at 18:30.

Restaurant:	Address	:		
Amber Golden Ballroom, 3rd Floor	No.	25	Zhichun	Road,
of Park Plaza Beijing Science Park	Haidian	L	District,	Beijing
丽亭华苑酒店3楼金辉厅	北京市	海淀日	区知春路25号	

#### Excursions on June 5, 2024

In the afternoon of Wednesday, June 5, participants will be able to enjoy some free time, and go on one of these two excursions:

- Great Wall (350 yuan per person)

- Temple of Heaven (400 yuan per person)

On registration day, June 3, participants will be able to choose one of the two excursions and pay on the spot to the travel agent -only cash payements are accepted. When booking one of the excurions, you need to provide your name and passport number. The price includes entrance tickets, round-trip buses, and an English speaking guide. On Wedenesday, June 5, the bus will be attending the participants at 13:40 in the parking lot in front of the Plaza Hotel, and will leave at 13:45. Both excursions will end at 17:30.

## PARTICIPANTS

No.	Name	Affiliation		
COl	<b>NVENERS &amp; WORKSHO</b>	OP LEADERS		
1	Blanc Michel	Research Institute in Astrophysics and Planetology, France; National Space Science Center, Chinese Academy of Sciences, China		
2	Bolton Scott	Southwest Research Institute, USA		
3	Ding Min	Southern University of Science and Technology, China		
4	Hao Jihua	University of Science and Technology of China, China		
5	Ji Jianghui	Purple Mountain Observatory, Chinese Academy of Sciences, China		
6	Kimura Tomoki	Tokyo University of Science, Japan		
7	Lainey Valery	Institute for Celestial Mechanics and Computation of Ephemerides, France		
8	Li Lei	National Space Science Center, Chinese Academy of Sciences, China		
9	Nimmo Francis	University of California, Santa Cruz, USA		
10	Prieto Ballesteros Olga	National Institute of Aerospace Technology, Center for Astrobiology, Spain		
11	Tosi Federico	Institute of Space Astrophysics and Planetology, Italy		
12	Sotin Christophe	Laboratory of Planetology and Geosciences, France ( <i>online</i> )		
13	Van Hoolst Tim	Royal Observatory of Belgium, Belgium (online)		
IN PERSON				
14	Barriot Jean Pierre	Wuhan University, China		
15	Cao Xing	Wuhan University, China		
16	Charnoz Sebastien	Paris Institute of Earth Physics (IPGP), France		



17	Chen Zhuo	Tsinghua University, China
18	de Kleer Katherine	California Institute of Technology, USA
19	Desprats William	Astronomical Institute of the University of Bern, Switzerland
20	Fu Haobo	Peking University, China
21	Fujii Yuri	Kyoto University, Japan
22	Fuminori Tsuchiya	Tokohu University, Japan
23	Guo Linli	China Aereospace Science and Technology Corporation, China
24	Hartogh Paul	Max Planck Institute for Planetary Science, Germany
25	Hay Hamish	University of Oxford, UK
26	He Fei	Institute of Geology and Geophysics, Chinese Academy of Sciences, China
27	Hestroffer Daniel	Institute for Celestial Mechanics and Computation of Ephemerides, France
28	Huang Qian	Chengdu University of Technology, China
29	Jing Quan	National Space Science Center, Chinese Academy of Sciences, China
30	Kang Wanying	Massachusetts Institute of Technology, USA
31	Koga Ryoichi	Nagoya University, Japan
32	Lari Giacomo	University of Pisa, Italy
33	Li Nan	Thales (China) Enterprises Management Co., Ltd. China
34	Li Yimeng	Peking University, China
35	Lian Yuchen	Shanghai Astronomical Observatory, Chinese Academy of Sciences, China
36	Liu Can	University of Science and Technology of China, China

37	Liu Zhiyang	Research Institute in Astrophysics and Planetology, France
38	Mc Kinnon William	Washington University in St. Louis, USA
39	Miao Yuanming	China Academy of Space Technology, China
40	Mondal Javed Akhter	University of Science and Technology of China, China
41	Ni Binbin	Wuhan University, China
42	Mousis Olivier	Marseille Astrophysics Laboratory, France
43	Ogihara Masahiro	Shanghai Jiaotong University, China
44	Ormel Chris	Tsinghua University, China
45	Peng Qingyu	Jinan University, China
46	Rovira Navarro Marc	Technical University of Delft, Netherlands
47	Shi Xian	Shanghai Astronomical Observatory, Chinese Academy of Sciences, China
48	Sun Tianran	National Space Science Center, Chinese Academy of Sciences, China
49	Tan Xiaoyi	Institute of Geology and Geophysics, Chinese Academy of Sciences, China
50	Terquem Caroline	University of Oxford, UK
51	Tian Zhenliang	Southern University of Science and Technology, China
52	Titov Dimitri	University of Leiden, Netherlands; Sun Yat-sen University, China
53	Trinh Antony	Royal Observatory of Belgium, Belgium
54	Wang Yujie	Shanghai Astronomical Observatory, Chinese Academy of Sciences, China
55	Wang Yuxian	National Space Science Center, Chinese Academy of Sciences, China
56	Xu Weiming	University of Science and Technology of China, China
57	Yan Jianguo	Wuhan University, China



58	Yao Zhonghua	University of Hongkong, China
59	Ye Shengyi	Southern University of Science and Technology, China
60	Yin Zefan	Peking University, China
61	Zheng Ruobing	University of Science and Technology of China, China
62	Zhu Menghua	Macau University of Science and Technology, China
ON	LINE SPEAKERS	
63	Baby Namitha	German Aerospace Center, Germany
64	Dirkx Dominic	University of Technology of Delft, Netherlands
65	Ermakov Anton	Stanford University, USA
66	Finkel Pablo	National Institute of Aerospace Technology, Center for Astrobiology, Spain
67	Go Murakami	Japan Aerospace Exploration Agency, Japan
68	Hand Kevin	NASA Jet Propulsion Laboratory, USA
69	Hue Vincent	Marseille Astrophysics Laboratory, France
70	Pappalardo Robert	NASA Jet Propulsion Laboratory, USA
71	Rhoden Alyssa	Southwest Research Institute's Solar System Science & Exploration Division, USA
72	Stevenson David	California Institute of Technology, USA
73	Schenk Paul	Lunar and Planetary Institute, USA
74	Tobie Gabriel	Laboratory of Planetology and Geosciences, France
75	Vance Steve	NASA Jet Propulsion Laboratory, USA
76	Witasse Oliver	European Space Research and Technology Centre, Netherlands

Exploring the Jovian satellite system: from formation to habitability

# NOTES



Beijing, June 03-07, 2024

Exploring the Jovian satellite system: from formation to habitability



Beijing, June 03-07, 2024

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