



Joint Symposium: 32nd ISTS & 9th NSAT

ISTS : International Symposium on Space Technology and Science

NSAT : Nano-Satellite Symposium

Symposium Prospectus and Budget and Fiscal Plan

Date : 15 - 21, June (Sat – Fri), 2019

Symposium Venue : AOSSA, Happiring Hall (tentative)

Homepage : <http://www.ists.or.jp>



Organizing Committee for
the 32nd International Symposium on Space Technology and Science



The Japan Society for Aeronautical and Space Sciences

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1. Name

Japanese 第32回宇宙技術および科学の国際シンポジウム（略称：第32回 ISTS）
English 32nd International Symposium on Space Technology and Science, Fukui, 2019
(abbr. 32nd ISTS—Fukui, 2019)

2. Organizers

Organizing Committee for the 32nd ISTS—Fukui, 2019
The Japan Society for Aeronautical and Space Sciences

3. Co-organizer

9th Nano-Satellite Symposium Organizing Committee

4. Collaborator

Fukui Prefecture, Fukui City

5. Supporters

Office of National Space Policy, Cabinet Office; Ministry of Internal Affairs and Communications, Ministry of Education, Culture, Sports, Science and Technology; Ministry of Economy, Trade and Industry; Ministry of Land, Infrastructure, Transport and Tourism; Japan Aerospace Exploration Agency; National Institute of Information and Communications Technology; Space Activities Promotion Committee, Japan Business Federation (Nippon Keidanren); Japan National Tourism Organization (JNTO)

6. Sponsors

Japanese Rocket Society; The Society of Japanese Aerospace Companies; The Institute of Electronics, Information and Communication Engineers; The Japan Society of mechanical Engineers; The Society of Instrument and Control Engineers; The Japan Society of Microgravity Application; Japan Society of Aerospace and Environmental Medicine; The Society of Eco-Engineering; Japanese Society for Biological Sciences in Space; The Robotics Society of Japan; Society for Promotion of Space Science; The American Institute of Aeronautics and Astronautics (AIAA); The Japanese Society for Planetary Sciences; Society of Geomagnetism and Earth, Planetary and Space Sciences; Space Solar Power Systems Society

7. International Collaborative Association (tentative)

Committee on Space Research (COSPAR)

8. Date

June 15th (Sat) – June 21st (Fri), 2019

9. Venues

AOSSA

1-4-1 Teyose, Fukui city, Fukui Prefecture 910-0858 Japan

TEL: +81-776-20-6101 <http://www.aossa.jp/access/> (Japanese Only)

Happiring Hall (tentative)

1-2-1 Chuo, Fukui city, Fukui Prefecture 910-0006 Japan

TEL : +81-776-20-2901 <http://www.happiring.com/english/>

1 0. Aims

The aim of ISTS is to contribute to (1) developing knowledge and technology in space science and (2) establishing a network among researchers, engineers and others in the fields of Astronautics, Space Science, Space Medicine and Space Law by providing with opportunities to discuss the current issues and research. It is also an international Symposium organized in Japan in order to foster young researchers, engineers and students by encouraging them to present papers and participate in Symposium.

1 1. Background

Since its first symposium in 1959, ISTS has been taken place almost every two years and nowadays has become the largest international in space technology and science. The 27th ISTS held in Tsukuba in 2009 celebrated its 50th anniversary. For enabling researchers to attend as many scientific Symposium as possible, it has changed the Symposium year from even year to odd year since 2009 (see Table 1 and 2 and Figure 1). In addition to its original aims, promoting to the development of knowledge and technology in space science and fostering young researchers and students, ISTS endeavors to promote science education to youth and adults within the general public. For example, it actively organizes one-day schools and space exhibitions. For this reason, there are constant requests to hold a Symposium from local municipalities. Since the 22nd symposium in Morioka, Iwate prefecture, the venues have been continuously in the regions.

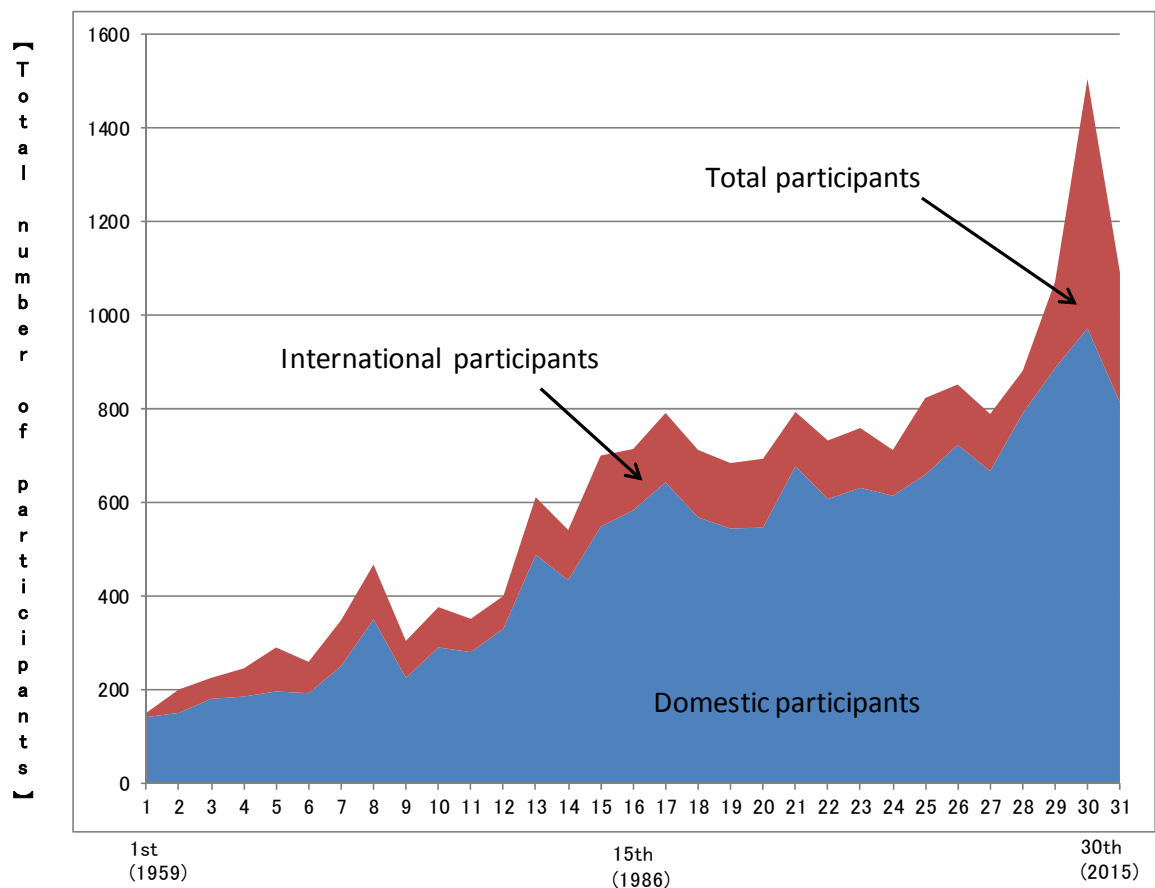
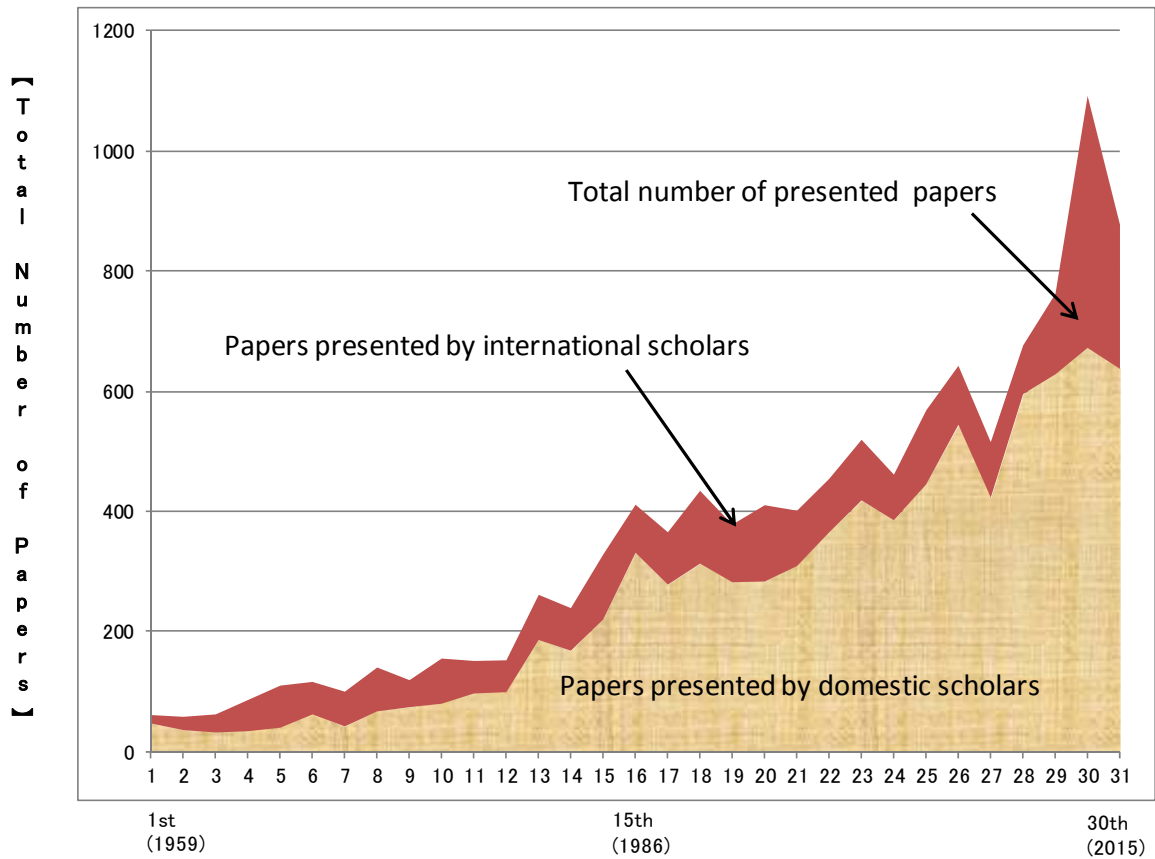
Table 1 Symposium Participants and Papers Presented in the 31st ISTS (31 countries represented)

Name of Country	Participants	Papers	Name of Country	Participants	Papers
USA	54	41	Brazil	1	2
Germany	51	51	Canada	1	2
China	41	31	Turkey	1	2
France	22	18	Belgium	1	1
South Korea	22	15	Egypt	1	1
Taiwan	13	10	Mexico	1	1
Australia	11	12	Nepal	1	1
England	10	15	Norway	1	1
Italy	8	7	Serbia	1	1
Netherland	7	4	Sweden	1	1
Russia	6	5	Denmark	1	
Spain	5	7	Malaysia	1	
Reunion	5	3	Thailand	1	
Singapore	4	2	International Total	278	240
Philippines	2	3	Japan	813	637
Hong Kong	2	2	TOTAL	1,091	877
India	2	1			

Table 2: Papers Presented and Conference Participants (from the 1st to 31st conferences)

	Date	Papers presented		Participants		Number of Countries Represented	Conference Venue
		Domestic	International	Domestic	international		
1	1959 5/25~5/28	61		150		4	Gakushi Kaikan, Tokyo
		47	14	141	9		
2	1960 5/24~28	58		200		6	Gakushi Kaikan, Tokyo
		36	22	150	50		
3	1961 8/28~9/1	62		225		12	Japan Center for Cities, Tokyo
		32	30	180	45		
4	1962 8/27~31	86		245		8	Japan Center for Cities, Tokyo
		34	52	185	60		
5	1963 9/2~7	110		290		12	Japan Center for Cities, Tokyo
		40	70	196	94		
6	1965 11/29~12/4	116		259		8	Japan Center for Cities, Tokyo
		62	54	192	67		
7	1967 5/15~20	100		346		11	Japan Center for Cities, Tokyo
		42	58	250	98		
8	1969 8/25~30	140		467		16	Japan Center for Cities, Tokyo
		67	73	350	117		
9	1971 5/17~22	119		304		11	Japan Center for Cities, Tokyo
		74	45	225	79		
10	1973 9/3~8	155		376		14	Japan Center for Cities, Tokyo
		80	75	290	86		
11	1975 6/30~7/5	151		351		13	Japan Center for Cities, Tokyo
		97	54	280	71		
12	1977 5/16~21	152		400		14	Japan Center for Cities, Tokyo
		99	53	330	70		
13	1982 6/27~7/2	261		611		14	Japan Center for Cities, Tokyo
		186	75	488	123		
14	1984 5/27~6/1	239		541		18	Japan Center for Cities, Tokyo
		168	71	434	107		
15	1986 5/18~23	328		700		18	Japan Center for Cities, Tokyo
		220	108	548	152		
16	1988 5/22~27	411		714		17	Hokkaido University, Sapporo
		331	80	583	131		
17	1990 5/20~25	365		791		19	Grand Prince Hotel Takanawa, Tokyo
		278	87	643	148		
18	1992 5/17~23	434		712		15	Hotel Shiroyama Kagoshima
		313	121	568	144		
19	1994 5/15~24	378		684		18	Yokohama Prince Hotel
		282	96	544	140		
20	1996 5/19~25	410		693		22	Nagaragawa Convention Center, Gifu
		283	127	546	147		
21	1998 5/24~6/1	401		793		15	Sonic City Hall, Omiya
		309	92	677	116		
22	2000 5/28~6/4	454		732		18	Hotel Metropolitan Morioka
		365	89	607	125		
23	2002 5/26~6/2	519		759		15	Shimane Civic Center
		418	101	631	128		
24	2004 5/30~6/6	461		712		19	World Convention Center Summit, Miyazaki
		386	75	614	98		
25	2006 6/4~6/11	568		823		18	Kanazawa Theatre
		445	123	659	164		
26	2008 6/1~6/8	642		852		26	Act City Hamamatsu
		544	98	723	129		
27	2009 7/5~7/12	515		789		25	International Congress Center, Tsukuba
		423	92	667	122		
28	2011 6/5~6/12	676		881		19	Okinawa Convention Center, Ginowan
		595	81	790	91		
29	2013 6/2~6/9	762		1,072		32	Nagoya Congress Center
		628	134	887	185		
30	2015 7/4~7/10	1,091		1,505		39	Kobe Convention Center
		672	419	972	533		
31	2017 6/3~6/9	877		1,091		31	Himegin Hall
		637	240	813	278		

Figure 1: Transition of the Numbers of Papers and Participants



1.2. Summary of Symposium

Main Theme: “ Fly like a Phoenix to Space ”

(1) Special Sessions

Special Sessions after the Opening Ceremony (June 17th)

- Special Program 1 : “World Space Activities”
- Special Program 2 : “Summary of the 2nd International Space Exploration Forum (ISEF2), 2018”

Organized Sessions (Tentative Plans)

- OS-1: Launch Vehicles Today and Tomorrow from Nano to Heavy
- OS-2: Active Private Sectors in Space Development
- OS-3: Big Discoveries by Small Bodies Exploration
- OS-4: Young-ISEF Follow-on

(2) Technical Sessions

a)Chemical Propulsion and Air-breathing Engines: Solid, Liquid, Hybrid Rockets, Air-breathing Engines, Reusable Rockets

b)Electric and Advanced Propulsion: Electric Propulsion, Laser/Microwave Propulsion, Solar-thermal/Sailing Propulsion, Electrodynamic Tether, Nuclear Propulsion, Magnetohydrodynamics, Microthrusters, Thruster Plume and Spacecraft Interactions, Plasma Technologies, Non-propulsive Applications, Powered Flight Mission

c)Materials and Structures: Structures of Spacecrafts and Space Vehicles, Structural Dynamics and Control, Structural Analysis, Tests and Nondestructive Inspections, Material Characterizations, New Materials, Smart materials and structures, Composite materials, Space Environment Interactions, Composite Materials

d)Astrodynamics, Navigation Guidance and Control: Joint session with 26th ISSFD: Attitude Dynamics, Attitude Determination & Control, Attitude & Payload Sensor Calibration, Orbital Dynamics, Orbit Determination & Control, Trajectory Design and Optimization, Mission Design, Spacecraft Navigation, Entry/Landing/Ascent Guidance, Navigation & Control, Orbital Rendezvous & Proximity Operations, Formation Flying & Satellite Constellations, Space Robotics & Rover, Spacecraft Autonomy & Intelligence, Guidance, Navigation & Control Components, Recent Experiences & Lessons Learned

e)Fluid Dynamics and Aerothermodynamics: High Enthalpy Flow, Atmospheric-entry, Aero-thermodynamics, Aerodynamic Design, Rarefied Gas, Radiation, Thermal Protection System, Plasma, Magneto-gasdynamics, Low Speed Aerodynamics, Aerodynamics at Takeoff and Landing, Supersonic and Hypersonic Flow, Gas Dynamics, Wind Tunnel

f)Small Satellite : Joint session with 9th NSAT: Innovative Small Satellite Mission, Small Satellite Utilization, Small Satellite Design and Development, Advanced Small Satellite Technology, Small Satellite Lessons Learned, Small Satellite Launch

g)Space Transportation: Reusable Launch Vehicles (RLVs), Expendable Launch Vehicles (ELVs), Reentry Vehicles, Orbital Transfer Vehicles (OTVs), Human Space Transportation, Sub-orbital Space Transportation

h)Microgravity Sciences and Technology: Microgravity Science, Physical Science, Fluid Physics, Combustion Science, Fundamental Physics, Material Science, Microgravity Experiments, Facilities for Microgravity Experiments, Opportunities for Microgravity Experiments, Operation and Utilization of the ISS

i)Thermal Control: Thermal and Environmental Control, System and Instrument Thermal Design, Thermal Management, Heat Transfer, Thermophysical Property, Thermal Testing and Analysis, Passive and Active Thermal Control, Technologies, Two-phase Technology, Advanced Thermal Control Materials

j) Satellite Communications, Broadcasting and Navigation: Satellite System Architectures, Networks and Protocols, Experimental Projects and Results, Subsystems, Components and Devices, Propagation, Regulation, Financing and Marketing, Space Navigation Systems, Fixed and Broadcast Satellite Systems, Mobile Satellite Systems

k) Science and Technology for Human and Robotic Space Exploration: Scientific Objectives, Results, and Instruments for Exploration of the Moon, Planets and Solar System Small Bodies; Mission Analysis, Mission Design and Key Technologies of Human and Robotic Explorations; Commercial and Private Initiatives of Space Explorations; Roadmap and Strategies for National and International Space Exploration Programs

m) Sounding Rocket, Balloon and Flight Experiment using Small Flight Vehicle: Promotion of Sounding Rocket or Balloon Programs, Suborbitals, Scientific Results, Engineering Demonstration, Range Facility & Operation, Instrumentation, Upper Atmosphere, Ionosphere, Flight Experiment using Small Flight Vehicle, Parabolic Flights Test

n) Earth Observation: Earth Observation, Earth Environment, Remote Sensing, Remote Sensing Sensors, Application of Remote Sensing, Data and Signal Processing, Data Analysis, Ground System, Data Assimilation, Global Change Prediction, Earth System Science, Disaster Monitoring, Geographic Information Systems

p) Space Life Science: Space Medicine and Physiology, Countermeasures, Metabolism, Neurophysiology, Environmental Medicine, Behavior and Performance, Psychosocial Issue, Mental Health Care, Remote Medical Care and Tele-medicine, Biomedical Technology, Space Radiation (Measurement, Biological effect, Protection), Space Biology, Gravitational, Physiology and Biology, Artificial Gravity, Analogue Environments and Simulations, Public Outreach and Education in Life Science, Space Life Science for Human Exploration, Space Habitat

q) Space Power Systems: Solar Power Satellite, Solar Cells, Power Resources, Power Management and Distribution, Power Storage System, Wireless Power Transmission

r) Space Environment and Debris: Space Environment, Space Debris, Meteoroid, Space Situational Awareness, Debris Observation and Measurement, Debris Population and Evolution Model, Debris Risk Assessment and Management, Orbital Dynamics on Debris, Reentry Safety, Hypervelocity Impact, Protection Design, Debris Mitigation, Debris Removal, Debris Environment Remediation, Space Weather, Space Weather Forecast, Spacecraft Charging, Environment Model, Solar and Geomagnetic Activity, Environment Data Management, International Cooperation on Debris and Space Environment, Near Earth Objects, Space Traffic Management

t) Systems Engineering and Information Technology: Systems Engineering – Methodologies, Systems Engineering – System Design, Systems Engineering – Process and Tools, Model Based Systems Engineering, Verification and Validation, IT Application for Systems Engineering, Project Management and Systems Engineering, Risk Management, Software Engineering, Requirement Engineering, Knowledge Management

u) Space Education and Outreach for the Benefit of All People: Space Education, Public Outreach, Public Relations, Capacity Building, Citizen Science, International Collaborative Projects, Students Activity, Space Tourism, Effect of Space Activities on Culture and Humanity, Journalism, Art, Space Events, NanoSat and CanSat for Education, Model Rocket, Amateur Radio Satellite

v) Space Law, Policy and International Cooperation: International Law, Domestic Laws & Regulations, Space Policy, Commercialization, Property Right, Exploitation of Resources, Environmental Protection, Space Debris, Sustainable Use, International and National Security, Disarmament & Arms Control, International Cooperation (Bilateral, Multilateral, Regional and Global)

w) Safety and Mission Assurance: Safety, Reliability, Quality, Software Product Assurance, EEE & Mechanical Parts, Standardization

- (3) Exhibitions
- (4) Technical Excursion
- (5) Other (social) Events

1.3. Schedule (draft)

2019	AM	PM	Others
15 June (Sat)			International Space Exhibition
16 June (Sun)			International Space Exhibition
17 June (Mon)	Opening Ceremony / Special Sessions		Welcome Reception International Space Exhibition
18 June (Tue)	Sessions	Sessions	International Space Exhibition Technical Excursion
19 June (Wed)	Sessions	Sessions	International Space Exhibition Poster Sessions
20 June (Thu)	Sessions	Sessions	Technical Excursion
21 June (Fri)	Sessions	Sessions 10 th Spacecraft Control System Design Contest	Commendation & Closing Ceremony

14. Revenue and Expense Plan (1 March 2018 - 29 February 2020)

(JPY)

Recurring Revenue		
Category	Subcategory	Total
Investment income		(12,000)
	Interests	12,000
Contribution		(11,000,000)
	Contribution	11,000,000
Business income		(35,719,000)
	Lectures	(35,719,000)
Subsidy		(0)
	Fiscal subsidy	0
	Local government subsidy	0
Burden charge		(4,000,000)
	Burden charge	4,000,000
Miscellaneous		(0)
	Interests	0
Recurring revenue total		50,731,000

Recurring Expense		
Category	Subcategory	Total
Operating expense		(50,731,000)
	Salaries	0
	Temporary employment wages	700,000
	Severance packages	0
	Legal welfare	0
	Welfare	0
	Conference	0
	Travel	0
	Communication and transportation	0
	Office supplies	0
	Homepages	0
	Printing and bookbinding	0
	Lease/Rent	2,950,000
	Utility	0
	Social expenses	0
	Insurance	0
	Commission	0
	Award	100,000
	TAX and dues	0
	Grant	0
Outsourcing expense	46,981,000	
Miscellaneous	0	
Recurring expense total		50,731,000
Profit/Loss		0

1 5. Committee and Membership

Seiya Ueno, the General Chairperson of the 31st ISTS, recommended Yasuhiro MORITA, Professor at JAXA, as the 32nd ISTS General Chair. This was approved by the governing board of the Japan Society for Aeronautical and Space Sciences. Professor Morita appointed the organizing committee and chairpersons as follows and held its first conference on 30 Oct. 2017 as the starting of the preparation.

32nd ISTS Organizing Committee Members

【Consultant】	【General Chairperson】 <u>Yasuhiro MORITA</u>	【Advisor】
【Honorary Advisor】		【Auditor】
【Deputy General Chairperson】		【Secretariat】
	【Executive Committee】	【Director of JSASS Board】 <u>Shinichi NAKASUKA</u>
	【Program Committee (domestic/international)】 <u>Kojiro SUZUKI</u>	
	└─ 【Program subcommittee】	
【Finance Committee】		<u>Kiyoshi BABA</u>
【Education and Outreach Committee】		<u>Nozomu SAKURABA</u>
【Exhibition Committee】		<u>Yoshikazu SHOJI</u>
【Publications Committee】		<u>Susumu HARA</u>
【Venue Relations Committee】		<u>Nobuhiro ABE</u>
【General Affairs Committee】		<u>Shigeru HAMAMOTO</u>
【Outsourcing Management Committee】		<u>Satoshi NONAKA</u>

32nd ISTS Secretariat

Address: Daido Seimei Kasumigaseki Bldg.
1-4-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-0013 Japan
TEL: (81)-3-3508-1256 FAX : (81)-3-3502-1888
E-mail: secretariat@ists.or.jp
Head: Mai Ootomo

32nd ISTS Organizing Committee Members' List

General Chairperson	Yasuhiro MORITA	JAXA
Consultant	Shigefumi SAITO	11th General Chairperson
	Shigeo KOBAYASHI	16th General Chairperson
	Tomonao HAYASHI	18th General Chairperson
	Ryojiro AKIBA	19th General Chairperson
	Tomifumi GODAI	20th General Chairperson
	Shigeaki NOMURA	21st General Chairperson
	Hiroki MATSUO	22nd General Chairperson
	Hirotooshi KUBOTA	23rd General Chairperson
	Susumu TODA	24th General Chairperson
	Yasunori MATOGAWA	25th General Chairperson
	Michikata KONO	26th General Chairperson
	Junjiro ONODA	27th General Chairperson
	Yoshihiro ARAKAWA	28th General Chairperson
	Masanori HOMMA	29th General Chairperson
	Kozo FUJII	30th General Chairperson
	Seiya UENO	31st General Chairperson
Honorary Advisor	Issei NISHIKAWA	Governor of Fukui Prefecture
	Shinichi HIGASHIMURA	Mayor of Fukui City
Advisor	Hiroshi YAMAKAWA	JAXA
	Ryutaro KAWAMURA	NTT Network Innovation Laboratories
	Toru KURODA	Science & Technology Research Laboratories
		Japan Broadcasting Corporation
	Yasuyuki NAKAJIMA	KDDI Research, Inc.
Deputy General Chairperson	Yoshifumi INATANI	JAXA
	Kiyoshi HIGUCHI	JAXA
Auditor	Hidetsugu UKUDA	MHI
	Hiroshi MATSUDA	NEC

Program Committee

Chairperson of the Committee	Kojiro SUZUKI	The University of Tokyo
Co-Chairperson	Yasuhiro KAWAKATSU	JAXA
Co-Chairperson	Wataru SARAЕ	JAXA
Co-Chairperson	Shinji NAKAYA	The University of Tokyo
	Hiroyuki KOIZUMI	The University of Tokyo
	Nobutada SAKO	CANON ELECTRONICS
	Masazumi MIYAKE	JAXA
	Yasuyuki MIYAZAKI	Nihon University

Finance Committee

Chairperson of the Committee	Kiyoshi BABA	IHI Aerospace
Co-Chairperson	Mihoko FUKUNAGA	IHI Aerospace
	Hidetsugu UKUDA	MHI
	Hiroki SATO	Fujitsu
	Koji TAKAO	IHI
	Shusaku TANAKA	MELCO
	Hiroshi MATSUDA	NEC
	Takefumi WAKAMATSU	JAXA

Education and Outreach Committee

Chairperson of the Committee	Nozomu SAKURABA	JAXA
Co-Chairperson	Kaori SASAKI	JAXA
	Nobuhiro ABE	Fukui Prefecture
	Kazue TOMINAGA	NPO Association of Space Advisers
	Norio MINATOMICHI	Fukui City
	Hitoshi YAMAOKA	National Astronomical Observatory of Japan

Exhibition Committee

Chairperson of the Committee	Yoshikazu SHOJI	JAXA
Co-Chairperson	Seiji OHTSUKA	JAXA
	Nobuhiro ABE	Fukui Prefecture
	Shuuhei HARADA	JAXA
	Norio MINATOMICHI	Fukui City

Publications Committee

Chairperson of the Committee	Susumu HARA	Nagoya University
Co-Chairperson	Hirohisa KOJIMA	Tokyo Metropolitan University
	Kosei ISHIMURA	Waseda University
	Yoshinori TAKAO	Yokohama National University
	Yoshihisa TAKAYAMA	Tokai University
	Atsushi MATSUDA	Meijo University
	Yusuke MARU	JAXA

Venue Relations Committee

Chairperson of the Committee	Nobuhiro ABE	Fukui Prefecture
Co-Chairperson	Norio MINATOMICHI	Fukui City
	Susumu YONEZAWA	University of Fukui
	Tadasu NAKAMURA	Fukui Prefectural University
	Tomoyuki NAKAJO	Fukui University of Technology

General Affairs Committee

Chairperson of the Committee	Shigeru HAMAMOTO	JAXA
Co-Chairperson	Satoshi NONAKA	JAXA
Co-Chairperson	Toshiyuki SUZUKI	JAXA
	Takao AKUTSU	JAXA
	Shunsuke SATO	JAXA
	Hiroyuki NISHIDA	Tokyo Univ. of Agriculture and Technology
	Takanori HAGA	JAXA

Outsourcing Management Committee

Chairperson of the Committee	Satoshi NONAKA	JAXA
Co-Chairperson	Toshiyuki SUZUKI	JAXA
	Jiro KASAHARA	Nagoya University
	Shinichi NAKASUKA	The University of Tokyo
	Takehiro HIMENO	The University of Tokyo
	Takayuki YAMAMOTO	JAXA

32nd ISTS Program Subcommittee Members' List

a) Session (Chemical Propulsion and Air-breathing Engines)

Chairperson of the Committee	Kenichi TAKAHASHI	Nihon University
Co-Chairperson	Osamu IMAMURA	Nihon University
	Kazuki SAKAKI	JAXA
	Yu DAIMON	JAXA
	Daisuke NAKATA	Muroran Institute of Technology
	Ken MATSUOKA	Nagoya University
	Hiroki MATSUNAGA	Fukuoka University
	Kengo YAMAMOTO	IHI Aerospace
	Justin HARDI	DLR
	Filippo MAGGI	Politecnico di Milano

b) Session (Electric and Advanced Propulsion)

Chairperson of the Committee	Yoshinori NAKAYAMA	National Defense Academy
Co-Chairperson	Akira KAKAMI	University of Miyazaki
	Akira IWAKAWA	Nagoya University
	Hiroshi KATSURAYAMA	Yamaguchi University
	Kenichi KUBOTA	JAXA
	Yoshinori TAKAO	Yokohama National University
	Hiroyuki NISHIDA	Tokyo Univ. of Agriculture and Technology
	Hiroki WATANABE	Tokyo Metropolitan University
	Wonho CHOE	KAIST
	Carsten SCHARLEMANN	Fachhochschule Wiener Neustadt
	Tony SCHÖNHERR	ESA/ESTEC
	Guangqing XIA	Dalian University of Technology

c) Session (Materials and Structures)

Chairperson of the Committee	Jun KOYANAGI	Tokyo University of Science
Co-Chairperson	Hiroaki TANAKA	National Defense Academy
	Takeshi AKITA	Chiba Institute of Technology
	Atsuhiko SENBA	Meijo University
	Shin-ichi TAKEDA	JAXA
	Ryousuke MATSUZAKI	Tokyo University of Science
	Akinori YOSHIMURA	Nagoya University

d) Session (Astrodynamics, Navigation, Guidance and Control)

Chairperson of the Committee	Takehiro HIGUCHI	Yokohama National University
Co-Chairperson	Mai BANDO	Kyushu University
	Takanori IWATA	JAXA
	Hirohisa KOJIMA	Tokyo Metropolitan University
	Takeya SHIMA	MELCO
	Katsuhiko YAMADA	Osaka University
	Hyochoong BANG	KAIST

e) Session (Fluid Dynamics and Aero-themodynamics)

Chairperson of the Committee	Hiroyuki NISHIDA	Tokyo Univ. of Agriculture and Technology
Co-Chairperson	Keiichi KITAMURA	Yokohama National University
	Hirohisa OTSU	Ryukoku University
	Naofumi OHNISHI	Tohoku University
	Hiroshi KATSURAYAMA	Yamaguchi University
	Katsuyoshi FUKIBA	Shizuoka University
	Atsushi MATSUDA	Meijo University
	Takashi MATSUNO	Tottori University
	Yusuke MARU	JAXA

f) Session (Small Satellite) Joint Session with NSAT

Chairperson of the Committee	Tomohiro ISHIKAWA	Tokyo Metropolitan College of Industrial Technology
Co-Chairperson	Yuji SAKAMOTO	Tohoku University
	Keiichi OKUYAMA	Kyushu Institute of Technology
	Ryouichi SEKITA	Fukuyama University
	Masanori NISHIO	Aichi University of Technology
	Seisuke FUKUDA	JAXA
	Saburo MATSUNAGA	Tokyo Institute of Technology
	Norihide MIYAMURA	Meisei University

g) Session (Space Transportation)

Chairperson of the Committee	Wataru SARAÉ	JAXA
Co-Chairperson	Takehiro HIMENO	The University of Tokyo
	Hiroshi IKAIDA	JAXA
	Koji KANETAKE	MHI
	Koki KITAGAWA	JAXA

Kazuhide MIZOBATA	Muroran Institute of Technology
Atsushi MURAKAMI	IHI Aerospace

h) Session (Microgravity Science and Technology)

Chairperson of the Committee	Satoshi MATSUMOTO	JAXA
Co-Chairperson	Takehiko ISHIKAWA	JAXA
	Satoshi ADACHI	JAXA
	Osamu KAWANAMI	University of Hyogo
	Masao KIKUCHI	JAXA
	Masato SAKURAI	JAXA
	Taishi YANO	Yokohama National University
	Ranga NARAYANAN	University of Florida

i) Session (Thermal Control)

Chairperson of the Committee	Hosei NAGANO	Nagoya University
Co-Chairperson	Hiroki NAGAI	Tohoku University
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	Hiroyuki SUGITA	JAXA

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