

**AP-RASC'10** 



### Second Call for Papers

### 2010 Asia-Pacific Radio Science Conference

**Toyama International Conference Center** Toyama, Japan September 22-26, 2010

#### **GENERAL INFORMATION**

The "2010 Asia-Pacific Radio Science Conference" (AP-RASC'10) will be held at Toyama International Conference Center, Toyama, Japan on September 22-26, 2010.

The AP-RASC is the Asia-Pacific regional URSI conference held between the URSI General Assemblies. The objective of the AP-RASC is to review current research trends, present new discoveries, and make plans for future research and special projects in all areas of radio science, especially where international cooperation is desirable, and a particular emphasis is placed on promoting various research activities in the Asia-Pacific area. The AP-RASC was first held in Tokyo, Japan in August 2001 and subsequently held in Qingdao, China in August 2004. The AP-RASC'10 in Toyama, Japan will be the third AP-RASC.

Scientific sessions composed of oral and poster papers will be organized at AP-RASC'10 covering all scientific activities by the URSI Commissions A-K:

- A: Electromagnetic metrology
- B: Fields and waves, electromagnetic theory and applications
- C: Radiocommunication systems and signal processing
- D: Electronics and photonics
- E: Electromagnetic environment and interference
- F: Wave propagation and remote sensing
- G: Ionospheric radio and propagation
- H: Waves in plasmas
- J: Radio astronomy
- K: Electromagnetics in biology and medicine

### **SPONSORSHIPS**

- This Conference is sponsored by:
  - International Union of Radio Science (URSI) The Institute of Electronics, Information and Communication Engineers (IEICE)

In cooperation with:

Association for Promotion of Electrical, Electronic and Information Engineering

Science Council of Japan

The Institute of Electrical Engineers of Japan (IEEJ)

Toyama City Toyama Prefectural University **Toyama Prefecture** University of Toyama

#### **LOCATION**

Toyama Prefecture is located roughly equidistant from the three metropolitan centers of Japan: Tokyo, Osaka, and Nagoya. In addition to domestic flights from Tokyo and Sapporo, international service from major cities in the Japan Sea region such as Seoul, Vladivostok, Dalian, and Shanghai is also provided to reach Toyama. URL: http://www.pref.toyama.jp/english/

#### Venue

Toyama International Conference Center 1-2 Ohtemachi, Toyama 930-0084, Japan Phone: +81-76-424-5931 / Fax: +81-76-493-7170 URL: http://www.ticc.co.jp/english/

#### **CONFERENCE SCHEDULE**

September		
22 (Wed):	Registration, SPC Session, Welcome	
	Reception	
23 (Thu):	Opening Ceremony, Oral Sessions, SPC	
	Reception	
	(SPC: Student Paper Competition)	
24 (Fri):	General Lecture 1, Oral Sessions,	
	Banquet	
25 (Sat):	General Lecture 2, Oral Sessions, Poster	
	Sessions, YSA Reception	
	(YSA: Young Scientist Award)	
26 (Sun):	Oral Sessions	

#### **IMPORTANT DATES**

- Abstract Submission Deadline: March 31, 2010
- Acceptance Notification: May 31, 2010

All authors of both invited and contributed papers are requested to submit one-page abstracts in an electronic form via the conference website. The details on paper submission are available at the following website:

http://www.ap-rasc10.jp/

### YOUNG SCIENTIST PROGRAMS

As in the URSI General Assemblies, the following two programs are planned for young scientists:

- Student Paper Competition (SPC)

- Young Scientist Award (YSA)

For details on the Programs and Application Guidelines, please visit the conference website:

http://www.ap-rasc10.jp/

### SPECIAL ISSUE

The AP-RASC'10 Special Issue is planned to be published in "RADIO SCIENCE" in 2011. Paper submission is subject to invitation by the Guest Editor:

Professor K. Kobayashi

AP-RASC'10 Conference Chair Chuo University

Tokyo, Japan

### **REGISTRATION FEES**

	Regular	Student
May 31-July 15, 2010	¥42,000	¥20,000
July 16-September 3, 2010	¥47,000	¥25,000
September 22-26, 2010	¥52,000	¥30,000

### SCIENTIFIC SESSIONS

Papers will be presented either in oral sessions or in poster sessions. Most sessions consist of invited and contributed papers. For accepted papers, a final decision on the style of presentation (oral, poster) will be made by the Session Conveners and the Program Committee. Session Codes, Session Titles, Keywords, and Session Conveners are listed below. The Session Code consists of the code of the URSI Commission (A-K) responsible for the session, followed by the code(s) of the other URSI Commission(s) organizing jointly the session and a serial number to identify the session.

### **Commission A: Electromagnetic Metrology**

A1: Calibration and dissemination in

electromagnetic metrology (ATF2010 joint session)

*Keywords*: Calibration, Traceability, Dissemination of time and frequency standards, Antenna Measurement, Electronics parameters, Electromagnetic properties of materials (Y. Koyama (Japan) and P. Banerjee (India))

**A2: Microwave frequency standards** (ATF2010 joint session)

*Keywords*: Cs standard, Rb clock, H maser, Sapphire oscillator, Chip scale atomic clock (T. Morikawa (Japan) and T. Y. Kwon (South Korea))

A3: Optical frequency standards (ATF2010 joint session)

*Keywords*: Optical lattice clock, Single ion trap, Optical cavity

(H. Katori (Japan) and K. L. Gao (China (CIE)))

- AB: Electromagnetic measurement and standards Keywords: RF Calorimeter, Precision airline and waveguide standards, RF attenuation standards, RF noise sources, RF standard antennas, RF measurement standards, RF power standards, RF impedance standards, Field strength standards, Antenna characteristics standards, RF measurement technology (K. Shimaoka (Japan) and J. H. Kim (South Korea))
- **AD: Optical frequency measurement** (ATF2010 joint session)

*Keywords*: Optical frequency comb, frequency-stabilized laser, optical frequency measurement, optical frequency synthesizer, THz frequency comb, UV frequency comb (M. Kajita and F.-L. Hong (Japan))

**AFG: Time and frequency transfer** (ATF2010 joint session)

*Keywords*: Two Way Satellite, GPS/GNSS, Carrier phase, Common-view, All-in-view, Optical fiber link

(M. Imae (Japan) and B. Warrington (Australia))

### **Commission B: Fields and Waves,**

### **Electromagnetic Theory and Applications**

### **B1: Electromagnetic theory**

*Keywords*: General electromagnetics, Mathematical modeling of nonlinear phenomena, Electromagnetics in micro-and nano-technologies (Yu. V. Shestopalov (Sweden) and A. Komiyama (Japan))

### **B2:** Guided waves

*Keywords*: Planar waveguides, Slotted antennas, Printed circuits, Electromagnetic band-gap structures

(S. Kahng (South Korea) and M. Tsuji (Japan))

### **B3: Intelligent antennas**

*Keywords*: Small antennas, Smart antennas, Dielectric resonator antennas, Adaptive techniques, Printed antennas (B. K. Lau (Sweden) and K. Ogawa (Japan))

### B4: Media effects in electromagnetics

*Keywords*: Metamaterials, Chiral media, Complex media, Material and media estimations (L.-W. Li (Singapore) and M. Tanaka (Japan))

### **B5: Scattering and diffraction**

*Keywords*: High frequency techniques, Forward and inverse scattering, Hybrid techniques (T. Ishihara and K. Tanaka (Japan))

### **BCK: Body area networks**

*Keywords*: Body-centric wireless communications, Body area network (BAN) systems, Indoor security systems, Wearable antennas, Implantable antennas, Medical monitoring (T. Uno and J. Wang (Japan))

### **BEFK:** Computational techniques and EM field simulator

*Keywords*: FDTD simulations, Multipole expansions, Finite element methods, Genetic algorithm, Iterative techniques (W. C. Chew (China (CIE)) and S. Ohnuki (Japan))

### Commission C: Radiocommunication Systems and Signal Processing

# CBDEFK1: Radio technology for social safety and security

*Keywords*: Social security, Information security, Secret key, Direction of arrival, Radio encryption (T. Ohira and S. Aikawa (Japan))

### CBDEFK2: Standardization activities in radio science

*Keywords*: IEEE 802.11ac, multiuser MIMO, Gbps, WiFi (Y. Takatori (Japan) and M. Cheong (South

(Y. Takatori (Japan) and M. Cheong (South Korea))

### **CBDF:** Green radio technologies

*Keywords*: Low power consumption, Integrated circuits, Power control (K. Okada and R.Fujimoto (Japan))

**CBDFK: Novel radio communication systems** *Keywords*: OFDM, PAPR, Power Amplifier, Highly-Efficient Modulation/Demodulation schemes

### (Y. Suzuki (Japan) and G. Dietl (Germany))

**CBF1: Cognitive and software defined radio systems** *Keywords*: Cognitive radio, Software defined radio, Spectrum sensing, Reconfigurable circuit (S. Hara (Japan) and K. Lee (South Korea))

CBF2: Radio signal processing toward Shannon limits

*Keywords*: Turbo code, LDPC, ML/MAP detection, Channel estimation

 (K. Fukawa (Japan) and L. Chen (China (CIE)))
 CBH: Wireless power transmission from space Keywords: Solar Power Satellite, Wireless Power Transmission, Energy Harvesting, Rectenna, Phased Array, Space Plasma, Nonlinear Interaction (N. Shinohara (Japan) and B. Shishkov (Bulgaria))

#### CD: Theoretical analysis and synthesis of analog RF circuits Kanwords: Circuit decign Characterization

*Keywords*: Circuit design, Characterization, Formulation, Analysis, Synthesis (T. Ohira (Japan) and T. Angkaew (Thailand))

### **Commission D: Electronics and Photonics**

## D1: Advanced electronic devices and circuits for ubiquitous wireless

*Keywords*: Advanced electronic devices and circuits that create valuable new capabilities for ubiquitous wireless, Receivers, transmitters, transceivers, and SoCs, for ubiquitous wireless using VHF/UHF/micro-wave/mm-wave, Advanced electronic devices for emerging wireless applications

(Y. Kado and M. Fujishima (Japan))

### D2: Trends in electronic/photonic devices and circuits

*Keywords*: Electronic, photonic and optoelectronic devices, modules, and circuits for cellar phone, wireless LAN, cognitive and software radio, fiber-optic communication systems, optical wireless communication systems, and radio-on-fiber systems, Emerging technologies for low-power, low-cost, high-speed, and highly-functional devices and circuits such as silicon nanowire transistors, spin transistors,

reconfigurable processors, and silicon photonics (Y. Umeda and S. Fukushima (Japan))

DC1: Meta-materials and their applications *Keywords*: Three-dimensional metamaterials, Planar metamaterial structures, meta-surfaces and meta-sheets, Tunable/reconfigurable/active/ nonlinear metamaterials, Metamaterials with extreme parameters, Plasmonic metamaterials, Extraordinary transmission, EBG structures, photonic crystals, and their applications, Millimeter wave/THz metamaterials, Applications in microwave engineering, antenna, and absorbers, Superlenses, hyperlenses, and other near-field imaging devices, Experimental studies and characterization of metamaterials, Analytical and numerical modeling of metamaterials (E. Sano and A. Sanada (Japan))

### DC2: Microwave photonics technology

*Keywords*: High speed and broadband photonic devices: lasers, detectors, modulators, optical signal processors, etc., Sensors using photonic and/or microwave technologies, Photonic and electromagnetic wave band-gap (PBG and EBG) structures, Signal processing and techniques for optical spectra synthesis, Optical controlled phase array antenna systems and antenna remoting, Advanced modulation techniques (OFDM, PSK, CDMA, etc) in optical transmission systems, Microwave and millimeter-wave optical signal generation techniques, Optical processing and control of high speed analog and digital signals, Photonic generation, distribution, detection, processing, filtering and control of microwave signals, Analog, digital and subcarrier multiplexed microwave photonic links (H. Toda (Japan) and T. A. Nirmalathas

(Australia))

### DC3: Terahertz-wave technology

*Keywords*: Terahertz (THz, sub-millimeter (sub-mm) and millimeter waves (MMW), Novel active/passive devices: Transistors, Amplifiers, Sources, Sensors, Detectors, Mixers, Antennas/waveguides, etc., Metamaterials for extraordinary transmission/manipulation of THz/MMW, Imaging, Spectroscopy for safety&security, Ubiquitous/ambient future ultra-broadband wireless communication and radar systems

(T. Otsuji (Japan) and T. Kleine-Ostmann (Gernamy))

### **Commission E: Electromagnetic Environment** and Interference

### E1: EMC problems in PLC

*Keywords*: Power line communication, Broadband over power line, Radiated electromagnetic field, Common mode voltage/current, Longitudinal conversion loss, Fixed/adaptive notching, Power management, Impulsive noise, Channel modeling (Y. Akiyama and M. Tokuda (Japan))

E2: EMC problems in printed circuit boards *Keywords*: EMC Design of PCB, Signal integrity, Undesired electromagnetic radiation, Power grounding, Circuit design on board, Numerical modeling of radiated emission from PCB, EMI/EMC modeling of circuits, Coupling and decoupling, Enclosure modeling, Chip-level EMI modeling and measurement, Immunity problems from chips to systems

(H. Inoue (Japan) and T.-L. Wu (China (SRS)))

E3: Lightning and discharge in EMC Keywords: Lightning phenomena, Lightning measurements, Lightning protection, Gap discharge, ESD (electrostatic discharge), Electrical contacts/contact discharge, Transients/surge, EM field emission, EMC/EMI in lightning, EMC/EMI in discharge

(X. Qie (China (CIE)) and K. Kawamata (Japan))

- E4: Shielding, grounding, and absorber design *Keywords*: Electromagnetic interference reduction, Absorbers, Absorption and reflection, Characteristics, Shields, Shielding gaskets, Shielding effectiveness, Noise suppressor sheet materials, Far-field/near-field shielding, Grounding, Electrostatic discharge shielding, Composite materials, Ferrite, Metamaterials, Artificial dielectric and magnetic materials, Frequency-selective surfaces, Advanced nanostructured materials, Conductive polymers, Transparent conductors, Measurement techniques (K. Hatakeyama (Japan) and M. Koledintseva (USA))
- EA: Measurement techniques including EMC compliance

*Keywords*: Emission test method, Immunity test method, Measurement uncertainty, Calibration techniques, EMC test facilities, Anechoic chambers, Reverberating chambers, TEM devices, EMI antennas, EMI measuring receivers and functions, Time domain measurement (Y. Matsumoto and I. Wu (Japan))

### EC: EMC problems in wire and wireless communication systems

*Keywords*: (Wired and wireless) sources of disturbance, EMC issues on DSL transmission, EMC issues on PLT transmission, EMC issues on wireless transmission, Coexistence/mutual interference, Noises (including REIN, PEIN, SHINE), Cross-talk, Mitigation techniques, Standardization work

(R. Kobayashi (Japan) and A. Zeddam (France))

### **Commission F: Wave Propagation and Remote** Sensing

### F1: Remote sensing of subsurface objects and landmine detection

*Keywords*: Ground penetration radar, Borehole radar, Surface EM technique, Induction method, EM logging, Ultra wideband radar, Radar polarimetry, Inverse scattering, Tomography, Signal processing, Archaeology, Geology, Ice, Permafrost, Mining, Mine detection, Unexploded objects

# (M. Sato (Japan) and S.-Y. Kim (South Korea))F2: Remote sensing of the earth and planetary atmosphere

Keywords: Radar meteorology, Multiparameter radar, Satellite rain measurements, Scattering and

propagation, Cloud profiling radar, Synergy technique, Satellite cloud measurement, Cloud microphysics, Cloud radiation (T. Manabe (Japan))

### F3: Remote sensing of the earth and planetary surfaces (including earthquake detection and prediction)

*Keywords*: Radiometry, Scatterometry, Radar polarimetry, Altimetry, Synthetic aperture radars, Pol-SAR, Radar interferometry, Interferometric SAR, Polarimetric interferometry, Target classification and identification, Calibration, Validation, Phenomenology, Earthquake detection and prediction

(T. Moriyama (Japan) and W.-M. Boerner (USA))

### F4: Satellite and terrestrial propagation

*Keywords*: ain attenuation, Rain and ice depolarization, Tropospheric scintillation, Fixed and mobile satellite communications, Satellite and site diversity techniques, Microwave and millimeter-wave propagation, Atmospheric gaseous absorption, Fading, Microwave, millimeter wave and optical wave propagation, Propagation for fixed wireless access and wireless local loops

(Y. Maekawa (Japan))

### FB: Millimeter, sub-millimeter, and terahertz propagation

*Keywords*: Attenuation due to hydrometeors, Rain attenuation dynamics, Gaseous attenuation, BWA and FSO channel modeling (A. Sato (Japan))

**FBC1: MIMO channel sounding and modeling** *Keywords*: Channel sounder architecture, Directional channel model and parameter estimation, Measured parameter statistics, Correlation and rank properties, Stochastic modeling, Site-specific measurements and prediction (J. Takada (Japan))

### FBC2: Mobile propagation

*Keywords*: Mobile propagation, Indoor propagation, Wideband propagation, Multipath fading, MIMO, Path visibility, Ray tracing, Channel modeling, Delay spread, Angular spread, Propagation simulation, System-oriented propagation (H. Iwai (Japan))

### Commission G: Ionospheric Radio and Propagation

- **GEH1: Electromagnetic phenomena related with earthquake and volcanic activities** *Keywords*: Earthquake, Volcano, Electromagnetic field and wave, Plasma disturbance associated with earthquake and volcano
- (K. Hattori (Japan) and J. Y. Liu (China (SRS)))
  GEH2: Lightning and lightning effects on atmosphere, ionosphere and plasmasphere *Keywords*: Lightning, Thunderstorm, Transient luminous events (TLEs), Terrestrial gamma-ray flashes (TGFs), Chemical effect of lightning, Plasma disturbance by lightning (M. Sato (Japan) and A. B. Chen (China (SRS)))

GFH1: Coupling of solar wind, magnetosphere, ionosphere and atmosphere *Keywords*: Solar wind, Ionosphere-thermosphere coupling, Ionosphere-magnetosphere coupling, Space weather, Substorm, Plasma transport and circulation

(T. Abe (Japan) and A. W. Yau (Canada))

**GFH2: Ionospheric irregularities and disturbances and their effects on radio applications** *Keywords*: Plasma instability, Traveling

ionospheric disturbance, Ionospheric and thermospheric storms (A. Saito (Japan) and M. A. Abdu (Brazil))

### **Commission H: Waves in Plasmas**

HBCG: New instrumentation and observation techniques for space and planetary sciences *Keywords*: Plasma and radio wave instruments, Radar observation, Observation techniques for solar-terrestrial environment, Instrumentation for planetary science, Ground station observation, Spacecraft observation, IS Radar, HF Radar, GPS, Heating, Total Electron Content (H. Misawa and H. Kojima (Japan))

HFG: Data assimilation and modeling of ionosphere, plasmasphere and magnetosphere *Keywords*: Data assimilation, Inversion, Ionosphere, Magnetosphere, Plasmasphere, Radiation belts, Ring current, Satellite/ground-based observations, Remote-sensing, Numerical simulation/modeling (Y. Miyoshi and S. Nakano (Japan))

HG1: Advanced theory and computer simulations in space plasmas

*Keywords*: Space and Astrophysical Plasma, Plasma Waves, Wave-Particle Interactions, Elementary Processes in Collisionless Plasmas, Complex Plasmas (T. Nakamura (Japan) and S. W. Y. Tam (China

(SRS)))

### HG2: Wave propagation and wave-particle interactions in solar-terrestrial and planetary environment

*Keywords*: Waves in solar-terrestrial and planetary environment, Propagation of natural radio and plasma waves, Electrostatic solitary waves, Particle acceleration and scattering by wave-particle interactions, Wave-wave interactions, Nonlinear phenomena, Plasma wave instabilities (Y. Katoh (Japan) and G. Lakhina (India))

### **Commission J: Radio Astronomy**

### J1: Large telescope in East Asia and possible array connection

*Keywords*: Large RA telescopes in East Asia, East Asia VLBI network, RA collaboration in East Asia

(H. Kobayashi (Japan) and Z.-Q. Shen (China (CIE)))

J2: Millimeter- and sub-millimeter-wave telescope and array

Keywords: ALMA, SMA, Sub-millimeter-wave VLBI

(S. Iguchi (Japan) and N. Ohashi (China (SRS)))

- J3: Radio astronomy in space and on the moon Keywords: Long-wavelength from upper ionosphere, Sub-millimeter-wave from space, RA observation on the moon (T. Iwata and H. Matsuo (Japan))
- JAD: Optical fiber connection of radio telescopes *Keywords*: eVLBI, Domestic fiber connection, Global network, Possible East Asia network, Standard format of eVLBI, (M. Sekido (Japan) and C. Phillips (Australia))
- JCD: Ultra wideband receiver and the applications *Keywords*: Square Kilometer Array, From octave band to decade and century band, Seamless wide frequency observation, Wideband radio spectra, High sensitivity dispersion measure (N. Kawaguchi (Japan))

JE: Radio frequency interference Keywords: RA bands and the protection, Harmful interference (M. Ohishi (Japan) and T. Tzioumis (Australia))

#### Commission K: Electromagnetics in Biology and Medicine

### K1: Biological effects (DC, ELF)

*Keywords*: Static field, Extremely low frequency field, Intermediate frequency field, Pulsed field, In vivo study, In vitro study, Gene expression, Epigenetic effect, Stress response, Genotoxicity (M. Ikehata (Japan) and J.-S. Lee (South Korea))

### K2: Biological effects (RF)

*Keywords*: Mobile phone, Radio frequency, In vitro study, In vivo study, Genotoxicity, Gene expression, Signal transduction, Carcinogenesis, Nervous system, Immune system (J. Miyakoshi (Japan) and Vijayalaxmi (USA))

#### **K3: Biomedical application of EM energy** *Keywords*: Hyperthermia, Diathermy, Microwave

ablation, Electrosurgery, Wireless energy transmission, Transcranial magnetic stimulation, Defibrillator, Cell/tissue manipulation, Implantable artificial organ, Thermal therapy, Electrical stimulation

### (H. Matsuki (Japan) and N. Kim (South Korea))

KAE: Assessment of human exposure to EMF *Keywords*: Electric/magnetic field (static/ELF/intermediate frequency), Radiofrequency electromagnetic field, Instruments, Anatomical human model, Induced current/electric field, SAR, Temperature rise, Calculation, Measurement, Safety guideline, Standard, Shielding (K. Vamazaki (Japan) and Y-M. Gim (South

(K. Yamazaki (Japan) and Y.-M. Gim (South Korea))

### **KB1:** Bioimaging

*Keywords*: Biological imaging, Brain mapping, fMRI, PET, MEG, NIRS, EEG, Electrode array, Optical recording

(Y. Jinbo and K. Iramina (Japan))

**KB2: EM theory for biomedical application** *Keywords*: Electromagnetic theory, Biomedical Application, Electromagnetic field, Numerical simulation, Hyperthermia, Thermal therapy, Cancer detection, Phantom, Antenna (K. Ito and Q. Chen (Japan))

### KBC: Numerical dosimetry for wireless communications

*Keywords*: Computational techniques, Anatomically based human models, Specific absorption rate (SAR), Temperature elevation, Uncertainty/variability, Cellular phone antennas, Base station antennas, Body-mounted devices, Safety guidelines, Standards

(A. Hirata (Japan) and J.-K. Pack (South Korea))

### KE: Electromagnetic interference with medical equipment

*Keywords*: EMI from wireless communication system, Wireless interferences issue for medical device, EMI from RFID, MRI EMI, EMI modeling for medical devices, Use of mobile phones in hospital, Wireless body area network, Electronic healthcare, HAC

(Y. Tarusawa (Japan) and W. Kainz (USA))

### **Union Session**

U: Radio science activities in Asia-Pacific area Keywords: Asia Pacific, Radio science, emerging area

(M. Krairiksh (Thailand) and K. Itoh (Japan))

### **CONFERENCE ORGANIZATION**

### **Conference Chair**

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- M. Hayakawa, The University of Electro-Communications (Past Chair, URSI Commission E)
- H. Imai, Chuo University (Council Member, Science Council of Japan)
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- M. Tanaka, President, Toyama Prefectural University (Member, Science Council of Japan)
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- S. Ueno, Kyushu University (Past Chair, URSI Commission K)
- S. Yoshida, Kyoto University (Member, Science Council of Japan)

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J. Takada, Tokyo Institute of Technology (Assistant Secretary, Japan National Committee of URSI)

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- Commission B: H. Shirai, Chuo University
- Commission C: K. Itoh, Kanazawa Institute of Technology
- Commission D: K. Tsukamoto, Osaka University
- Commission E: K. Hatakeyama, University of Hyogo
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- Commission G: S. Watanabe, Hokkaido University
- Commission H: Y. Kasahara, Kanazawa University
- Commission J: N. Kawaguchi, National Astronomical Observatory of Japan
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