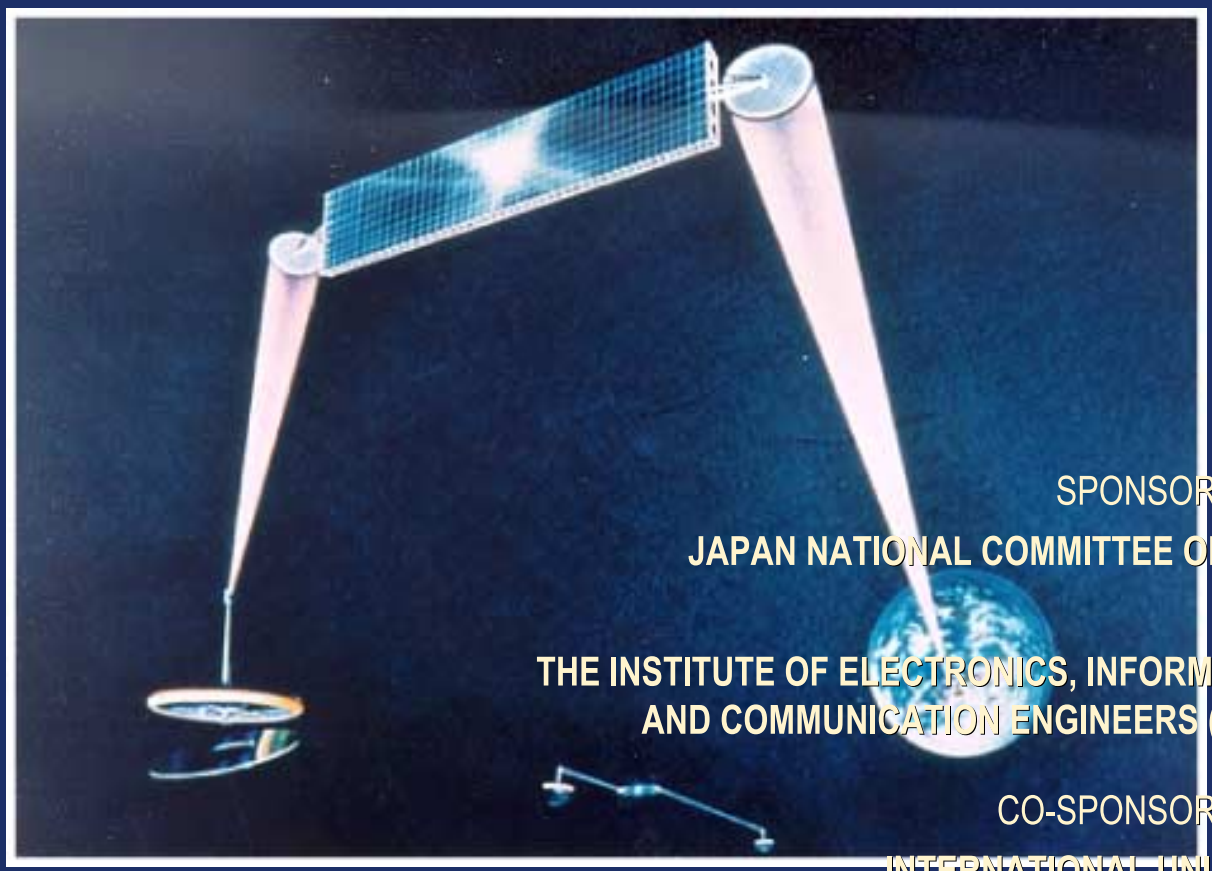
2001 Asia-Pacific Radio Science Conference

AP-RASC'01

Chuo University, Tokyo, Japan **August 1-4, 2001**

Radio Science – Communications, Environment, and Energy

FINAL PROGRAM



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Message from Conference Chairperson

The 2001 Asia-Pacific Radio Science Conference (AP-RASC ’01) is the first Asia-Pacific regional URSI conference to be held between URSI General Assemblies. The AP-RASC ’01 is sponsored by the Japan National Committee of URSI and The Institute of Electronics, Information and Communication Engineers (IEICE) and co-sponsored by the International Union of Radio Science (URSI). The objective of this Conference is to stimulate and to coordinate the research activities of radio science in the Asia-Pacific area. The main theme of this conference is “Radio Science - Communications, Environment, and Energy”. As General Lectures, Prof. Yasuhiko Yasuda of Waseda University, Japan, will present his paper on “Mobile Communications Technology-Most Brilliant Application of Radio Science” and also Prof. Govind Swarup in India will present his paper on “Challenges at the Frontiers of Science and Engineering in Radio Astronomy”. Corresponding to the main theme, the Union Session on “Solar Power Satellite and Wireless Power Transmission” will be held as a common theme for all Commissions. Scientific sessions will cover all scientific activities of the URSI Commissions A to K. We would like to have the AP-RASC in every three years somewhere in the Asia-Pacific area following to the AP-RASC ’01. We expect that the AP-RASC develops as a real forum of URSI activities in the Asia-Pacific area. I wish to extend my hearty welcome to your participation in the AP-RASC ’01 and welcome to Tokyo.

Yoji Furuhama
Conference Chairperson, AP-RASC ’01

Message from URSI President

On behalf of the whole URSI family, I would like to express my hearty welcome to all participants to the 2001 Asia-Pacific Radio Science Conference (AP-RASC ’01), here in Tokyo. It has been widely recognized that the URSI activity has a delta-functional peak at the time of the General Assembly (GA) every three years. In order to fill out the activity valley during the inter-GA triennium, various efforts have been attempted and actually performed. URSI-sponsored symposia and workshops organized by a single or joint URSI Commission(s) have definitely enhanced its inter-GA activities. Trans-Commission activities covering all subjects related to radio science have also been boosted in the midst of the two consecutive URSI GAs by a regional conference such as the North American URSI meeting. However, such regional conference has never been held in the Asian Pacific region. The AP-RASC is expected to provide a similar forum to this end. URSI is pleased to observe such a new effort of expanding URSI activities and enhancing its visibility.

The first AP-RASC was proposed and organized by the Japanese Member Committee of URSI and was given endorsement by URSI. URSI hopes that the AP-RASC will continually be held triennially in different places by different URSI Members in the Asian and Pacific-rim region. Finally I must express my thanks as URSI representative to thank all the work done by the Japanese Organizing, Steering and Program Committees for taking pains to prepare and hold the AP-RASC ’01.

Hiroshi Matsumoto
URSI President
Chairperson of International Advisory Committee of AP-RASC ’01

Conference Venue

The 2001 Asia-Pacific Radio Science Conference (AP-RASC '01) will be held on August 1-4, 2001, at the Korakuen Campus (Faculty of Science and Engineering) of Chuo University (Address: 1-13-27 Kasuga, Bunkyo-ku, Tokyo 112-8551, Japan).

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Co-sponsored by
- International Union of Radio Science (URSI)

Supported by
- Chuo University

In cooperation with
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- Astronomical Society of Japan
- Communications Research Laboratory
- IEEE Japan Council
- Japan Biomagnetism and Biomagnetics Society
- Japan Society of Medical Electronics and Biological Engineering
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- The Geodetic Society of Japan
- The Institute of Electrical Engineers of Japan
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- The Japan Society of Applied Physics
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- The Remote Sensing Society of Japan

Conference Organization

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Auditor

M. Yamada, Tokyo Univ. of Technology (Japan)

Time Table of 2001 Asia-Pacific Radio Science Conference

Wednesday, August 1

11:00-18:00
Registration

11:30-12:30
Organizing Committee Meeting
(Members Only)
-Room M5

13:30-14:00
<Opening Ceremony> -Room U

14:00-15:40
<Union Session 1>
-Room U

15:40-16:00 Coffee Break

16:00-17:40
<Union Session 2>
-Room U

18:30-20:30
<Welcome Reception>
-Cafeteria I

Thursday, August 2

8:30-17:40 Registration

9:30-11:10
<Session 1>
-A1 (Room A)
-B1-1 (Room B)
-C1 & C2 (Room C)
-D1-1 (Room D)
-E1 (Room E)
-F1-1 (Room F)
-G1 (Room G)
-H5 (Room H)
-J1 (Room J)
-K2 (Room K)

11:10-11:30 Coffee Break

11:30-12:30
<General Lecture 1>
-Room U

12:30-14:00 Lunch Break

12:40-13:40
International Committee Meeting
(IAB, ISC Members Only)
-Room M5

14:00-15:40
<Session 2>
-A1 & A2 (Room A)
-B1-2 (Room B)
-C3 (Room C)
-D1-2 (Room D)
-E2 (Room E)
-F2 (Room F)
-G2 (Room G)
-H6-1 (Room H)
-J2 (Room J)
-K1 (Room K)

15:40-16:00 Coffee Break

16:00-17:40
<Session 3>
-A2 (Room A)
-B6/BE (Room B)
-D1-3 (Room D)
-E3/EGH (Room E)
-F3 (Room F)
-G3 (Room G)
-H6-2 (Room H)
-J3 (Room J)
-K3 (Room K)

18:00-20:30
<Business Meetings>
-Commission A (Room A)
-Commission B (Room B)
-Commission C (Room C)
-Commission D (Room D)
-Commission E (Room E)
-Commission F (Room F)
-Commission G (Room G)
-Commission H (Room H)
-Commission J (Room J)
-Commission K (Room K)

Friday, August 3	Saturday, August 4
8:30-17:40 Registration	8:30-17:00 Registration
9:30-11:10 **<Session 4>** -A3-1 (Room A) -B3-1 (Room B) -E4/EGH (Room E) -F4 (Room F) -G4 (Room G) -H3 (Room H) -J4 (Room J) -K4 (Room K)	8:50-10:30 **<Session 6>** -B5 (Room B) -B7/BCE (Room X) -D4-1/DBC (Room D) -E6/EC (Room E) -F6 (Room F) -G6 (Room G) -H1 (Room H) -J6 (Room J) -K7/KAB (Room K)
11:10-11:30 Coffee Break	10:30-10:50 Coffee Break
11:30-12:30 **<General Lecture 2>** -Room U	10:50-12:30 **<Session 7>** -A4-1 (Room A) -B2 (Room B) -B8/BCE (Room X) -D4-2/DBC (Room D) -E7 (Room E) -F7 (Room F) -G7 (Room G) -H2 (Room H) -J7 (Room J) -K8/KE (Room K)
12:30-14:00 Lunch Break	12:30-14:00 Lunch Break
14:00-15:40 **<Session 5>** -A3-2 (Room A) -B3-2 (Room B) -B4 (Room X) -C4/CD (Room C) -E5/EGH (Room E) -F1-2 (Room F) -F5 (Room Y) -G5 (Room G) -H4 (Room H) -J5 (Room J) -K5 (Room K)	14:00-15:40 **<Session 8>** -A4-2 (Room A) -B9-1/BCDEFK (Room B) -D2 (Room D) -E8 (Room E) -F8 (Room F) -G8 (Room G) -G9/GE (Room X) -H7 (Room H) -J8 (Room J) -K6-1 (Room K)
15:40-16:00 Coffee Break	15:40-16:00 Coffee Break
16:00-19:00 **<Poster Session>**	16:00-17:40 **<Session 9>** -B9-2/BCDEFK (Room B) -D3 (Room D) -E9 (Room E) -F9 (Room F) -G10/GE (Room X) -H8 (Room H) -J9 (Room J) -K6-2 (Room K)
	19:00-21:00 **<Banquet>** -Tokyo Dome Hotel

Convenors' List

Union Session:

U: *Solar Power Satellite and Wireless Power Transmission*
J.G. Hawkins (USA)
K. Hashimoto (Japan)

Commission A: Electromagnetic Metrology

A1: *Frequency Standards*
P. Fisk (Australia)
S. Ohshima (Japan)

A2: *Time Scales and Time and Frequency Transfer*
M. Hosokawa (Japan)
C. Liao (Taiwan)

A3: *Frequency Stabilized Laser and Its Applications*
A. Onae (Japan)
H. Inaba (Japan)

A4: *Electromagnetic Measurement and Standards*
H. Yajima (Japan)
J.H. Kim (Korea)

Commission B: Fields and Waves

B1: *Scattering and Diffraction*
H.J. Eom (Korea)
K. Kobayashi (Japan)

B2: *Media Effects in Electromagnetics*
A. Ishimaru (USA)
C.H. Chan (China)

B3: *Guided Waves*
K. Yasumoto (Japan)
S.J. Xu (China)

B4: *Intelligent Antennas*
K. Sawaya (Japan)
T. Maeda (USA)

B5: *Electromagnetic Theory - Basics and Applications*
M. Nakajima (Japan)
S. Tokumaru (Japan)

B6/BE: *Electromagnetics in EMC Problems*
M. Tokuda (Japan)
L.-C. Zhang (China)

B7, B8/BCE: *IMT2000: Its Development and Challenge*
S. Ohmori (Japan)
K.-J. Wee (Korea)

B9/BCDEFK: *Computational Techniques and EM Field Simulator*
M. Koshiba (Japan)
K.S. Chiang (Hong Kong)

Commission C: Signals and Systems

C1 & C2: *Advanced Radio Technologies*
R. Kohno (Japan)
S. Haruyama (Japan)

C3: *Radio Agents for Future Multimedia Personal Communications*
K. Tsukamoto (Japan)
Y.-H. Park (Korea)

C4/CD: *Microwave Photonics*
H. Ogawa (Japan)
M. Tsuchiya (Japan)

Commission D: Electronics and Photonics

D1: *Surface Emitting Lasers and Novel Microcavity Devices*
Y. H. Lee (Korea)
F. Koyama (Japan)

D2: *Advanced Devices for Wavelength Division*
K. Okamoto (Japan)
I. Mito (Japan)

D3: *Femtosecond Optoelectronics and Ultrafast Communications*
M. Nakazawa (Japan)

D4/DBC: *Lightwave Radio and Relevant Technologies*
T. Takano (Japan)
D.M. Britz (USA)

Commission E: Electromagnetic Noise and Interference

E1, E2: *Lightning Discharge*
D. Wang (Japan)
A. Bondiou-Clergerie (France)

E3, E4, E5/EGH: *Sprites, elves and their global activities*
Y. Takahashi (Japan)
M. Fuellekrug (Germany)

E6/EC: *Electromagnetic Compatibility in Communication Systems apparatus*
S. Miyamoto (Japan)
J. Gavan (Israel)

E7, E8: *EMC Problems in Printed Circuits Boards and Systems*
O. Wada (Japan)
H. Garbe (Germany)

E9: *EMC Problems of Electrical Power System*
C. Kim (Korea)
Z.-I. Kawasaki (Japan)

Commission F: Wave Propagation and Remote Sensing

F1: *Earth-Space Propagation*
Y. Maekawa (Japan)
C.E. Mayer (USA)

F2: *Fixed Terrestrial Propagation*
A. Sato (Japan)

F3, F4: *Mobile and Indoor Propagation*
Y. Karasawa (Japan)
C. Wilson (Australia)

F5: *Polarimetric Remote Sensing of Earth's Environment*
W.-M. Boerner (USA)
Y. Yamaguchi (Japan)
F6: *Interferometric Remote Sensing of Earth's Environment*
Y. Kim (USA)
H. Yamada (Japan)
F7: *Remote Sensing of Rain and Clouds*
Ge Wenzhong (China)
H. Kumagai (Japan)
F8: *Subsurface Remote Sensing and Ground Penetrating Radar*
M. Sato (Japan)
D. Noon (Australia)
F9: *Advanced Remote Sensing Technologies*
S. Uratsuka (Japan)
W.M. Moon (Korea)
Y.S. Oh (Korea)

Commission G: Ionospheric Radio and Propagation
G1, G2: *International Reference Ionosphere*
K.-I. Oyama (Japan)
D.K. Bilitza (USA)
K.K. Mahajan (India)
G3, G4: *Ionospheric Dynamics and Disturbances*
S. Maeda (Japan)
T.J. Fuller-Rowell (USA)
H. Shinagawa (Japan)
G5, G6: *Ionospheric Irregularities and Structures*
M. Yamamoto (Japan)
R.T. Tsunoda (USA)
J.-Y. Liu (Taiwan)
G7, G8: *Progress of Ionospheric Radio Observations*
S. Watanabe (Japan)
K. Schlegel (Germany)
N. Balan (India)
G9, G10/GE: *Electromagnetic Phenomena Related with Earthquake and Volcanic Activities*
K. Hattori (Japan)
J.-Y. Liu (Taiwan)

Commission H: Waves in Plasmas
H1, H2: *Plasma as a Complex System*
A. Sen (India)
T. Nakamura (Japan)
H3, H4: *Observation and Theory of Plasma Waves in space*
I. Cairns (Australia)
H. Kojima (Japan)
H5, H6: *Wave Propagation and Remote Sensing of Magnetosphere*
B.J. Fraser (Australia)
A. Morioka (Japan)
H7, H8: *Modeling and Computer Simulations in Space Plasmas*
K. Tang (China)
S. Machida (Japan)

Commission J: Radio Astronomy
J1, J2: *Large Telescopes and Projects - Millimeter and Submillimeter Facilities*
K.Y. Lo (Taiwan)
T. Hasegawa (Japan)
J3, J4: *Low-Frequency Telescopes and/or Dense Arrays*
M. Kojima (Japan)
B. Peng (China)
J5, J6: *VLBI Projects and Their Scientific Perspective*
D.L. Jauncey (Australia)
T. Sasao (Japan)
J7, J8: *Collaboration and Development of Radio Astronomy in Asia-Pacific Region*
M. Inoue (Japan)
T. Tzioumis (Australia)
J9: *Future Plans in the 21st Century*
T. Kasuga (Japan)
S. Cho (Korea)

Commission K: Electromagnetics in Biology and Medicine
K1: *Mechanisms and Physics*
K. Joyner (Australia)
T. Higashi (Japan)
K2: *Health Assessment*
H. Chiang (China)
K. Isaka (Japan)
K3: *Biological Effects of DC and ELF Fields*
T. Shigemitsu (Japan)
A. Wood (Australia)
K4: *Biological Effects of RF Fields*
J. Behari (India)
M. Taki (Japan)
K5: *Biomedical Applications*
J.C. Lin (USA)
H. Matsuki (Japan)
K6: *Recent Activities of Electromagnetics in Medicine and Biology in Asia-Pacific Countries*
S. Ueno (Japan)
J.C. Lin (USA)
K7/KAB: *Dosimetry for Wireless Communications*
C.K. Chou (USA)
T. Nojima (Japan)
K. Itoh (Japan)
K8/KE: *EMC Problems Including Human Bodies*
Y.-M. Gimm (Korea)
O. Fujiwara (Japan)

Scientific Program

Wednesday, August 1 14:00-15:40 **Room U**

Union Session 1 Solar Power Satellite and Wireless Power Transmission(1)

Chairs : J.M. Osepchuk, *Full Spectrum Consulting, USA*
K. Hashimoto, *Kyoto University, Japan*

14:00 Convenors' Message

A. SPS, as a new source of energy in the 21st century

14:05 Space Solar Power - A Global Approach to Reducing Global Warming (Video Presentation, invited)
P.E. Glaser, *Power from Space Consulting, Inc., USA*

14:20 Research on Solar Power Station and Microwave Power Transmission in Japan: Technology and Strategy (invited)
H. Matsumoto, *Kyoto University, Japan*

14:50 What Kind of Role Can SSPS Play in Future Electricity Market in Japan? (invited)
T. Sawa and I. Matsuoka, *Kyoto University, Japan*

15:20 Summary of Recent Results from NASA's Space Solar Power (SSP) Programs: Concepts and Technology Advances (invited)
J.C. Mankins, *NASA Headquarters, Office of Space Flight, USA*

Wednesday, August 1 16:00-17:40 **Room U**

Union Session 2 Solar Power Satellite and Wireless Power Transmission(2)

Chairs : K. Hashimoto, *Kyoto University, Japan*
J.M. Osepchuk, *Full Spectrum Consulting, USA*

B. SPS technologies related to URSI

16:00 The Current Capabilities of Microwave WPT Technology (invited)
J.O. McSpadden, *USA*

C. Interference and compatibility of SPS with environments

16:20 To Explore the Evolution of the Universe (invited)
M. Inoue, *National Astronomical Observatory of Japan, Japan*

16:40 Environmental Health and Safety Considerations Relative to Microwave Radiation in the SPS (invited)
J.M. Osepchuk, *Full Spectrum Consulting, USA*

17:00 Compatibility with Radio Communications - Interference Assessment to Space and Terrestrial Systems - (invited)
T. Hatsuda and K. Ueno, *Hokkaido Institute of Technology, Japan*

17:40 Conclusing Remarks

Thursday, August 2 11:30-12:30 **Room U**

General Lecture 1

Mobile Communications Technology-Most Brilliant Application of Radio Science

Prof. Y. Yasuda, *Waseda University, Japan*

Yasuhiko Yasuda was born in Tokyo on July 7, 1935. He received B.E.in Electrical Engineering, M.E. and D.E. in Electronic Engineering degrees from the University of Tokyo, in 1958, 1960 and 1963, respectively. In 1963 he joined the Institute of Industrial Science, the University of Tokyo as an assistant professor and was promoted to a full professor in 1977. Since retiring from the University of Tokyo in August of 1992, Dr. Yasuda has been professor at the Department of Electronics, Information and Communication Engineering, School of Science and Engineering, Waseda University.

During his long career of research, he produced numerous useful achievements including invention of delta sigma modulation, development of 3-level VSB high speed transmission scheme for newspaper fax machines corresponding to the CCITT G2 fax standard, proposal of coding methods for digital facsimile images, proposal of hierarchical image coding and processing, etc.

His current interest is in the fields of image coding and processing, mobile communications and satellite communications.

He is a past President of Institute of Electronics, Information and Communication Engineers and a past President of the Institute of Image Electronics Engineers of Japan. He has served acting chairman of Telcommunication Technology Council (MPT), a member of Broadcast Technology Council (NHK) and a member of board of directors, Engineering Academy of Japan. He is now serving President of Mobile Computing Promotion Consortium, Chairperson of Japan Approvals Institute for Telecommnications Equipment, President of the Telecommunication Technology Committee.

Dr.Yasuda has been awarded numerous prizes from various academic organizations including the IEICE Outstanding Achievement Award .

Friday, August 3 11:30-12:30 **Room U**

General Lecture 2

Challenges at the Frontiers of Science and Engineering in Radio Astronomy

Prof. G. Swarup, *Tata Institute of Fundamental Research, India*

Prof G. Swarup was born in Thakurdwara, U.P.,India in 1929. He obtained M.Sc. in Physics from Allahabad University in 1950 and Ph.D. in Electrical Engineering from Stanford University in 1961. Since 1963 he has been working at the Tata Institute of Fundamental Research in India where he is currently Homi Bhabha Senior Fellow. He is a Fellow of the Royal Society of London and a receipent of the John Howard Dellinger Medal of URSI.

Professor G. Swarup is well known internationally for his outstanding contributions in radio astronomy and for building innovative radio telescopes for front line research. His discovery of solar Type U burst and the gyro-radiation model for explaining the microwave solar emission are pioneering contributions.

During 1963-1970, he constructed a 530 m x 30 m cylindrical radio telescope of a unique design at Ooty in South India. Using the method of lunar occultation, it provided for the first time high resolution angular data (1 to 4 arcesc) for over thousand weak radio sources, which provided an independent evidence for the Big Bang model.

He has recently completed the design and construction of a Giant Metrewave Radio Telescope (GMRT) consisting of 30 numbers of 45m diameter fully steerable parabolic dishes spread over a region of about 25 km in Western India. A novel concept has been developed which makes it practical to construct such large antennas quite economically. GMRT is the world's largest radio telescope operating in the frequency range of 38-1430 MHz.

Commission A

Thursday, August 2, 9:30-11:10 **Room A**

A1 Frequency Standards

Chairs : P. Fisk, *National Measurement Laboratory, CSIRO, Australia*
T. Ikegami, *National Research Laboratory of Metrology, Japan*

1. Development of Atomic Frequency Standards Using Laser-Cooled Atoms (invited)

H. Lee, T. Kwon, and S. Park, *Korea Research Institute of Standards and Science, South Korea*

2. Laser-Pumped Cs Gas-Cell Frequency Standard (invited)

Y. Ohuchi[1], H. Suga[1], M. Fujita[1], T. Suzuki[1], M. Uchino[1], K. Takahei[1], M. Tsuda[1], Y. Saburi[1], Y. Koga[2], K. Hagimoto[2], and S. Oshida[2], [1]*Anritsu Corporation and* [2]*National Research Laboratory of Metrology, Japan*

3. Analysis of Cavity Phase Distribution in NRLM-4 (invited)

K. Hagimoto, T. Ikegami, and S. Ohshima, *National Research Laboratory of Metrology, Japan*

4. Ultra-Low Noise Oscillators and High Stability Secondary Frequency Standards Based on Sapphire Loaded Cavity Resonators Session Code (invited)

M.E. Tobar, *University of Western Australia, Australia*

5. Progress on the NML Trapped Ion Frequency Standard (invited)

P. Fisk, R. Warrington, M. Wouters, and M. Lawn, *National Measurement Laboratory, CSIRO Australia, Australia*

Thursday, August 2, 14:00-15:40 **Room A**

A1 & A2 T&F Standards in Space Science and Technology

Chairs : H. Lee, *Korea Research Institute of Standards and Science, Korea*
M. Hosokawa, *Communications Research Laboratory, Japan*

1. Binary Pulsar Time Scale

A.E. Rodin, *Kashima Space Research Center CRL, Japan*

2. The 4-way Doppler Measurement System for the Lunar Gravity Mapping by SELENE

T. Iwata[1], K. Yonekura[1], K. Asari[2], Y. Kono[2], N. Kawano[2], and T. Takano[3], [1]*National Space Development Agency of Japan,* [2]*National Astronomical Observatory of Japan, and* [3]*Institute of Space and Astronautical Science, Japan*

3. A Test on Time Transfer with GPS/GLONASS Multi-channel Receivers in Asia-Pacific Area (invited)

Z. Wang[1], M. Imae[2], and Y. Shibuya[2], [1]*Shaanxi Astronomical Observatory (CSAO), China(CIE);* [2]*Communications Research Laboratory (CRL), Japan*

4. Remote Frequency Calibration Using GPS/GLONASS Carrier Phase Measurements (invited)

C. Liao[1], K. Tu[1], and J. Huang[2], [1]*Telecommunication Labs. Chunghwa Telecom Co., Ltd. and* [2]*Yuan Ze University, China(SRS)*

5. A Hydrogen Maser with a Sapphire Loaded Cavity for Space Application (invited)

T. Morikawa[1], J. Umezu[1], K. Takahei[2], M. Uehara[2], K. Mori[2], and M. Tsuda[2], [1]*Communications Research Laboratory and* [2]*Anritsu Corporation, Japan*

Thursday, August 2, 16:00-17:40 **Room A**

A2 Time Scales and Time and Frequency Transfer

Chairs : M. Imae, *Communications Research Laboratory, Japan*
M. Hosokawa, *Communications Research Laboratory, Japan*

1. Development of New Time Transfer Modem for TWSTFT (invited)

M. Imae, M. Aida, Y. Takahashi, T. Gotoh, and N. Kurihara, *Communications Research Laboratory, Japan*

2. Two-Way Time Transfer via Common-path Optical Link

W. Tseng, M. Li, and C. Liao, *Telecommunication Labs. Chunghwa Telecom Co., Ltd., China(SRS)*

3. Time Transfer and Time Dissemination Activities at NML Australia (invited)

P. Fisk, R. Warrington, M. Wouters, and M. Lawn, *National Measurement Laboratory, CSIRO Australia, Australia*

4. Fast Computation Algorithms for Clock Stability Characterization (invited)

F. Chu, M. Li, and C. Liao, *Telecommunication Labs. Chunghwa Telecom Co., Ltd., China(SRS)*

5. A Practical Method of Frequency Stability Improvement in Digital Frequency Synthesis

V. Stofanik, I. Balaz, and M. Minarik, *FEI-SUT, Slovakia*

Friday, August 3, 9:30-11:10 **Room A**

A3-1 Frequency Stabilized Laser and Its Applications (1)

Chairs : A. Onae, *National Research Laboratory of Metrology, Japan*
H. Inaba, *National Research Laboratory of Metrology, Japan*

1. A Cesium Optical Atomic Clock using a Low Phase Noise Regeneratively Mode-Locked Fiber Laser (invited)

M. Nakazawa and K. Suzuki, *NTT Network Innovation Laboratory, Japan*

2. Photonic Local Oscillator System for Submillimeter Wave Astronomy (invited)

M. Ishiguro, *National Astronomical Observatory of Japan, Japan*

3. Development of Optical Frequency Comb Generator for Accurate Difference Frequency Measurement (invited)

B. Widiyatmoko[1], S. Lee[2], M. Kourogi[2], and M. Ohtsu[2], [1]*Japan Science and Technology Corporation and* [2]*Tokyo Institute of Technology, Japan*

4. Direct Comparison between Microwave and Optical Frequencies with a One-Octave Ultra-Fast Laser Comb (invited)

K. Sugiyama[1], A. Onae[1], F. Hong[1], S.N. Slyusarev[1], T. Ikegami[1], J. Ishikawa[1], K. Minoshima[1], H. Matsumoto[1], J.C. Knight[2], W.J. Wadsworth[2], and P.S. Russell[2], [1]*National Research Laboratory of Metrology, Japan;* [2]*University of Bath, UK*

5. Study on Iodine Molecular Spectra at 630-640 nm and Preliminary Result for Frequency Stabilized Diode Laser (invited)

X. Chen[1], J. Zhang[1], Y. Wang[1], T. Kasahara[2], and Y. Akimoto[2], [1]*Peking University, China(CIE);* [2]*National Research Laboratory of Metrology, Japan*

Commission A / Commission B

Friday, August 3, 14:00-15:40 **Room A**

A3-2 Frequency Stabilized Laser and Its Applications (2)

Chairs : A. Onae, *National Research Laboratory of Metrology, Japan*
H. Inaba, *National Research Laboratory of Metrology, Japan*

1. Optical Frequency Standard for Optical Fiber Communication Systems (invited)

K. Nakagawa[1] and A. Onae[2], [1]*University of Electro-Communications and* [2]*National Research Laboratory of Metrology, Japan*

2. Frequency Stabilization of Violet Diode Lasers and their Application to Spectroscopy

K. Hayasaka, R. Ohmukai, and M. Watanabe, *Communications Research Laboratory, Japan*

3. Fast PLL with Electrooptical Modulator for Offset Laser Frequency Stabilisation

A.J. Antonczak, K.M. Abramski, and H. Trzaska, *Wroclaw University of Technology, Poland*

4. Frequency Sweeping of Erbium Doped Fiber Ring Laser Around an Absorption Line of C_2H_2 for Frequency Stabilization

H. Inaba[1], Y. Akimoto[1], and M. Nakazawa[2], [1]*National Research Laboratory of Metrology and* [2]*NTT Network Innovation Laboratories, Japan*

Saturday, August 4, 10:50-12:30 **Room A**

A4-1 Electromagnetic Measurement and Standards (1)

Chairs : J. Kim, *KRISS, Korea*
H. Yajima, *National Institute of Advanced Industrial Science and Technology, Japan*

1. Measurement and Calculation of Site S-parameter Between Two Dipole Antenna Elements (invited)

T. Iwasaki[1], T. Yoshida[1], K. Komiyama[2], and Y. Goto[3], [1]*University of Electro-Commmunications,* [2]*National Institute of Advanced Industrial Science and Technology(AIST), and* [3]*Kyoritsu Corporation, Japan*

2. Correlation of Fully Anechoic Chamber and OATS Measurements Using a Spherical Dipole Antenna (invited)

T. Kang[1], Y. Chung[1], and H. Kim[2], [1]*KRISS and* [2]*POSTECH, South Korea*

3. Uncertainty Evaluation for EMI Antenna Calibration (invited)

A. Sugiura[1], Y. Yamanaka[2], and Y. Matsumoto[1], [1]*Tohoku University and* [2]*Communications Research Laboratory, Japan*

4. Comparative Measurement for Parameter Valuation of Standard Dipole Antennas on an OATS (invited)

K. Komiyama[1], T. Morioka[1], and D. Nakajima[2], [1]*Electrotechnical Laboratory and* [2]*Japan Quality Assurance, Japan*

5. Uncertainties in Near-Field and RCS Measurements

L.A. Muth, *NIST, U.S.A.*

Saturday, August 4, 14:00-15:40 **Room A**

A4-2 Electromagnetic Measurement and Standards (2)

Chairs : J. Kim, *KRISS, Korea*
H. Yajima, *National Institute of Advanced Industrial Science and Technology, Japan*

1. Impedance Measurement of Coaxial Load Using Reference Air Line (invited)

J. Kang and J. Kim, *KRISS, South Korea*

2. Laser Power Standard Using a Calorimeter with a NiP Absorber

T. Inoue[1] and M. Miyawaki[2], [1]*Electrotechnical Laboratory and* [2]*Japan Quality Assurance Organization, Japan*

3. Measurement of Microwave Noise Source with Different Type of Connector from Standards

H. Nakano[1], T. Inoue[1], and Y. Kato[2], [1]*Electrotechnical Laboratory and* [2]*Kikusui Electronics Corporation, Japan*

4. Time Domain Measurements of EM Field Pattern to Animate the Radio Wave Propagation

Y. Ito, K. Sato, and H. Echigo, *Tohoku Gakuin University, Japan*

5. Measurement of Electromagnetic Radiation from GSM Base Stations in Turkey

R. Gamidov, M. Cetintas, H. Karacadag, A. Gedik, and M. Yogun, *TUBITAK-UME (National Metrology Institute), Turkey*

Thursday, August 2, 9:30-11:10 **Room B**

B1-1 Scattering and Diffraction (1)

Chairs : H.J. Eom, *Korea Advanced Institute of Science and Technology, Korea*
K. Kobayashi, *Chuo University, Japan*

1. Blazing Phenomena in Reflection-Type Gratings (invited)

Y.K. Cho, *Kyungpook National University, South Korea*

2. Transient Scattering by a Parallel Plate Waveguide Cavity with an Iris (invited)

T. Hinata[1] and S. Ohnuki[2], [1]*Nihon University, Japan;* [2]*University of Illinois at Urbana-Champaign, USA*

3. On Mixed Boundary-Value Problems in Electromagnetic Theory (invited)

M. Idemen[1] and A. Alkumru[2], [1]*Isik University and* [2]*Gebze Institute of Technology, Turkey*

4. EM Scattering of a Thin Circular Conducting Ring Enclosed by a Spherical Chiral Radome Shell: A Method of Moments Analysis (invited)

L.-W. Li[1] and W.X. Zhang[2], [1]*The National University of Singapore, Singapore;* [2]*Southeast University, China(CIE)*

5. Fresnel Diffraction of a Gaussian Beam in an Anisotropic Medium (invited)

S.R. Seshadri, *Nihon University, Japan*

Commission B

Thursday, August 2, 14:00-15:40 **Room B**

B1-2 Scattering and Diffraction (2)

Chairs : K. Kobayashi, *Chuo University, Japan*
H.J. Eom, *Korea Advanced Institute of Science and Technology, Korea*

1. Asymptotic Analysis of Edge-Excited Currents on a Convex Face of an Impedance Wedge (invited)
K. Hongo[1] and H. Kobayashi[2], [1]*Toho University and* [2]*Fujitsu System Integration Laboratories, Japan*

2. Method of Dual Integral Equation for Non-Separable Problem, Dielectric Wedge (invited)
J.-W. Ra, *Korea Advanced Institute of Science and Technology, South Korea*

3. Interaction of Oscillations in Slotted Resonators (invited)
Yu.V. Shestopalov, *Karlstad University, Sweden*

4. A New Improved Formulation for Incremental Theory of Diffraction (invited)
R. Tiberio, A. Toccafondi, and S. Maci, *University of Siena, Italy*

5. Development and Application of Generalized Multi-Pole Techniques to EM Scattering in China (invited)
W.X. Zhang and X.L. Bao, *Southeast University, China(CIE)*

Saturday, August 4, 10:50-12:30 **Room B**

B2 Media Effects in Electromagnetics

Chairs : A. Ishimaru, *University of Washington, USA*
C.H. Chan, *City University of Hong Kong, China (CIE)*

1. Radar Cross Sections of Random Medium and Rough Surface (invited)
M. Tateiba, *Kyushu University, Japan*

2. Fundamental Study for Imaging through Turbid Medium Using Near-Axis Scattered Light (invited)
I. Fujiwara, Y. Taka, Y. Kato, and K. Shimizu, *Hokkaido University, Japan*

3. Statistical EFIE (S-EFIE) for Object in the Presence of a Smooth Rough Surface (invited)
A. Ishimaru, J. Rockway, Y. Kuga, and S. Lee, *University of Washington, USA*

4. Media Effects of Random Subtstrate Impurity in Microstrip Transmission Lines and Discontinuities (invited)
C.H. Chan, K.F. Chan, and X.Q. Sheng, *City University of Hong Kong, China(CIE)*

5. Scattering of Electromagnetic Waves from One-Dimensionally Rough Surfaces Containing Resonant Structures (invited)
A.R. McGurn[1] and R. Fitzgerald[2], [1]*Western Michigan University and* [2]*University of Texas, USA*

Friday, August 3, 9:30-11:10 **Room B**

B3-1 Guided Waves (1)

Chairs : K. Yasumoto, *Kyushu University, Japan*
S.J. Xu, *University of Science and Technology of China, China (CIE)*

1. Properties of Guided Modes on Open Structures Near the Cutoff Region Using a New Version of Complex Effective Dielectric Constant (invited)
S.J. Xu[1], X.Y. Zeng[1], K. Wu[2], and K.M. Luk[3], [1]*University of Science and Technology of China, China(CIE);* [2]*Ecole Polytechnique, Canada;* [3]*City University of Hong Kong, China(CIE)*

2. Effects of Grooving Substrate on Leakage Loss of Conductor-Backed Coplanar Waveguide
M. Hotta[1], M. Kobayashi[1], T. Inoue[1], M. Hano[1], and T. Sakane[2], [1]*Yamaguchi University and* [2]*Sumitomo Osaka Cement Co. Ltd., Japan*

3. Dispersion of Transient Signals in Generalized Goubau-Type Striplines
I.O. Vardiambasis, *Technological Educational Institute of Crete, Greece*

4. Coupling between Triple-Mode Ceramic Waveguide Cavity and a Microstrip Circuit
Y. Tikhov, J.P. Kim, and K.M. Park, *LG Innotek Co. Ltd., South Korea*

5. Rigorous Mode-Matching Analysis of Large Aperture Coupling Between Parallel and Crossed Rectangular Waveguides
Z. Jiang and Z. Shen, *Nanyang Technological University, Singapore*

Friday, August 3, 14:00-15:40 **Room B**

B3-2 Guided Waves (2)

Chairs : K. Yasumoto, *Kyushu University, Japan*
S.J. Xu, *University of Science and Technology of China, China (CIE)*

1. A Unified Method for Analyzing Waveguides and Waveguide Junctions (invited)
L.W. Li, S.L. Lin, T.S. Yeo, and M.S. Leong, *The National University of Singapore, Singapore*

2. Analysis on Excitation of Magnetostatic Surface Waves by Asymmetric Coplanar Waveguide Transducers
Y. Ando and M. Hayakawa, *The University of Electro-Communications, Japan*

3. Analysis of Microstrip Lines Considering Edge Singular Behaviors in Spatial Domains
J.S. Kim and W.S. Park, *Pohang University of Science and Technology, South Korea*

4. Coupled-Mode Analysis for Characteristic Impedances of Coupled Microstrip Lines on Ferrite Substrates
M. Matsunaga[1] and K. Yasumoto[2], [1]*Ehime University and* [2]*Kyushu University, Japan*

5. Radiation from an Oblique Parallel-Plate Waveguide Array
H.J. Eom and J.Y. Kwon, *Korea Advanced Institute of Science and Technology, South Korea*

Commission B

Friday, August 3, 14:00-15:40 **Room X**

B4 Intelligent Antennas

Chairs : K. Sawaya, *Tohoku University, Japan*
T. Maeda, *Toshiba America Research Inc., USA*

1. PN Code Acquisition with Smart Antenna and Adaptive Threshold for DS-CDMA Wireless Communications (invited)
B. Wang and H.M. Kwon, *Wichita State University, USA*

2. Effects of a Variable Reactance Range on the SIR Gain of an Adaptive ESPAR Antenna
J. Cheng, Y. Kamiya, and T. Ohira, *ATR Adaptive Communications Research Laboratories, Japan*

3. MIMO: Measurements, Channel Models, and Network Implications (invited)
J.C. Liberti, *Telcordia Technologies, USA*

4. W-CDMA High Capacity Wireless Access Technologies Based on Adaptive Antenna Array Diversity and Interference Canceller (invited)
M. Sawahashi, S. Tanaka, and T. Ihara, *NTT DoCoMo Inc, Japan*

5. Field Test of DOA-Based Adaptive Antenna for GSM 1800
E. Bonek[1], A. Kuchar[2], and M. Tangemann[3], [1]*Technische Universität Wien and* [2]*Forschungszentrum Telekommunikation Wien ftw., Austria;* [3]*Alcatel SEL, Germany*

Saturday, August 4, 8:50-10:30 **Room B**

B5 Electromagnetic Theory - Basics and Applications

Chairs : M. Nakajima, *Japan*
S. Tokumaru, *Keio University, Japan*

1. Issues in Making Photon and Electron Models (invited)
Y. Kinoshita, *Shinshu University, Japan*

2. Re-Examination of the Fundamental Concepts of Electromagnetic Field and Resolution of the Paradox of Poynting Vector (invited)
S. Kar, *University of Calcutta, India*

3. Bicomplex Electromagnetic Fields and Their Boundary Conditions (invited)
M. Hashimoto, *Osaka Electro-Communication University, Japan*

4. On Vector-Potential Pairs in Computational Eletrodynamics
N. Georgieva, *McMaster University, Canada*

5. Line Integral Representation of Physical Optics and Equivalent Edge Currents
M. Ando, K. Sakina, K. Kawamoto, and M.S. Cui, *Tokyo Institute of Technology, Japan*

Thursday, August 2, 16:00-17:40 **Room B**

B6/BE Electromagnetics in EMC Problems

Chairs : M. Tokuda, *Musashi Institute of Technology, Japan*
L. Zhang, *Northern Jiaotong University, China (CIE)*

1. Numerical Techniques for Analysis of EMC Problems (invited)
K. Sawaya and Q. Chen, *Tohoku University, Japan*

2. Solving Problems of EM Coupling Through Apertures (invited)
Y. Lu, X. Yu, and Y. Huang, *BUPT, China(CIE)*

3. FDTD Modeling for the Computation of Electromagnetic Fields Radiated by Electrostatic Discharges
O. Fujiwara, *Nagoya Institute of Technology, Japan*

4. Suppression of Field on Power Lines Induced by MW Broadcasting Wave by Selecting Ground Points
T. Sasamori[1], K. Sawaya[2], S. Adachi[3], M. Asahi[4], K. Arita[4], and N. Okamura[5], [1]*Akita Prefectural University,* [2]*Tohoku University,* [3]*Tohoku Institute of Technology,* [4]*Tokyo Electric Power Co., and* [5]*Kandenko Co., Japan*

5. The Electromagnetic Shielding Properties of Carbon Fiber Sheets Coated Ni-Ferrite by Microwave Hydrothermal Process
H. Yamamoto[1], R. Murakami[1], D. Yonekura[1], C. Kim[1], and Y. Kim[2], [1]*The University of Tokushima, Japan;* [2]*Korea Maritime University, South Korea*

Saturday, August 4, 8:50-10:30 **Room X**

B7/BCE IMT2000: Its Development and Challenge (1)

Chairs : S. Ohmori, *Communications Research Laboratory, Japan*
K.-J. Wee, *Radio Research Laboratory, Korea*

1. Next-Generation Mobile Communication Systems discussed in Japan (invited)
K.C. Watanabe, *Ministry of Public Management, Home Affairs, Posts and Telecommunications, Japan*

2. Technologies of IMT-2000 and Beyond IMT-2000 (invited)
F. Watanabe, *KDDI Inc., Japan*

3. W-CDMA Enhanced Wireless Access Technologies and Beyond for High Speed Packet Transmission (invited)
M. Sawahashi, *NTT DoCoMo, Inc., Japan*

4. IMT-2000: Its Development and Challenge (invited)
C.-J. Chang, *National Chiao Tung University, China(SRS)*

5. Research and Development on Third Generation Mobile Communication Systems in Singapore (invited)
A.S. Madhukumar and F. Chin, *Centre for Wireless Communications, Singapore*

Commission B / Commission C

Saturday, August 4, 10:50-12:30 **Room X**

B8/BCE IMT2000: Its Development and Challenge (2)

Chairs : S. Ohmori, *Communications Research Laboratory, Japan*
K.-J. Wee, *Radio Research Laboratory, Korea*

1. Activities of IMT-2000 and Future Mobile Communications in Thailand (invited)
P. Srisuksant, *National Electronics and Computer Technology Center (NECTEC), Thailand*

2. APT IMT-2000 Forum (invited)
K.-J. Wee, *Radio Research Laboratory, Ministry of Informatioin and Communication, Korea*

3. SK Telecom; Plan for IMT-2000 (invited)
H.J. Shin, *SK Telecom, South Korea*

4. Introduction of Next-Generation Mobile Cellular: Requirements, Technologies and Deployment Scenario (invited)
Y. Sugamura, H. Oshima, and M. Asa, *Motorola Japan Research Lab., Japan*

Saturday, August 4, 14:00-15:40 **Room B**

B9-1/BCDEFK Computational Techniques and EM Field Simulator (1)

Chairs : K.S. Chiang, *City University of Hong Kong, China (CIE)*
M. Koshiba, *Hokkaido University, Japan*

1. Full-Vectorial Finite-Element Analysis of Multiple-Quantum-Well Semiconductor Waveguides
H.-C. Chang and D.-U. Li, *National Taiwan University, China(SRS)*

2. Analysis of 3-Dimensional Optical Waveguides by the FE-BPM Based on Newmark Scheme and PML
S. Charoenying, P. Niphatsan, and T.Angkaew *Chulalongkorn University, Thailand*

3. Analysis of a Segmented Cladding Optical Fiber by the Radial Effective-Index Method
K.S. Chiang and V. Rastogi, *City University of Hong Kong, China(CIE)*

4. An Efficient Technique for Numerical Solution of Diffraction from a Multilayer-Coated Bigrating
D. Zhou[1], Y. Okuno[1], and T. Matsuda[2], [1]*Kumamoto University and* [2]*Kumamoto National College of Technology, Japan*

5. Adaptive Time-Domain Modeling of RF Packaging Structures, MEMS and Antennas Using the Multiresolution Time-Domain Technique (MRTD)
N. Bushyager, E. Tsai, E. Dalton, and E.M. Tentzeris, *Georgia Institute of Technology, USA*

Saturday, August 4, 16:00-17:40 **Room B**

B9-2/BCDEFK Computational Techniques and EM Field Simulator (2)

Chairs : K.S. Chiang, *City University of Hong Kong, China (CIE)*
Y. Okuno, *Kumamoto University, Japan*

1. Efficient Derivative Estimation for the Optimization of Microstrip Antennas
M.H. Bakr[1], N. Georgieva[2], and W.J.R. Hoefer[1], [1]*University of Victoria and* [2]*McMaster University, Canada*

2. EM Simulation of PBG Microstrip Circuit Integrated Patch Antenna
A.S. Andrenko, Y. Ikeda, and O. Ishida, *Mitsubishi Electric Corporation, Japan*

3. Implementation of IE-MEI Method to the Scalar-Field Problem
N.M.A. Chowdhury[1], J. Takada[1], and M. Hirose[2], [1]*Tokyo Institute of Technology and* [2]*Electrotechnical Laboratory, Japan*

4. Large-Signal Numerical Characterization of IMPATT Diode for High Power Oscillator Operation
S. Kar, *University of Calcutta, India*

5. FDTD Simulation of Multiple Flip Chip Interconnects
P. Li[1], T. Li[2], H. Wu[3], K. Chin[1], and W. Sui[4], [1]*New Jersey Institute of Technology,* [2]*Cadence Design Systems, Inc.,* [3]*Lucent Technology, and* [4]*Conexant Systems, USA*

Thursday, August 2, 9:30-11:10 **Room C**

C1 & C2 Advanced Radio Technologies

Chairs : R. Kohno, *Yokohama National University, Japan*
S. Haruyama, *SONY Computer Science Laboratory, Japan*

1. Millimeter-wave Radio over Fiber Road to Vehicle Communications (invited)
M. Fujise, *Communications Research Laboratory, Japan*

2. Space Hopping Scheme for SDR and MUSIC DOA Estimation as Its Application (invited)
S. Ishii[1], A. Hoshikuki[1], and R. Kohno[2], [1]*Futaba Corporation and* [2]*Yokohama National University, Japan*

3. Proposal and Evaluation of System Diversity Technology for Software Defined Radio
T. Shono, K. Uehara, and S. Kubota, *NTT/Network Innovation Laboratories, Japan*

4. Complexed System for Aircraft Vehicles' Navigation
B. Makarenko, I. Kashaev, V. Kulishenko, *A. Podorozhnyak, and A. Soroka, NIIRI, Ukraine*

5. A New and Simple Algorithm of Downlink Beamforming in FDD-CDMA System
X. Sun and H. Wang, *Beijing University of Posts and Telecommunications, China(CIE)*

Commission C / Commission D

Thursday, August 2, 14:00-15:40 **Room C**

C3 Agents for Future Multimedia Personal Communications

Chairs : K. Tsukamoto, *Osaka University, Japan*
Y. Park, *Ministry of Information and Communication, South Korea*

1. Multimedia Integrated network by Radio Access Innovation (MIRAI) (invited)
G. Wu and M. Mizuno, *Communications Research Laboratory, Japan*

2. The Status of the Radio Access to the Internet in the Asia-Pacific Region (invited)
Y. Park[1], S. Komaki[2], and H. Park[3], [1]*Ministry of Information and Communication / Electronic Data Management Center, South Korea;* [2]*Osaka University, Japan;* [3]*Yonsei University, South Korea*

3. Resource Management Scheme for Multimedia Data Transmissions in IEEE802.11 Based Wireless LANs (invited)
K. Saitoh, Y. Inoue, M. Iizuka, and M. Morikura, *NTT/Access Network Service Systems Laboratories, Japan*

4. Analysis of Adaptive Array Antennas in Indoor Multi-Path Environments for Wireless Ad-Hoc Network Systems (invited)
A. Ando and T. Ohira, *ATR Adaptive Communications Research Laboratories, Japan*

5. Microwave Photonics Networks for Radio Agent Communications (invited)
K. Tsukamoto and S. Komaki, *Osaka University, Japan*

Friday, August 3, 14:00-15:40 **Room C**

C4/CD Microwave Photonics

Chairs : H. Ogawa, *Communications Research Laboratory, Japan*
M. Tsuchiya, *University of Tokyo, Japan*

1. Advanced Concept of Radio Highway (invited)
K. Kumamoto, K. Tsukamoto, and S. Komaki, *Osaka-University, Japan*

2. Optoelectronic MM-Wave Signal Processing (invited)
M. Tsuchiya, Y. Ozeki, and M. Kishi, *The University of Tokyo, Japan*

3. Fiber Optic Transmission of Radio QPSK Signals (invited)
I. Seto, T. Tomioka, and S. Ohshima, *Toshiba Corporation, Japan*

4. Radio on Fiber Network Techniques (invited)
T. Kuri, *Communications Research Laboratory, Japan*

Thursday, August 2, 9:30-11:10 **Room D**

D1-1 Photonic Crystals

Chair : F. Koyama, *Tokyo Institute of Technology, Japan*

1. Photonic Crystals and Microlasers (invited)
T. Baba, *Yokohama National University, Japan*

2. Functional Optical Devices Consisting of Photonic Crystals (invited)
Y. Ohtera, *Tohoku University, Japan*

3. Photonic Crystal Lasers (invited)
Y.H. Lee, *Korea Advanced Institute of Science and Technology, South Korea*

4. Photonic Crystals and Devices (invited)
S. Noda, *Kyoto University, Japan*

Thursday, August 2, 14:00-15:40 **Room D**

D1-2 Surface Emitting Lasers

Chair : Y.H. Lee, *Korea Advanced Institute of Science and Technology, South Korea*

1. Vertical Cavity Surface Emitting Laser -Its Fundamentals and Technology- (Tutorial)
K. Iga, *Tokyo Institute of Technology, Japan*

2. GaN Based VCSELs and Quantum Dots (invited)
Y. Arakawa, *University of Tokyo, Japan*

3. Vertical Cavity Lasers for Optical Communication Applications (invited)
K.D. Choquette, *University of Illinois, USA*

(* Tutorial Presentation is allotted 30 min. for the presentation and 10 min. for the discussion, which is double the time of a regular presentation.)

Commission D

Thursday, August 2, 16:00-17:40 **Room D**

D1-3 Surface Emitting Lasers and Their Applications

Chair : K.D. Choquette, *University of Illinois, USA*

1. **High Speed Interconnection Module Using VCSEL (invited)**
   H.K. Shin, K.H. Lee, H.E. Shin, and I. Kim, *OPTICIS Co., Ltd., South Korea*
2. **Transverse Mode Control of Vertical Cavity Surface Emitting Lasers (invited)**
   N. Yokouchi and A. Kasukawa, *Furukawa Electric Co., Ltd., Japan*
3. **Application of VCSELs to Laser Printers and Optical Communications (invited)**
   H. Nakayama, A. Sakamoto, N. Ueki, J. Sakurai, A. Murakami, H. Otoma, Y. Miyamoto, and M. Yamamoto, *Fuji Xerox, Japan*
4. **GaInNAs/GaAs Surface Emitting Lasers (invited)**
   T. Miyamoto, *Tokyo Institute of Technology, Japan*
5. **Nano-structures and MEMS for Surface Emitting Lasers (invited)**
   F. Koyama, *Tokyo Institute of Technology, Japan*

Saturday, August 4, 14:00-15:40 **Room D**

D2 Advanced Devices for Wavelength Division Multiplexing System

Chairs : K. Okamoto, *NTT, Japan*
I. Mito, *NEC Corporation, Japan*

1. **Wavelength-Selectable Light Sources for WDM Systems (invited)**
   T. Sasaki, *NEC Corporation, Japan*
2. **Optical Fibers and Fiber Amplifiers for WDM (invited)**
   S. Namiki and T. Yagi, *Furukawa Electric Co., Ltd., Japan*
3. **Emerging Lightwave Applications of Optical Fiber Grating Device Structures (invited)**
   B.J. Eggleton, Bell Labs, *Lucent Technologies, USA*
4. **Dynamic Gain Equalizers for WDM Systems (invited)**
   B.Y. Kim, *Ultraband Fiber Optics, USA*
5. **Planar Lightwave Circuits for WDM Systems (invited)**
   Y. Hibino, *NTT Photonics Laboratories, Japan*

Saturday, August 4, 16:00-17:40 **Room D**

D3 Femtosecond Optoelectronics and Ultrafast Communications

Chair : M. Nakazawa, *Tohoku University, Japan*

1. **Recent Progress on Femtosecond Technology in Japan (invited)**
   F. Saito, *The Femtosecond Technology Research Association, Japan*
2. **Sub 5 Femtosecond Pulse Technology and its Application Ultrafast Material Dynamics (invited)**
   T. Kobayashi, *University of Tokyo, Japan*
3. **Modelling of a High - Intensity Pulse Propagation in All - Dielectric Multilayered Fibres by the Time - Domain Finite - Difference Beam Propagation Method**
   E.A. Romanova[1], E.V. Bekker[1], T.M. Benson[2], and P. Sewell[2], [1]*Saratov State University, Russia;* [2]*University of Nottingham, UK*
4. **Femtosecond Pulse Technology and its Application to Novel WDM Communication (invited)**
   C. Xu, B. Collings, X. Liu, and W. Knox, *Lucent Technologies, USA*
5. **Single Channel Terabit/s OTDM Transmission Using a Femtosecond Pulse Train (invited)**
   T. Yamamoto, K.R. Tamura, and M. Nakazawa, *NTT, Japan*

Saturday, August 4, 8:50-10:30 **Room D**

D4-1/DBC Lightwave Radio and Relevant Technologies, (1) Optical Links on the Ground and in the Vicinity

Chair : D.M. Britz, *AT&T Labs-Shannon Laboratory, USA*

1. **IP-Based Mesh Networks Using Hybrid Free-Space Optical and Microwave Communication Systems (invited)**
   M. Achour, P. Adhikari, C. Moursund, E. Man, and TereScope, *OptiSwitch and OptiSwitch Master Teams, Optical Access, USA*
2. **Regional Broadband Network by Optical Wireless System**
   K. Wakamori[1], H. Yamashita[1], Y. Kimura[1], Y. Shimodaira[2], and F. Sato[2], [1]*Hamamatsu Photonics K.K. and* [2]*Telecommunications Advancement Organization, Japan*
3. **Optical Free-Space Communication Link**
   V. Biolkova, O. Wilfert, and D. Biolek, *Brno University of Technology, Czech Republic*
4. **Optical Remote Sensing of Upper Atmospheric Turbulence Layers by Speckle-pattern Observations**
   S. Oya, M. Takabe, and T. Aruga, *Communications Research Laboratory, Japan*

Commission D / Commission E

Saturday, August 4, 10:50-12:30 **Room D**

D4-2/DBC Lightwave Radio and Relevant Technologies, (2) Optical Link in Space, Components

Chair : T. Takano, *The Institute of Space and Astronautical Science, Japan*

1. The Status of Free-Space Optical Communications at JPL/ NASA (invited)

H. Hemmati, *Jet Propulsion Laboratory, USA*

2. Analysis of Mutual Alignment Errors due to Wave-Front Distortion in a Free-Space Laser Communication Link

M. Toyoshima, N. Takahashi, T. Jono, T. Yamawaki, K. Nakagawa, and A. Yamamoto, *NASDA, Japan*

3. Artificial Stars Generated by a Nd:YAG Pulse Laser

S. Yoshikado, S. Oya, and T. Aruga, *Communications Research Laboratory, Japan*

4. A Plan of Laser Transmission from Ground to OICETS Satellite

K. Araki and H. Kunimori, *Communications Research Laboratory, Japan*

5. Optimal Design of an Optical Antenna with Modified Reflectors Fed by a Parallel Beam

T. Uo[1], T. Toda[2], and T. Takano[2], [1]*University of Tokyo and* [2]*The Institute of Space and Astronautical Science, Japan*

Thursday, August 2, 9:30-11:10 **Room E**

E1 Lightning Physics

Chairs : A. Bondiou-Clergerie, *ONERA, France*
D. Wang, *Gifu University, Japan*

1. Review on the Lightning Physics Study in China (invited)

X. Qie, *Cold and Arid Regions Environmental and Engineering Institute, China(CIE)*

2. Review of an Experimental Study of Positive Leaders Initiating Rocket-Triggered Lightning (invited)

D.A. Davis, *Siena College, USA*

3. Review of the Initiation and the Self-Sustained Propagation of Positive Leaders (invited)

A.J. Bondiou-Clergerie and P. Lalande, *ONERA, France*

4. Lightning Location from a Single Station

I. Nagano, S. Yagitani, and N. Takezono, *Kanazawa University, Japan*

5. The Influence of Solar Activity on Lightning

K. Schlegel, *MPAE, Germany*

Thursday, August 2, 14:00-15:40 **Room E**

E2 Lightning Detection

Chairs : A. Bondiou-Clergerie, *ONERA, France*
D. Wang, *Gifu University, Japan*

1. Review on Lightning Detection System (invited)

Z-I. Kawasaki, *Osaka University, Japan*

2. 3-Dimensional Lightning Mapping Observations Using A Time-Of-Arrival System (invited)

W. Rison, P.R. Krehbiel, and R.J. Thomas, *New Mexico Institute of Mining and Technology, USA*

3. Recent Results from LIS and OTD -flash rate and storm height- (invited)

T. Ushio[1], S.J. Heckman[2], D.J. Boccippio[3], H.J. Christian[3], K. Okamoto[1], and Z-I. Kawasaki[4], [1]*Osaka Prefecture University, Japan;* [2]*USRA and* [3]*NASA, USA;* [4]*Osaka University, Japan*

4. An Interferometer for Lightning Detection from Space : The Orages Project (invited)

P. Lalande[1], A. Bondiou-Clergerie[1], P. Blanchet[1], F. Roux[2], and S. Chauzy[2], [1]*Onera and* [2]*Laboratoire d'Aerologie, France*

5. Lightning Location from the Time of Group Arrival (TOGA) of VLF Sferics at 4 Sites

R.L. Dowden, J.B. Brundell, and C.J. Rodger, *LF*EM Reseach Ltd, New Zealand*

Thursday, August 2, 16:00-17:40 **Room E**

E3/EGH Sprites, Elves and Their Global Activities (1)

Chairs : Y. Takahashi, *Tohoku University, Japan*
M. Fuellekurg, *Frankfurt University, Germany*

1. Simulation of lower ionospheric modification by lightning-EMP (Elves) (invited)

C.J. Rodger[1], M. Cho[2], M.A. Clilverd[3], and M.J. Rycroft[4], [1]*LF*EM Research Ltd., New Zealand;* [2]*Kyushu Institute of Technology, Japan;* [3]*British Antractic Survey and* [4]*CAESAR Consultancy, UK*

2. Full Wave Analysis of Elves Created by Lightning-Generated Intense EMPs

I. Nagano, S. Yagitani, and S. Makino, *Kanazawa University, Japan*

3. VLF Sprites with Sub-Millisecond Resolution

R.L. Dowden, C.J. Rodger, and J.B. Brundell, *LF*EM Reseach Ltd, New Zealand*

4. Sprites and Lightning Currents from ELF Observations (invited)

S.A. Cummer, *Duke University, USA*

5. Interrelation between ELF Transients and Ionospheric Disturbances in Association with Sprite and Elve (invited)

Y. Hobara[1], H. Fukunishi[2], K. Ohta[3], and M. Hayakawa[4], [1]*EORC, NASDA,* [2]*Tohoku University,* [3]*Chubu University, and* [4]*The University of Electro-Communications, Japan*

Commission E

Friday, August 3, 9:30-11:10 **Room E**

E4/EGH Sprites, Elves and Their Global Activities (2)

Chairs : Y. Takahashi, *Tohoku University, Japan*
M. Fuellekurg, *Frankfurt University, Germany*

1. Remote Sensing of Sprite Occurrences in Central Africa by Infrared Satellite Imagery (invited)
M. Fuellekrug, *Frankfurt University, Germany*

2. Sprites Identification Based on ELF Observation in Antarctica (invited)
M. Sato, *Tohoku University, Japan*

3. High-Definition TV Imagery of Elves and Sprites over the Mediterranean Sea during the 1999 Leonid Meteor Shower Peak (invited)
H. Yano[1], S. Abe[2], and Y. Takahashi[3], [1]*Institute of Space and Astronautical Science,* [2]*Graduate University for Advanced Studies, and* [3]*Tohoku University, Japan*

4. Observation of Sprites Over the Asian Continent
H. Su[1], A.B. Chen[1], R. Hsu[1], and L. Lee[2], [1]*National Cheng Kung University and* [2]*National Space Program Office, China(SRS)*

5. Activities of Sprites and Elves in Winter Season
Y. Takahashi, *Tohoku University, Japan*

Friday, August 3, 14:00-15:40 **Room E**

E5/EGH Sprites, Elves and Their Global Activities (3)

Chairs : Y. Takahashi, *Tohoku University, Japan*
M. Fuellekurg, *Frankfurt University, Germany*

1. Telescopic Imaging of Sprites (invited)
E.A. Gerken and U.S. Inan, *Stanford University/STAR Laboratory, USA*

2. Characteristics of Sprite Halo Based on Photometric and Imaging Data
R. Miyasato[1], Y. Takahashi[1], H. Fukunishi[1], and M.J. Taylor[2], [1]*Tohoku University, Japan;* [2]*Utah State University, USA*

3. Sprite Initiation and Other Sprites Characteristics (invited)
D. Moudry, H. Stenbaek-Nielsen, D. Sentman, and E. Wescott, *University of Alaska Fairbanks, USA*

4. Estimation of Electron Energy in Sprites and Elves
M. Sera, Y. Takahashi, and H. Fukunishi, *Tohoku University, Japan*

5. Sprites Observation by ISUAL Onboard the ROCSAT-2 Satellite (invited)
H. Su[1], J. Chern[1], L. Lee[1], R. Hsu[1], A.B. Chen[1], S.B. Mende[2], H. Fukunishi[3], and Y. Takahashi[3], [1]*National Cheng Kung University, Taiwan;* [2]*University of California, USA;* [3]*Tohoku University, Japan*

Saturday, August 4, 8:50-10:30 **Room E**

E6/EC Electromagnetic Compatibility in Communication System

Chairs : S. Miyamoto, *Osaka University, Japan*
J. Gavan, *Holon Academic Institute of Technology, Israel*

1. Interference from Cosited Radio Systems and Radiation Hazards: Are They Related? (invited)
J. Gavan, *HAIT, Israel*

2. An Enhanced Simulation Methodology for Computing Interference between NGSO Systems and Other Radiocommunications Networks
R. Chavez and V. Kontorovich, *CINVESTAV-IPN, Mexico*

3. High Dynamic Range Radiated-Emission Measurement for Portable Radios (invited)
T. Iyama, Y. Tarusawa, and T. Nojima, *NTT DoCoMo, Inc., Japan*

4. Representing Function for Extreme Value Distribution to Describe the Low Time Rate Portion of Radio Noise
H. Echigo and R. Sato, *Tohoku Gakuin University, Japan*

5. Adaptive Immunity Controll of 2.4GHz-band DS-SS Wireless LAN System under Man-made Noise and Multipath Fading Environment (invited)
S. Miyamoto and N. Morinaga, *Osaka University, Japan*

Saturday, August 4, 10:50-12:30 **Room E**

E7 EMC Problems in Printed Circuits Boards and Systems (1)

Chairs : O. Wada, *Okayama University, Japan*
H. Garbe, *University of Hannover, Germany*

1. Modeling of Printed Circuit Boards for Fast EMC Simulation (invited)
O. Wada, Z.L. Wang, Y. Fukumoto, Y. Toyota, and R. Koga, *Okayama University, Japan*

2. EMC Modeling and Design of Microelectronic Systems (invited)
W. John, *Fraunhofer Gesellschaft Institute Reliability and Microintegration, Germany*

3. Influence of Device Models on PCB Radiation (invited)
F.G. Canavero, S. Grivet-Talocia, I.A. Maio, and I.S. Stievano, *Politecnico di Torino, Italy*

4. EMI Modeling & Simulation for Advanced Electronic Packaging (invited)
M.K. Iyer, *Institute of Microelectronics (IME), Singapore*

5. LSI Modeling Techniques for Power Supply Current Analysis on PCB (invited)
H. Wabuka, *NEC Corporation, Japan*

Commission E / Commission F

Saturday, August 4, 14:00-15:40 **Room E**

E8 EMC Problems in Printed Circuits Boards and Systems (2)

Chairs : H. Garbe, *University of Hannover, Germany*
O. Wada, *Okayama University, Japan*

1. Getting Data for System Integration from Radiation Measurements in TEM Waveguides (invited)

H. Garbe[1], M. Heidemann[1], and P. Kralicek[2], [1]*University of Hannover and* [2]*FhG-IZM Advanced System Engineering, Germany*

2. A Tendency on EMI Reduction by means of Parts and Wirings Layouts on PCB (invited)

S. Nitta and A. Mutoh, *Tokyo University of Agriculture and Technology, Japan*

3. Susceptibility and Immunity Characteristics of Circuits on a PCB (invited)

Y. Kami, *The University of Electro-Communications, Japan*

4. Near Field Measurement to Control Noise Characteristics of Microcontrollers Assembled on PCB (invited)

A. Nakamura, T. Hayashi, and M. Suwa, *Hitachi, Ltd., Japan*

5. Optimization of Lossy Sheets for the Suppression of Coupling between Two Microstrip Lines in Microwave Amplifier Modules

A. Saito[1] and A. Nishikata[2], [1]*Daido Steel Co., Ltd. and* [2]*Tokyo Institute of Technology, Japan*

Saturday, August 4, 16:00-17:40 **Room E**

E9 EMC Problems of Electrical Power Systems

Chair : T. Funaki, *Osaka University, Japan*

1. EMC Measurement in Urban Area

T. Fukami[1], H. Sakurano[1], and I. Nagano[2], [1]*Ishikawa National College of Technology and* [2]*Kanazawa University, Japan*

2. Application of the Time-Frequency Analysis for EMC Study on Power Conversion System

K. Akamatsu[1], M. Michihira[2], T. Funaki[1], Z. Kawasaki[1], and K. Matuura[1], [1]*Osaka University and* [2]*Kobe City College of Technology, Japan*

3. Theoretical Analysis on the Penetration of Power Line Harmonic Radiation into the Ionosphere

Y. Ando and M. Hayakawa, *The University of Electro-Communications, Japan*

4. Change of ELF Magnetic Field Distribution Caused by Asymmetric Configuration of Electric Power Cable Covered with Metal Pipe

T. Moriyama, K. Asano, S. Ohtsuka, M. Cho, J. Hong, and M. Hikita, *Kyushu Institute of Technology, Japan*

5. Electromagnetic Interference from a Three Phase Double Circuit 765-kV Transmission Line in Korea (invited)

D. Lee[1], K. Shin[1], K. Yang[2], M. Joo[2], and S. Min[3], [1]*KEPRI,* [2]*KERI, and* [3]*Soonchunhyang University, South Korea*

Thursday, August 2, 9:30-11:10 **Room F**

F1-1 Recent Issues on Earth-Space Propagation

Chairs : Y. Maekawa, *Osaka Electro-Communication University, Japan*
C.E. Mayer, *University of Alaska, Fairbanks, U.S.A.*

1. An Investigation on Rain Rate Correlation Characteristics in Global Propagation Prediction Methods (invited)

C. Ito and Y. Hosoya, *Kitami Institute of Technology, Japan*

2. Effects of Four-Layered Rainforests in Earth-Space Propagation: An Analytical Approach and Mixed-Mode Propagation (invited)

L.-W. Li, T. Yeo, and M. Leong, *The National University of Singapore, Singapore*

3. Prediction Modeling of Rain Attenuation using the KOREASAT (invited)

Y. Choi, J. Lee, and H. Lee, *ETRI, South Korea*

4. Scintillation Model Comparison (invited)

C.E. Mayer, *Univ. of Alaska, USA*

5. Modeling and Measurement of Depolarization Effects on Slant Propagation Paths (invited)

C.A. Amaya and D.V. Rogers, *Communications Research Centre Canada, Canada*

Friday, August 3, 14:00-15:40 **Room F**

F1-2 Special Session on Post-PARTNERS Project

Chairs : K. Igarashi, *Communications Research Laboratory, Japan*
U. Sastrokusumo, *Institute of Technology Bandung, Indonesia*

1. Rain Attenuation Measurements in Ku-band Satellite Communication in the East-Asian Region under the POST-PARTNERS Project (invited)

H. Minakoshi[1], K. Igarashi[1], T. Boonchauk[2], N. Hemmakorn[2], A. Yagasena[3], S.I. Hassan[3], J. Suryana[4], U.I. Sastrokusumo[4], J.C. Monje[5], and R. Reyes[5], [1]*Communications Research Laboratory, Japan;* [2]*King Mongkut's Institute of Technology Ladkrabang, Thailand;* [3]*University Sains Malaysia, Malaysia;* [4]*Institute of Technology Bandung, Indonesia;* [5]*Ateneo de Manila University, Philippines*

2. Result of Ku-band Satellite Signal Propagation Experiments under Post-PARTNERS Project (invited)

T. Boonchuk[1], N. Hemmarkorn[1], K. Igarashi[2], H. Minakoshi[2], M. Kawamura[2], Y. Moriya[3], and T. Minode[4], [1]*King Mongkut's Institute of Technology, Thailand;* [2]*Communications Research Laboratory,* [3]*Tokai University, and* [4]*ARIB, Japan*

3. Results of Second Year Ku-Band Beacon Signal Measurement at Tronoh, Malaysia (invited)

Y. Appannah[1], S. Syed Hassan[1], M. Singh[1], K. Igarashi[2], and H. Minakoshi[2], [1]*University Science of Malaysia, Malaysia;* [2]*Communications Research Laboratory, Japan*

4. Seasonal Dependence of Clear Air Tropospheric Scintillation from Ku-band Propagation Using JCSAT3 in Indonesia (invited)

L. Yulianti[1], U. Sastrokusumo[1], J. Suryana[1], K. Igarashi[2], and H. Minakoshi[2], [1]*Institute of Technology Bandung, Indonesia;* [2]*Communications Research Laboratory, Japan*

5. Two Years Rainfall Rate and Rain Attenuation Measurements in Indonesia under Post-PARTNERS Project (invited)

U. Sastrokusumo[1], J. Suryana[2], H. Wundarto[1], K. Igarashi[3], and H. Minakoshi[3], [1]*Institute of Technology Bandung and* [2]*Lab.of Radio Telecommunication and Microwave, Indonesia;* [3]*Communications Research Laboratory, Japan*

Commission F

Thursday, August 2, 14:00-15:40 **Room F**

F2 Terrestrial Propagation

Chairs : S. Choi, *Department of Radio Technology, Radio & Broadcasting Lab., ETRI, South Korea*
A. Sato, *NTT Access Network Service Systems Lab., Japan*

1. The Measurement and Modelling of Surface and Elevated Ducts in Coastal Environments (invited)
A.S. Kulessa, *DSTO, Australia*

2. Comparison of ITU-R Atmospheric Model and the Measured Data at 60 GHz in KOREA
Y. Kim, J. Lee, J. Kim, and Y. Choi, *Radio & Broadcasting Lab., ETRI, South Korea*

3. Multi-Frequency Effects for Estimation of Radio Refractivity Profile
J.H. Kim, Y.S. Choi, and H.S. Lee, *Radio & Broadcasting Lab., ETRI, South Korea*

4. The Development of Broadcasting Interference Analysis Simulator for Frequency Allotment
C. Shin, H. Lee, S. Choi, and S. Lee, *Radio & Broadcasting Lab., ETRI, South Korea*

5. New Delay Profile Model for FWA in Residential Area in 5-GHz Band
N. Kita[1], S. Uwano[1], K. Itokawa[1], A. Sato[1], H. Hosoya[2], and H. Watanabe[2], [1]*NTT Access Network Service Systems Laboratories and* [2]*NTT Advanced Technology, Japan*

Thursday, August 2, 16:00-17:40 **Room F**

F3 Mobile and Indoor Propagation (1)

Chairs : T. Kobayashi, *Tokyo Denki University, Japan*
F. Perez-Fontan, *Universidad de Vigo, Spain*

1. Comparison of Channel Characteristics and Propagation-measurement-based Spread Spectrum Link Performance Estimates for Microcellular-type Mobile Radio Channels at Frequencies Near 2GHz and 6GHz (invited)
R.J. Bultitude and N. Adnani, *Communications Research Centre, Canada*

2. Time-Space Path Modeling for Wideband Mobile Propagation (invited)
T. Fujii and I. Sato, *Japan Telecom Co.,Ltd., Japan*

3. Recent Advances and Future Prospects in Indoor Radio Channel Prediction (invited)
H. Suzuki, *CSIRO, Australia*

4. Multipath Propagation Theory and Modeling in Wideband Mobile Radio - Connecting Propagation and Systems by ETP model - (Tutorial)
Y. Karasawa, *The University of Electro-Communications, Japan*

(* Tutorial Presentation is allotted 30 min. for the presentation and 10 min. for the discussion, which is double the time of a regular presentation.)

Friday, August 3, 9:30-11:10 **Room F**

F4 Mobile and Indoor Propagation (2)

Chairs : Y. Karasawa, *Univ. Electro-Communications, Japan*
R. Bultitude, *Communications Research Centre, Canada*

1. Field Prediction in Urban Mobile Communications (invited)
W. Hong and X. Yin, *Southeast University, China(CIE)*

2. Advanced Propagation Models for GSM1800 and UMTS (invited)
T. Kuerner, *E-Plus Mobilfunk GmbH & CoKG, Germany*

3. Initiatives in Microwave Propagation Studies for Future Mobile Communications (invited)
H. Shimizu[1] and T. Kobayashi[2], [1]*YRP Mobile Telecommunications Key Technology Research Laboratories and* [2]*Tokyo Denki University, Japan*

4. Studies on Land Mobile Satellite Propagation Modeling (invited)
F. Perez-Fontan, *University of Vigo, Spain*

5. Millimeter-Wave Propagation Characteristics in ITS Inter-Vehicle Communications (invited)
A. Kato, K. Sato, and M. Fujise, *Communications Research Laboratory, Japan*

Friday, August 3, 14:00-15:40 **Room Y**

F5 Polarimetric Remote Sensing of Earth's Environment

Chairs : W.-M. Boerner, *University of Illinois at Chicago, USA*
Y. Yamaguchi, *Niigata University, Japan*

1. Advances in Extra-Wide-Band Multi-modal Sensing and Imaging (invited)
W.-M. Boerner[1] and Y. Yamaguchi[2], [1]*University of Illinois at Chicago, USA;* [2]*Niigata University, Japan*

2. Rotation of a Target and Its Scattering Matrix (invited)
J. Yang[1], Y. Peng[1], and Y. Yamaguchi[2], [1]*Tsinghua University, China(CIE);* [2]*Niigata University, Japan*

3. Fundamental Development and Tests of a Depolarizing Retrodirective Reflector for Polarimetric Calibration
M. Fujita[1], H. Okubo[1], Y. Fujino[2], and M. Tanaka[2], [1]*Tokyo Metropolitan Institute of Technology,* [2]*Communications Research Laboratory, Japan*

4. Polarimetric SAR Image Classification and Support Vector Machines (invited)
S. Fukuda and H. Hirosawa, *The Institute of Space and Astronautical Science, Japan*

5. PI-SAR Image Analyses (invited)
Y. Yamaguchi, K. Kimura, and H. Yamada, *Niigata University, Japan*

Commission F

Saturday, August 4, 8:50-10:30 **Room F**

F6 Interferometric Remote Sensing of Earth's Environment

Chairs : Y. Kim, *Jet Propulsion Laboratory, California Institute of Technology, USA*
H. Yamada, *Niigata University, Japan*

1. Overview of Vegetation Parameter Estimation Techniques using SAR Polarimetry and Interferometry (invited)
Y. Kim and J. van Zyl, *Jet Propulsion Laboratory, USA*

2. Polarization Dependence of the SAR Interferometry (invited)
M. Shimada[1], M. Minamisawa[2], and H. Ohkura[3], [1]*NASDA,* [2]*RESTEC, and* [3]*NIED, Japan*

3. Dual Polarization SAR Interferometry for Vegetation Analysis (invited)
H. Yamada[1], Y. Yamaguchi[1], E. Rodriguez[2], Y. Kim[2], and W.M. Boerner[3], [1]*Niigata University, Japan;* [2]*Jet Propulsion Laboratory and* [3]*University of Illinois at Chicago, USA*

4. The Relationship between Radar Polarimetric and Interferometric Phase (invited)
J. van Zyl and Y. Kim, *Jet Propulsion Laboratory, USA*

5. Utilization of Interferometric DEM by Airborne SAR for Volcanic Acivities (invited)
S. Uratsuka, T. Umehara, H. Maeno, A. Nadai, M. Satake, T. Matsuoka, and H. Masuko, *Communications Research Laboratory, Japan*

Saturday, August 4, 10:50-12:30 **Room F**

F7 Remote Sensing of Rain and Clouds

Chairs : Ge Wenzhong, *Nanjing University, China(CIE)*
H. Kumagai, *Communications Research Laboratory, Japan*

1. Passive Microwave Retrieval of Over-ocean Precipitation Rate and Rain Types Using TRMM Microwave Imager (invited)
K. Aonashi, *Meteorological Research Institute, Japan*

2. Three Years of TRMM Rain Observation (invited)
T. Iguchi, *Communications Research Laboratory, Japan*

3. Characterization of Tropical Rainfall: A Remote Sensing Approach (invited)
J.T. Ong, K.I. Timothy, and E.B. Choo, *Nanyang Technological University, Singapore*

4. Precipitation Particle Classification and Raindrop Size Distribution Retrieval from S-band Polarization Radar Measurements (invited)
J. Vivekanandan and G. Zhang, *National Center for Atmospheric Research, USA*

5. Rain Radar Network in China (invited)
Ge Wenzhong, *Nanjing University, China(CIE)*

Saturday, August 4, 14:00-15:40 **Room F**

F8 Subsurface Remote Sensing and Ground Penetrating Radars

Chairs : M. Sato, *Tohoku University, Japan*
D. Noon, *The University of Queensland, Australia*

1. Acoustic Plug Detection in Plugged Boreholes
S. Choi, *ETRI, South Korea*

2. Penetration Depth Improvement using Stepped-Frequency Ground Penetrating Radar (invited)
D.A. Noon, G.F. Stickley, and I.D. Longstaff, *CSSIP, University of Queensland, Australia*

3. Highly Decoupled Transmitting and Receiving Antenna for CW Ground-Penetrating Radar (invited)
D. Je and J. Ra, *Korea Advanced Institute of Science and Technology, South Korea*

4. Radio Imaging Method -Research and Development in China - (invited)
Y. Wu, X. Qu, and Z. Zhang, *Beijing Xiyi Hightech Research Institute, China(CIE)*

5. The Inversion of Subsurface Data and a Simple Algorithm to Process Large-Scale Real Data (invited)
W.C. Chew[1], A.A. Aydiner[1], T.J. Cui[1], D.L. Wright[2], D.V. Smith[2], and J.D. Abraham[2], [1]*University of Illinois, Urbana and* [2]*United States Geological Surbey, USA*

Saturday, August 4, 16:00-17:40 **Room F**

F9 Advanced Remote Sensing

Chairs : S. Uratsuka, *Communications Research Laboratory, Japan*
W.M. Moon, *Seoul National University, South Korea*

1. Polarimetric Borehole Radar and Applications (invited)
M. Sato, *Tohoku University, Japan*

2. Remote Sensing of Lunar Surface and Subsurface by Spaceborne HF Sounder : SELENE Lunar Radar Sounder
T. Kobayashi[1], T. Ono[1], and H. Oya[2], [1]*Tohoku University and* [2]*Fukui University of Technology, Japan*

3. Electromagnetic Scattering by Objects on the Stratified and Rough Surface Ground for Satellite Remote Sensing
J. Sonoda and Y. Miyazaki, *Toyohashi University of Technology, Japan*

4. Radiometric Image Synthesis with a Single Mobile Antenna
P. Fridman, *ASTRON, The Netherlands*

5. Phase Fluctuations Influence on Processing Time of Signals of Radiolocation Station with Antenna Synthesized Aperture
B. Makarenko, A. Soroka, A. Vilchinsky, and E. Prilepsky, *NIIRI, Ukraine*

Commission G

Thursday, August 2, 9:30-11:10 **Room G**

G1 International Reference Ionosphere (1)

Chairs : K. Oyama, *Institute of Space and Astronautical Science, Japan*
D.K. Bilitza, *GSFC,NSSDC, USA*

1. The URSI/COSPAR International Reference Ionosphere (IRI) - A Standard Description of Ionospheric Parameters (invited)
D. Bilitza, *Raytheon ITSS, USA*

2. Ionospheric Variability and the International Reference Ionosphere (invited)
P.J. Wilkinson, *IPS Radio and Space Services, Australia*

3. A Study of Ionospheric Electron Densities Obtained from the IRI, TIEGCM, and GPS Applications (invited)
J. Liu, M. Chen, H. Tsai, and C. Lin, *National Central University, China(SRS)*

4. Possible Coordination of Electron Density and Temperature Data Obtained with Hinotori, DE-2 and ICB1300 Spacecrafts for IRI
K. Oyama, *Institute of Space and Astronautical Science, Japan*

5. 3-D Visualization of Electron Density of Ionosphere
S. Watari, I. Iwamoto, K. Igarashi, M. Isogai, and Y. Arakawa, *Communications Research Laboratory, Japan*

Thursday, August 2, 14:00-15:40 **Room G**

G2 International Reference Ionosphere (2)

Chairs : D.K. Bilitza, *GSFC,NSSDC, USA*
K. Oyama, *Institute of Space and Astronautical Science, Japan*

1. A Unique Feature of the Low Latitude Ionosphere
N. Balan, *Kyoto University, Japan*

2. Akebono Contribution to International Reference Ionosphere (invited)
T. Abe and K. Oyama, *The Institute of Space and Astronautical Science, Japan*

3. Temperature Anisotropy of Drifting Ions in the Auroral F-region Derived from the EISCAT Tristatic Observations
T.F. Shibata and J. Yasuno, *University of Electro-Communications, Japan*

4. Initial Results of the Thermal Electron Measurement on KOMPSAT-1
K.W. Min, J.J. Lee, and J. Kim, *Korea Advanced Institute of Science and Technology, South Korea*

5. Empirical Modeling of Electron Temperature in the Planetary Ionospheres (invited)
K.K. Mahajan, *National Physical Laboratory, India*

Thursday, August 2, 16:00-17:40 **Room G**

G3 Global Response of the Thermosphere and Ionosphere to Geomagnetic Disturbances

Chairs : S. Maeda, *Kyoto Women's University, Japan*
P.J. Wilkinson, *IPS Radio and Space Services, Australia*

1. Global Modeling of the Response of the Thermosphere and Ionosphere to Geomagnetic Storms (invited)
T.J. Fuller-Rowell, *Space Environment Center, USA*

2. Traveling Ionospheric Disturbances Detected by GPS Network (invited)
A. Saito[1], T. Tsugawa[2], Y. Otsuka[3], and M.C. Kelley[1], [1]*Cornell University, USA;* [2]*Kyoto University and* [3]*Nagoya University, Japan*

3. Ionospheric Disturbances During the Space Weather Month (September 1999)
P.J. Wilkinson[1] and T.J. Fuller-Rowell[2], [1]*IPS Radio and Space Services, Australia;* [2]*Space Environment Center, USA*

4. Modeling of the Low-Latitude Ionosphere During Geomagnetic Disturbances
N. Maruyama[1], S. Watanabe[1], and T.J. Fuller-Rowell[2], [1]*Hokkaido University, Japan;* [2]*Space Environment Center, USA*

5. Penetration of Magnetospheric Electric fields to the Global Ionosphere During substorms
T. Kikuchi[1], H. Luehr[2], K. Schlegel[3], and T. Kitamura[4], [1]*Communications Research Laboratory, Japan;* [2]*GeoForshungsZentrum and* [3]*Max-Planck-Institut fuer Aeronomie, Germany;* [4]*Kyushu-University, Japan*

Friday, August 3, 9:30-11:10 **Room G**

G4 Dynamics and Energetics of the High-Latitude Thermosphere and Ionosphere

Chairs : T.J. Fuller-Rowell, *Space Environment Center, USA*
M. Ishii, *Communications Research Laboratory, Japan*

1. Estimate of Joule Heating Rate from Multi-Instrument Measurements (invited)
G. Lu and A.D. Richmond, *National Center for Atmospheric Research, USA*

2. Estimating Variability in Large Scale Joule Heating of the Atmosphere (invited)
D.J. Knipp, M.G. McHarg, and F.K. Chun, *US Air Force Academy, USA*

3. Seasonal Variations of Ion Upflow and Electron Density in the Topside Ionosphere (invited)
R. Fujii, *Nagoya University, Japan*

4. Neutral Temperature over the Cusp and Auroral Oval
S. Maeda[1], S. Nozawa[2], and M. Sugino[2], [1]*Kyoto Women's University and* [2]*Nagoya University, Japan*

5. Changes of Energy Budget in the Polar Thermosphere Caused by Energy Inputs from the Upper and Lower Regions
H. Fujiwara[1], M. Suzuki[1], S. Maeda[2], and S. Nozawa[3], [1]*Tohoku University,* [2]*Kyoto Women's University, and* [3]*Nagoya University, Japan*

Commission G

Friday, August 3, 14:00-15:40 **Room G**

G5 Ionospheric Irregularities and Structures (1)

Chairs : R.T. Tsunoda, *SRI International, USA*
M. Yamamoto, *Kyoto University, Japan*

1. Equatorial Investigations of Ionospheric Irregularities from the Pohnpei Radar Observatory (invited)

R.T. Tsunoda, *SRI International, USA*

2. Meridional Changes in Ionospheric Height near the Magnetic Equator and Implications in Equatorial Spread F Onsets (invited)

T. Maruyama[1], K. Nozaki[1], M. Yamamoto[2], and S. Fukao[2], [1]*Communications Research Laboratory and* [2]*Kyoto University, Japan*

3. A Study on Energy Source of the Additional Layer in the Ionosphere

C. Hsiao[1], J. Liu[1], and H. Lue[2], [1]*National Central University and* [2]*Fu-Jen University, China(SRS)*

4. The GPS Investigations of Ionospheric Irregularities and Structures along the WestPac Chain

J. Liu[1], H. Tsai[1], F. Chu[1], and K. Saroso[2], [1]*National Central University, China(SRS);* [2]*Ionospheric Research and Development Center, Indonesia*

5. Radar Imaging of E and F Region Irregularities at Jicamarca (invited)

D.L. Hysell, *Clemson University, USA*

Saturday, August 4, 8:50-10:30 **Room G**

G6 Ionospheric Irregularities and Structures (2)

Chairs : M. Yamamoto, *Kyoto University, Japan*
R.T. Tsunoda, *SRI International, USA*

1. Gadanki and MU Radar Studies of the E Region Field-Aligned Irregularities (invited)

P.B. Rao[1], M. Yamamoto[2], and S. Fukao[2], [1]*National MST Radar Facility, India;* [2]*Kyoto University, Japan*

2. The Quasi-Periodic Radar Echoes Studies in Chung-Li (invited)

C. Pan, *Institute of Space Science, NCU, China(SRS)*

3. Altitude Comparison of Mid-Latitude Quasi-Periodic Radar Echoes and Sporadic-E

T. Ogawa[1], O. Takahashi[1], K. Nozaki[2], and M. Yamamoto[3], [1]*Nagoya University,* [2]*Communications Research Laboratory, and* [3]*Kyoto University, Japan*

4. Investigating the Natural Ionosphere Structure with HF Radio Waves

L.M. Kagan, *Radiophysical Research Institute, Russia*

5. Global Distributions of Sporadic E Obtained from Intersatellite Communication Links

K. Hocke[1], K. Igarashi[1], M. Ikeda[1], T. Tsuda[2], and A.G. Pavelyev[2], [1]*Communications Research Laboratory and* [2]*Kyoto University, Japan*

Saturday, August 4, 10:50-12:30 **Room G**

G7 Progress of Ionospheric Radio Observations (1)

Chairs : N. Balan, *University of Kerala, India*
S. Watanabe, *Hokkaido University, Japan*

1. The MU Radar Contributions to Midlatitude Ionospheric Physics: Past, Present, and Future (invited)

S. Fukao, *Kyoto University, Japan*

2. SuperDARN: A Global View of Dynamics of High Latitude Convection (invited)

T. Kikuchi[1], K. Hashimoto[1], R.M. Greenwald[2], and M. Ruohoniemi[2], [1]*Communications Research Laboratory, Japan;* [2]*Johns Hopkins University/Applied Physics Laboratory, USA*

3. Advances in Passive Multistatic Radar for Atmospheric and Ionospheric Remote Sensing (invited)

J.D. Sahr, C. Zhou, and D.M. Gidner, *University of Washington, USA*

4. Space Tethers for Space Science and Propulsion (invited)

B.E. Gilchrist, *University of Michigan, USA*

5. Retrieval of in-situ Electron Density in the Topside Ionosphere from Cosmic Radio Noise Intensity by Artificial Neural Network

T. Maruyama, *Communications Research Laboratory, Japan*

Saturday, August 4, 14:00-15:40 **Room G**

G8 Progress of Ionospheric Radio Observations (2)

Chairs : S. Watanabe, *Hokkaido University, Japan*
N. Balan, *University of Kerala, India*

1. Gravity Waves and Ionospheric Irregularities over Tropical Convection Zones and Mountain Regions observed by GPS/MET

K. Hocke and T. Tsuda, *Kyoto University, Japan*

2. Progress in Radio Holography Application to Investigation of Natural Processes Using Radio Occultation Data

A. Pavelyev[1], T. Tsuda[2], K. Hocke[2], K. Igarashi[3], C. Reigber[4], J. Wickert[4], and G. Beyerle[4], [1]*IRE RAS, Russia;* [2]*Kyoto University and* [3]*Communications Research Laboratory, Japan;* [4]*GFZ Potsdam, Germany*

3. Development of a Multi-Frequency Interferometer for the Jovian Decameter Radiation and a Method to Estimate TEC Fluctuation by Using the GPS Network

M. Oya[1], T. Nakajo[1], T. Ono[1], M. Iizima[1], and H. Oya[2], [1]*Tohoku University and* [2]*Fukui University of Technology, Japan*

4. Dynamical Coupling of the Upper Atmospheric Regions at Mid Latitudes

N. Balan[1], S. Kawamura[1], T. Nakamura[1], M. Yamamoto[1], K. Igarashi[2], S. Fukao[1], and S. Watanabe[3], [1]*Kyoto University,* [2]*Communications Research Laboratory, and* [3]*Hokkaido University, Japan*

5. Radio Occultation Project in Japan Study of Atmosphere/Ionosphere of Mars, Moon, Venus, and Solar Corona

K. Oyama[1], T. Imamura[1], K. Noguchi[1], A.S. Nabatov[2], T. Takano[1], Z. Yamamoto[1], M. Tokumaru[3], and T. Ichikawa[1], [1]*Institute of Space and Astronautical Science, Japan;* [2]*Institute of Radio Astronomy of Academy of Science of Ukraine, Ukraine;* [3]*Nagoya University, Japan*

Commission G / Commission H

Saturday, August 4, 14:00-15:40 **Room X**

G9/GE Electromagnetic Phenomena Related with Earthquake and Volcanic Activities (1)

Chairs : O.A. Molchanov, *Earth Observation Research Center, NASDA, Japan (Russia)*
S.A. Pulinets, *IZMIRAN, Russia*

1. Electric & Electromagnetic Earthquake Precursors Recorded on Mediterranean Basin: Field Observations, Method of Analysis, Generation Mechanisms (invited)

F. Vallianatos[1] and V. Lapenna[2], [1]*Technological Educational Institute of Crete, Greece;* [2]*Istituto di Metodologie Avanzate di Analisi Ambientale-CNR, Italy*

2. The Latest Aspects of Electromagnetic Study for the Short-term Earthquake Prediction in Japan, - Anomalous Electric Potential Changes - (invited)

T. Nagao and S. Uyeda, *RIKEN-IFREQ, Japan*

3. ULF Geomagnetic Anomalies Associated with Earthquakes

K. Hattori[1], Y. Akinaga[2], K. Gotoh[2], C. Yoshino[3], Y. Kopytenko[4], M. Hayakawa[2], K. Yumoto[5], T. Nagao[6], and S. Uyeda[3], [1]*Chiba University,* [2]*The University of Electro-Communications, and* [3]*RIKEN International Frontier Research Group on Earthquake, Japan;* [4]*St. Petersburg Filial of IZMIRAN, Russia;* [5]*Kyushu University and* [6]*Tokai University, Japan*

4. Electromagnetic Phenomena Associated with Earthquakes (invited)

M. Hayakawa, *The University of Electro-Communications, Japan*

5. Evidence of Earth-origin Electromagnetic Waves Propagating in the Deep Earth

M. Tsutsui, *Kyoto Sangyo University, Japan*

Saturday, August 4, 16:00-17:40 **Room X**

G10/GE Electromagnetic Phenomena Related with Earthquake and Volcanic Activities (2)

Chairs : F. Vallianatos, *Technological Educational Institute of Crete, Greece*
M. Hayakawa, *The University of Electro-Communications, Japan*

1. Electromagnetic Radiation of the Finite Moving Sources

J. Dong and Y. Gao, *Beijing Univ. of Posts and Telecom., China(CIE)*

2. Seismo-Ionospheric Anomalies Observed Prior to the 1995 Kobe Earthquakes (invited)

J. Liu[1], H. Tsai[1], Y. Chuo[1], and S.A. Pulinets[2], [1]*National Central University, China(SRS);* [2]*IZMIRAN, Russia*

3. Physics and Practical Application of Ionospheric Precursors of Strong Earthquakes (invited)

S.A. Pulinets[1], K.A. Boyarchuk[1], V.V. Hegai[1], and J. Liu[2], [1]*IZMIRAN, Russia;* [2]*National Central University, China(SRS)*

4. Lithosphere-Atmosphere-Ionosphere Coupling through Gravity Waves as Observed from Propagation of VLF Subionospheric Signals and Satellite Recordings (invited)

O. Molchanov[1] and M. Hayakawa[2], [1]*Earth Observation Research Center, NASDA and* [2]*The University of Electro-Communications, Japan*

5. Equatorial Anomaly Variations Observed Before the Strong Earthquakes in Western Pacific Region

A.D. Legen'ka[1] and J. Liu[2], [1]*IZMIRAN, Russia;* [2]*National Central University, China(SRS)*

Saturday, August 4, 8:50-10:30 **Room H**

H1 Plasma as a Complex System (1)

Chairs : A. Sen, *Institute for Plasma Research, India*
T.K. Nakamura, *Fukui Prefectural University, Japan*

1. A Statistical Theory on Temperature Anisotropy Relaxation by Ion Cycltron Waves

T.K. Nakamura, *Fukui Prefectural University, Japan*

2. Stochastic Growth Theory and Its Application in Space Plasmas (invited)

I.H. Cairns and P.A. Robinson, *University of Sydney, Australia*

3. Statistical Study of Geomagnetic Disturbances: Power Law in Frequency Distributions and the SOC Model (invited)

H. Shirai and Y. Watanabe, *Nagoya University, Japan*

4. Complexity in Electron Magnetohydrodynamic Turbulence (invited)

A. Das, *Institute for Plasma Research, India*

5. Electron Acoustic Waves Exhibiting Dromion Solutions and Their Role in the Polar Cap Boundary Layers

S.S. Ghosh[1], A. Sen[2], and G.S. Lakhina[3], [1]*Pohang University of Science and Technology (POSTECH), South Korea;* [2]*Institute for Plasma Research and* [3]*Indian Institute of Geomagnetism, India*

Saturday, August 4, 10:50-12:30 **Room H**

H2 Plasma as a Complex System (2)

Chairs : T.K. Nakamura, *Fukui Prefectural University, Japan*
A. Sen, *Institute for Plasma Research, India*

1. Transport of Energetic Particles in a Space Plasma(Tutorial)

T. Hada, *Kyushu University, Japan*

2. Plasma Heating and Nonthermal Particle Acceleration in Magnetic Reconnection (invited)

M. Hoshino, *University of Tokyo, Japan*

3. Collective Phenomena in a Strongly Coupled Dusty Plasma

A. Sen and P.K. Kaw, *Institute for Plasma Research, India*

4. Electron Heating Influenced by Whistler Wave Packets at Quasi-Parallel Shock Waves

K. Nishimura, H. Matsumoto, and H. Kojima, *Kyoto University, Japan*

(* Tutorial Presentation is allotted 30 min. for the presentation and 10 min. for the discussion, which is double the time of a regular presentation.)

Commission H

Friday, August 3, 9:30-11:10 **Room H**

H3 Observation and Theory of Plasma Waves in Space (1)

Chairs : I. Cairns, *University of Sydney, Australia*
H. Kojima, *Kyoto University, Japan*

1. Radio and Plasma Wave Observations of Jupiter by Cassini and Galileo (invited)

W.S. Kurth and D.A. Gurnett, *University of Iowa, USA*

2. Type II Solar Radio Emissions Associated with the Propagation of Coronal Mass Ejections through Space Plasmas (invited)

M.J. Reiner, *NASA/GSFC and Catholic Univ. of America, USA*

3. Interplanetary Type II Radio Bursts and Geomagnetic Storms

S. Watari[1] and T. Watanabe[2], [1]*Communications Research Laboratory and* [2]*Ibaraki University, Japan*

4. Observations and Computer Simulations of 2fp Emissions (invited)

Y. Kasaba[1] and H. Matsumoto[2], [1]*Institute of Space and Astronautical Science (ISAS) and* [2]*Kyoto University, Japan*

5. GEOTAIL Contribution to Space Plasma Physics via Plasma Wave Observations (invited)

H. Matsumoto, *Kyoto Univ., Japan*

Friday, August 3, 14:00-15:40 **Room H**

H4 Observation and Theory of Plasma Waves in Space (2)

Chairs : H. Kojima, *Kyoto University, Japan*
I. Cairns, *University of Sydney, Australia*

1. Coherent Potential Structures Induced by Electron/Ion Beam Instabilities in Plasmas (invited)

Y. Omura, K. Ninomiya, T. Umeda, H. Usui, and H. Matsumoto, *Kyoto University, Japan*

2. Electron Acceleration in High Mach Number Shocks: Electron Holes and Solitary Waves (invited)

N. Shimada and M. Hoshino, *University of Tokyo, Japan*

3. Statistical Analyses of Plasma Waves in the Bow Shock and Magnetosheath Regions: GEOTAIL Observation

K. Shin, H. Matsumoto, and H. Kojima, *Kyoto University, Japan*

4. SS-520-2 Rocket Observations of Electric Field in the Polar Region

T. Miyake[1], T. Okada[1], D. Tomishima[1], Y. Watanabe[1], H. Kojima[2], and H. Matsumoto[2], [1]*Toyama Prefectural University and* [2]*Kyoto University, Japan*

5. Plasma Wave Observation in the Polar Region via SS-520-2 Rocket Experiment

Y. Ueda[1], H. Kojima[1], H. Matsumoto[1], K. Hashimoto[1], I. Nagano[2], T. Okada[3], T. Mukai[4], H. Iwai[1], and R. Fujiwara[1], [1]*Kyoto University,* [2]*Kanazawa University,* [3]*Toyama Prefectural University, and* [4]*The Inst. of Space and Astronautical Science, Japan*

Thursday, August 2, 9:30-11:10 **Room H**

H5 Wave Propagation, and Remote Sensing of Magnetosphere (1)

Chairs : B.J. Fraser, *University of Newcastle, Australia*
Y. Kasahara, *Kyoto University, Japan*

1. Remote Sensing Solar Wind Plasma: Imaging Interplanetary Disturbances (invited)

P. Manoharan, *Radio Astronomy Centre (NCRA, TIFR), India*

2. Bistatic Radio Tomographic Imaging in the Magnetosphere with IMAGE and WIND

S.A. Cummer[1], M.J. Reiner[2], B.W. Reinisch[3], M.L. Kaiser[4], J.L. Green[4], R.F. Benson[4], R. Manning[5], and K. Goetz[6], [1]*Duke University,* [2]*RITSS/LEP, NASA GSFC,* [3]*UMass Lowell, and* [4]*NASA GSFC, USA;* [5]*Observatoire de Paris, France;* [6]*U. of Minnesota, USA*

3. Remote Sensing Plasma Mass Density Dynamics in the Magnetosphere Using ULF Waves (invited)

C. Waters, *University of Newcastle, Australia*

4. Global Dynamics of the Inner Magnetosphere Derived from ELF/VLF Waves Observed by Akebono (invited)

Y. Kasahara[1], I. Nagano[2], and I. Kimura[3], [1]*Kyoto University,* [2]*Kanazawa University, and* [3]*Osaka Institute of Technology, Japan*

5. Auroral Kilometric Radiation as a Diagnostic of the Electron Acceleration Region (invited)

R.J. Strangeway[1], R.E. Ergun[2], and P.L. Pritchett[3], [1]*IGPP/UCLA,* [2]*LASP/University of Colorado, and* [3]*Dept. Physics/UCLA, USA*

Thursday, August 2, 14:00-15:40 **Room H**

H6-1 Wave Propagation, and Remote Sensing of Magnetosphere (2)

Chairs : A. Morioka, *Tohoku University, Japan*
T. Obara, *Communications Research Laboratory, Japan*

1. The Solar Cycle Dependence of Auroral Kilometric Radiation

A. Kumamoto[1], T. Ono[1], and H. Oya[2], [1]*Tohoku University and* [2]*Fukui University of Technology, Japan*

2. An Electromagnetic Simulator for 3D Ray-Tracings of the AKR

A.G. Nurdiyana[1], T. Murata[1], K. Hashimoto[2], and H. Matsumoto[2], [1]*Ehime University and* [2]*Kyoto University, Japan*

3. Source of Kilometric Continuum (invited)

K. Hashimoto[1], R.R. Anderson[2], H. Matsumoto[1], W. Calvert[3], H. Oya[4], and M. Iizima[5], [1]*Kyoto University, Japan;* [2]*University of Iowa and* [3]*Iowa City, USA;* [4]*Fukui University of Technology and* [5]*Tohoku University, Japan*

4. Propagation Characteristics of Lobe Trapped Continuum Radiation in the Distant Magnetotail

H. Takano[1], I. Nagano[1], S. Yagitani[1], M. Fukuoka[1], and H. Matsumoto[2], [1]*Kanazawa University and* [2]*Kyoto University, Japan*

5. GEOTAIL Observation of Cyclotron Growth of Chorus Emissions

S. Yagitani[1], I. Nagano[1], H. Matsumoto[2], Y. Omura[2], and T. Mukai[3], [1]*Kanazawa University,* [2]*Kyoto University, and* [3]*ISAS, Japan*

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Thursday, August 2, 16:00-17:40 **Room H**

H6-2 Wave Propagation, and Remote Sensing of Magnetosphere (3)

Chairs : C. Waters, *University of Newcastle, Australia*
Y. Tonegawa, *Tokai University, Japan*

1. Propagation and Resonance Characteristics of Pc 5 Waves Revealed in Coordinated Space and Ground Observations (invited)

Y. Tonegawa[1], T. Sakurai[1], and N. Sato[2], [1]*Tokai University and* [2]*National Institute of Polar Research, Japan*

2. Linearly Polarised Electromagnetic Ion Cyclotron Wave Propagation in the Middle Magnetosphere

B.J. Fraser[1], G. Dowdell[2], and Y. Hu[3], [1]*University of Newcastle,* [2]*Integral Energy, and* [3]*DSTO, Australia*

3. Weekend Decrease of ELF Emissions Observed at Thinly Inhabited Meridian

H. Yamagishi[1], N. Sato[1], and I. Nagano[2], [1]*National Institute of Polar Research and* [2]*Kanazawa University, Japan*

4. Role of Plasma Waves in the Large Enhancement of Relativistic Electrons in the Outer Radiation Belt 1: Evidence of Internal Acceleration Inferred from Akebono/NOAA Observations

T. Obara[1], Y. Miyoshi[2], and A. Morioka[2], [1]*Communications Research Laboratory and* [2]*Tohoku Univ., Japan*

5. Role of Plasma Waves in the Large Enhancement of Relativistic Electrons in the Outer Radiation Belt 2: Non-Adiabatic Acceleration by Wave-Particle Interaction

Y. Miyoshi[1], A. Morioka[1], and T. Obara[2], [1]*Tohoku University and* [2]*Communications Research Laboratory, Japan*

Saturday, August 4, 14:00-15:40 **Room H**

H7 Modeling and Computer Simulations in Space Plasmas (1)

Chairs : K. Tang, *Chinese Academy of Science, China(CIE)*
S. Machida, *Kyoto University, Japan*

1. Electrostatic Particle Simulations of the Weak Double Layer in the Auroral Plasma Including the Effects of Up-flowing Ions

A. Yajima and S. Machida, *Kyoto University, Japan*

2. Electromagnetic Particle Simulations of Electron Beam Instabilities in a Two-dimensional Open System

T. Umeda, Y. Omura, H. Matsumoto, and H. Usui, *Kyoto University, Japan*

3. Quasi-Hundred Years Term Modulation and Prediction on Solar- Geomagnetic Disturbance

K. Tang, *Institute of geophysics, Chinese Academy of Sciences, China(CIE)*

4. Ballooning Instability as a Mechanism of the Near-Earth Onset of Magnetospheric Substorms (invited)

A. Miura, *University of Tokyo, Japan*

5. A Study of Wave-particle Interactions near the Neutral Sheet during Compression of Plasma Sheet in the Magnetotail: Hybirid Code and KEMPO Code Computer Simulations

T. Murata[1], Y. Omura[2], and H. Matsumoto[2], [1]*Ehime University and* [2]*Kyoto University, Japan*

Saturday, August 4, 16:00-17:40 **Room H**

H8 Modeling and Computer Simulations in Space Plasmas (2)

Chairs : K. Tang, *Chinese Academy of Science, China(CIE)*
S. Machida, *Kyoto University, Japan*

1. A Model for Producing Modulation Lanes in Jupiter's Decametric Radio Spectra (invited)

K. Imai[1], F. Reyes[2], and T.D. Carr[2], [1]*Kochi National College of Technology, Japan;* [2]*University of Florida, USA*

2. Global Simulation of MHD Wave Propagation in the Magnetosphere (invited)

S. Fujita, *Meteorological College, Japan*

3. A Theoretical Model on Spread-F Longitudinal Effects (invited)

Z. Xiao and T. Zhang, *Peking University, China(CIE)*

4. Computer Experiments on Electromagnetic Interaction Between Antenna and Space Plasma (invited)

H. Usui, H. Matsumoto, and Y. Omura, *Kyoto University, Japan*

5. FDTD Analysis of an Antenna Immersed in a Lossy Cold Magneto-Plasma

Y. He[1] and S. Adachi[2], [1]*Osaka Electro-Communication University and* [2]*Tohoku Institute of Technology, Japan*

Thursday, August 2, 9:30-11:10 **Room J**

J1 Large Telescopes and Projects - Millimeter and Submillimeter Facilitites (1)

Chairs : K. Lo, *Academia Sinica, Institute of Astronomy and Astrophysics, Chinese Taipei*
T. Hasegawa, *National Astronomical Observatory of Japan, Japan*

1. Low-Mass Star Formation Studied Using Millimeter Interferometers (invited)

N. Ohashi, *Academia Sinica Institute of Astronomy & Astrophysics, Chinese Taipei*

2. Millimeter-wave Interferometric Observations of Nearby Galaxies (invited)

K. Kohno and R. Kawabe, *Nobeyama Radio Observatory of Japan, Japan*

3. Interactions and Mergers in Active Galaxies at Low Redshifts (invited)

J. Lim, *Academia Sinica Institute of Astronomy and Astrophysics, Chinese Taipei*

4. From LMSA to ALMA (invited)

M. Ishiguro, *National Astronomical Observatory of Japan, Japan*

5. Front End Design and Development for ALMA (invited)

W. Wild[1] and J. Payne[2], [1]*NOVA/SRON, The Netherlands and;* [2]*NRAO, USA*

Commission J

Thursday, August 2, 14:00-15:40 **Room J**

J2 Large Telescopes and Projects - Millimeter and Submillimeter Facilitites (2)

Chairs : T. Hasegawa, *National Astronomical Observatory of Japan, Japan*
K. Lo, *Academia Sinica, Institute of Astronomy and Astrophysics, Chinese Taipei*

1. Developments of Submillimeter-wave receivers for the ALMA and the ASTE 10 m telescope (invited)

Y. Sekimoto, *National Astronomical Observatory of Japan, Japan*

2. Mm and Submm Superconducting Receiver Development in China (invited)

S. Shi[1] and P. Wu[2], [1]*Purple Mountain Observatory and* [2]*Nanjing University, China(CIE)*

3. The Sub-Millimeter Array in Taiwan: A Progress Report (invited)

M. Chen, C. Chin, T. Chu, S. Hu, Y. Hwang, T. Lee, K. Lo, R. Martin, P. Martin-Cocher, P. Raffin, and M. Wang, *Academia Sinica, Institute of Astronomy, Chinese Taipei*

4. AMiBA: Array for Microwave Background Anisotropy

K. Lo[1], R. Martin[2], and T. Chiueh[3], [1]*Institute of Astronomy and Astrophysics, Academia Sinica(ASIAA), Chinese Taipei;* [2]*Research Cooperation of University of Hawaii, USA;* [3]*National Taiwan University, China(SRS)*

5. The Australia Telescope Millimetre-Wave Upgrade (invited)

R. Subrahmanyan, M.J. Kesteven, M.W. Sinclair, R.G. Gough, G.R. Graves, and M.R. Leach, *CSIRO Australia Telescope National Facility, Australia*

Thursday, August 2, 16:00-17:40 **Room J**

J3 Low-Frequency Telescopes and/or Dense Arrays (1)

Chairs : M. Kojima, *Nagoya University, Japan*
B. Peng, *Beijing Astronomical Observatory, China(CIE)*

1. Modeling FAST, the world's largest single dish (invited)

B. Peng, R. Nan, Y. Su, Y. Qiu, L. Zhu, and W. Zhu, *Beijing Astronomical Observatory, China(CIE)*

2. The Frequency-Agile Solar Radiotelescope (FASR) (invited)

D.E. Gary[1], T.S. Bastian[2], S.M. White[3], and G.J. Hurford[4], [1]*New Jersey Institute of Technology,* [2]*National Radio Astronomy Observatory,* [3]*University of Maryland, and* [4]*UC Berkeley, USA*

3. The Indian Giant Metrewave Radio Telescope (invited)

S. Ananthakrishnan and A. Pramesh Rao, *National Centre for Radio Astrophysics, TIFR, India*

4. The 74 MHz System on the Very Large Array (invited)

R.A. Perley[1], B.C. Erickson[2], and N.E. Kassim[3], [1]*National Radio Astronomy Observatory, USA;* [2]*University of Tasmania, Australia;* [3]*Naval Research Laboratory, USA*

5. The Miyun Synthesis Radio Telescope (invited)

X. Zhang and H. Wang, *Beijing Astronomical Observatory, CAS, China(CIE)*

Friday, August 3, 9:30-11:10 **Room J**

J4 Low-Frequency Telescopes and/or Dense Arrays (2)

Chairs : B. Peng, *Beijing Astronomical Observatory, China(CIE)*
M. Kojima, *Nagoya University, Japan*

1. Spherical Dish Array in Nasu Pulsar Observatory -Conceptual Development of Spherical Dishes and Observational Results- (invited)

T. Daishido[1], K. Asuma[1], N. Tanaka[1], H. Takeuci[1], M. Kuniyoshi[1], R. Hoshi[1], K. Goto[1], S. Mizuki[1], K. Mizuno[1], T. Suzuki[1], K. Fukuoka[1], T. Umemura[1], H. Matsumura[1], K. Uzawa[1], and K. Akabane[2], [1]*Waseda University and* [2]*National Astronomical Observatory of Japan, Japan*

2. Newly developed meter to decimeter range radio telescopes for the investigations of planetary Environments (invited)

H. Misawa[1], A. Morioka[1], F. Tsuchiya[1], and T. Kondo[2], [1]*Tohoku University and* [2]*Communications Research Laboratory, Japan*

3. Beam Pattern Measurements of Large Parabola Antenna using LEO Satellite Beacons

H. Kubo, M. Nishino, and T. Miyazaki, *Kagoshima University, Japan*

4. Tomographic Observation of Heliosphere using UHF IPS Antennas (invited)

M. Kojima, M. Tokumaru, K. Fujiki, K. Hayashi, A. Yokobe, and T. Ohmi, *Nagoya University, Japan*

5. Very compact S and X bands coaxial helical array feeds for VLBI antenna

H. Mimaki, H. Nakano, and T. Kasuga, *Hosei University, Japan*

Friday, August 3, 14:00-15:40 **Room J**

J5 VLBI/Projects and Their Scientific Perspective (1)

Chairs : D.L. Jauncey, *Australia Telescope National Facility / CSIRO, Australia*
T. Sasao, *National Astronomical Observatory of Japan, Japan*

1. The Frontiers of Very Long Baseline Interferometry (Tutorial)

M.J. Reid, *Harvard-Smithsonian CfA, USA*

2. Achievements of the First Generation Space-VLBI Mission VSOP and the Future (Tutorial)

H. Hirabayashi, *ISAS, Japan*

3. VLBI in the Southern Hemisphere (invited)

J.E. Reynolds, *ATNF/CSIRO, Australia*

(* Tutorial Presentation is allotted 30 min. for the presentation and 10 min. for the discussion, which is double the time of a regular presentation.)

Commission J

Saturday, August 4, 8:50-10:30 **Room J**

J6 VLBI/Projects and Their Scientific Perspective (2)

Chairs : T. Sasao, *National Astronomical Observatory of Japan, Japan*
D.L. Jauncey, *Australia Telescope National Facility / CSIRO, Australia*

1. VLBI Activities in China (invited)
Z. Qian, *Shanghai Astronomical Observatory, CAS, China(CIE)*

2. VERA (VLBI Exploration of Radio Astrometry) system (invited)
H. Kobayashi[1], T. Sasao[1], N. Kawaguchi[1], S. Manabe[1], T. Miyaji[1], K. Shibata[1], O. Kameya[1], M. Honma[1], Y. Tamura[1], K. Satou[1], S. Kuji[1], K. Horiai[1], K. Iwadate[1], H. Imai[1], K. Yokoyama[1], T. Omodaka[2], T. Hirota[2], M. Nishimo[2], and T. Kasuga[3], [1]*National Astronomical Observatory of Japan,* [2]*University of Kagoshima, and* [3]*Hosei University, Japan*

3. VERA --- Science (invited)
M. Honma, *National Astronomical Observatory of Japan, Japan*

4. Japan - Russia Differential Pulsar VLBI
A.E. Rodin and M. Sekido, *Kashima Space Research Center CRL, Japan*

5. Alignment of Radio Jets of EGRET-Detected AGNs
X. Hong, W. Wang, T. An, and D. Jiang, *Shanghai Astronomical Observatory, China(CIE)*

Saturday, August 4, 10:50-12:30 **Room J**

J7 Collaboration and Development of Radio Astronomy in Asia-Pacific Region (1)

Chairs : M. Inoue, *National Astronomical Observatory of Japan, Japan*
T. Tzioumis, *ATCA, CSIRO, Australia*

1. Geodetic VLBI Experiments for the APSG (invited)
S. Ye, *Shanghai Astronomical Observatory, CAS, China(CIE)*

2. The Asia-Pacific Telescope (invited)
D.L. Jauncey, *ATNF/CSIRO, Australia*

3. IVS Technology Development Center at CRL and its Recent Activities (invited)
T. Kondo[1], Y. Koyama[1], J. Nakajima[1], M. Sekido[1], R. Ichikawa[1], E. Kawai[1], H. Okubo[1], H. Osaki[1], T. Yoshino[2], J. Amagai[2], H. Kiuchi[2], Y. Takahashi[2], and F. Takahashi[2], [1]*Kashima Space Research Center / CRL and* [2]*Communications Research Laboratory, Japan*

4. Chinese-Russian Collaboration for the Developing of the Radio Astronomy with Ussuriysk 70 m Antenna at Far East of Russia
X. Hong[1], Z. Qian[1], I.E. Molotov[2], S.F. Likhachev[2], and Y.P. Molotov[2], [1]*Shanghai Astronomical Observatory, China(CIE);* [2]*Astro Space Center of P.N. Lebedev Physical Institute, Russia*

5. The ASIAA-ATNF AMiBA collaboration
M.J. Kesteven, *CSIRO, Australia*

Saturday, August 4, 14:00-15:40 **Room J**

J8 Collaboration and Development of Radio Astronomy in Asia-Pacific Region (2)

Chairs : T. Tzioumis, *ATCA, CSIRO, Australia*
M. Inoue, *National Astronomical Observatory of Japan, Japan*

1. The Need for a United Asia-Pacific Radio Astronomy Front (invited)
M. Ohishi, *National Astronomical Observatory of Japan, Japan*

2. Interference Mitigation and RadioAstronomy (invited)
M.J. Kesteven and R.J. Sault, *CSIRO, Australia*

3. Radio Astronomy Spectrum Management in Australia.
A. Tzioumis, *CSIRO, ATNF, Australia*

4. Frequency Management Issues for Radio Astronomy in India
V. Lakshmanan and S. Ananthakrishnan, *National Centre for Radio Astrophysics, TIFR, India*

5. Radio Astronomy Service in the Republic of Korea
H. Chung, *Korea Astronomy Observatory, South Korea*

Saturday, August 4, 16:00-17:40 **Room J**

J9 Future Plans in the 21st Century

Chairs : T. Kasuga, *Hosei University, Japan*
S. Cho, *Korea Astronomical Observatory, South Korea*

1. The Allen Telescope Array---A New Tool for SETI and Other Radio Astronomy (invited)
D.C. Bock, *University of California at Berkeley, USA*

2. Korea's New Radio Project: Construction of the Korean VLBI Network (KVN) (invited)
Y. Minh, *Korea Astronomy Observatory, South Korea*

3. VSOP-2: The Next Space VLBI Mission following VSOP (invited)
Y. Murata[1], H. Hirabayashi[1], P.G. Edwards[1], D.W. Murphy[1], M. Inoue[2], H. Kobayashi[2], and S. Kameno[2], [1]*The Institute of Space and Astronautical Science and* [2]*National Astronomical Observatory of Japan, Japan*

4. Hansa-Himalayan Antenna for Sub-MM Astronomy
R. Balasubramanyam, *University of New South Wales, Australia*

5. Film Lens Antennas for the Large Radio Telescopes
H. Ujihara[1] and Y. Chikada[2], [1]*The Graduated University for Advanced Studies and* [2]*National Astronomical Observatory of Japan, Japan*

Commission K

Thursday, August 2, 14:00-15:40 **Room K**

K1 Mechanisms and Physics

Chairs : K.H. Joyner, *Motorola Australia Pty. Limited, Australia*
T. Higashi, *Osaka University, Japan*

1. Diamagnetic Orientation of Flagella and Cila (invited)

T. Takeuch, T. Higashi, Y. Nakaoka, and R. Emura, *Osaka University, Japan*

2. The Importance of Precise Dosimetry, Temperature Control, and Exposure Assessment for Radiofrequency Cell Exposures In Vitro : A Case Study on the Proliferation of LN-71 Human Glioma Cells (invited)

C.C. Davis[1], I. Bikhman[2], and S.M. Motzkin[2], [1]*University of Maryland and* [2]*Polytechnic University, USA*

3. Limits and Basic Problems in Research on Non-Thermal RF Biological Effects (invited)

M.L. Swicord[1] and A.R. Sheppard[2], [1]*Motorola Inc. and* [2]*Asher Sheppard Consulting and Loma Linda University, USA*

4. Mechanisms for Modulation-Specific Effects in Biological Systems Exposed To Radiofrequency Energy (invited)

A.R. Sheppard, *Asher Sheppard Consulting and Loma Linda University, USA*

5. Electromagnetic Fields and Currents in Human

T. Ohmuma, *Tohoku University, Japan*

Thursday, August 2, 9:30-11:10 **Room K**

K2 Health Assessment

Chairs : Z. Cao, *Chinese Academy of Preventive Medicine, China*
K. Shimizu, *Hokkaido University, Japan*

1. Effects of Time-Varying Strong Magnetic Fields on Cellular Functions. (invited)

K. Park[1], T. Ikehara[1], H. Houchi[1], K. Hosokawa[1], H. Yamaguchi[1], Y. Kinouchi[1], K. Yoshizaki[1], and H. Miyamoto[2], [1]*The University of Tokushima and* [2]*Tokushima Bunri University, Japan*

2. Human EEG Analysis after 30 min ELF-EMF Exposure in Consideration of Ministerial Order Establishing Technical Standards for Electrical Facilities of Japan (invited)

M. Kawada, *Nagoya Institute of Technology, Japan*

3. Evaluation of Geomagnetic Activity Influence on Frequency of Appearance of Acute Pathologies and Heavy Traumas

S.A. Pulinets, V.P. Kuleshova, and I.A. Safronova, *IZMIRAN, Russia*

4. Effects of Handsets of Celluar Telephone on Symptoms of Neuasthesia, Quality of Sleeping, Depression, and Neurobehavioral Function (invited)

Z. Cao, X. Zhao, H. Zhang, and Y. Tao, *Chinese Academy of Preventive Medicine (CAPM), China(CIE)*

5. Cancer Incidence in the Vicinity of Korea AM Radio Broadcast Towers (invited)

M. Ha[1], H. Lim[2], and D. Yoo[3], [1]*Dankook University College of Medicine,* [2]*Seoul National University College of Medicine, and* [3]*Electronics and Telecommunications Research Institute, South Korea*

Thursday, August 2, 16:00-17:40 **Room K**

K3 Biological Effects of DC and ELF Fields

Chairs : A.W. Wood, *Swinburne University of Technology, Australia*
T. Shigemitsu, *Central Research Institute of Electric Power Industry, Japan*

1. Modelling the Interaction of Electromagnetic Fields Acting on Biological Systems (invited)

G. D'Inzeo[1], F. Apollonio[1], M. Liberti[1], and L. Tarricone[2], [1]*La Sapienza University of Rome and* [2]*University of Perugia, Italy*

2. Genetic effects of ELF fields in mammalian cells (invited)

J. Miyakoshi[1], T. Nakahara[1], G.R. Ding[2], H. Yaguchi[1], and M. Yoshida[1], [1]*Kyoto University, Japan;* [2]*The Fourth Military Medical University, China(CIE)*

3. Developmental Toxicology Evaluation of Magnetic Fields in SD Rats (invited)

S.H. Myung[1], M.K. Chung[2], S.B. Kim[3], and D.I. Lee[3], [1]*KERI,* [2]*KRICT, and* [3]*KEPRI, South Korea*

4. Effects of Whole Body Exposure to 50Hz Electromagnetic Fields on the Leukocyte Adhesion in Mice (invited)

C. Ohkubo and A. Ushiyama, *National Institute of Public Health, Japan*

5. Do Power Frequency Magnetic Fields Affect Human Heart Rate and Brain Function? (invited)

A.W. Wood, M.L. Sait, C.K. Stough, and V.K. Shardey, *Swinburne University of Technology, Australia*

Friday, August 3, 9:30-11:10 **Room K**

K4 Biological Effects of RF Fields

Chairs : J. Behari, *Jawaharlal Nehru University, India*
M. Taki, *Tokyo Metropolitan University, Japan*

1. Summary of World Wide Studies Related to Cellular Telephony and Cancer (invited)

M.L. Swicord and J.J. Morrissey, *Motorola Inc., USA*

2. Effects of Low Level RF Fields on Induced Osteoporosis in Rat Bone (invited)

J. Behari[1], R. Lochan[1], and N.R. Jagannathan[2], [1]*Jawaharlal Nehru University and* [2]*All India Institute of Medical Sciences, India*

3. Cytogenetic Studies in Human Blood Lymphocytes Exposed to Radiofrequency Radiation (invited)

Vijayalaxmi[1], W.F. Pickard[2], M.L. Meltz[1], K.S. Bisht[2], J.L. Roti Roti[2], and E.S. Moros[2], [1]*University of Texas Health Science Center and* [2]*Washington University, USA*

4. Effects of Exposure to High-Frequency Electro-Magnetic Waves on Rat Reference Memory in a T-maze Task. (invited)

H. Yamaguchi[1], G. Tsurita[1], S. Ueno[1], S. Watanabe[2], M. Taki[3], and H. Nagawa[1], [1]*University of Tokyo,* [2]*Communications Research Laboratory, and* [3]*Tokyo Metropolitan University, Japan*

5. Lack of Tumor Promotion Potential of the Electromagnetic Near Field Used for Cellular Phones (900MHz and 1.5GHz) on Rat Liver and Mouse Skin Carcinogenesis (invited)

K. Imaida[1], T. Shirai[1], M. Taki[2], and O. Fujiwara[3], [1]*Nagoya City University Medical School,* [2]*Tokyo Metropolitan University, and* [3]*Nagoya Institute of Technology, Japan*

Commission K

Friday, August 3, 14:00-15:40 **Room K**

K5 Biomedical Application

Chairs : J.C. Lin, *University of Illinois, USA*
H. Matsuki, *Tohoku University, Japan*

1. High-Resolution Cortical Imaging by Means of Parametric Projection Filters (invited)

J. Hori[1] and B. He[2], [1]*Niigata University, Japan;* [2]*University of Illinois at Chicago, USA*

2. Ultra Wide-range Vital Sign Monitoring Using Mobile Communication (invited)

K. Shimizu and T. Nishida, *Hokkaido University, Japan*

3. A Treatment System Combining Interstitial Microwave Hyperthermia and Interstitial Radiation Therapy (invited)

K. Ito[1], K. Saito[1], H. Yoshimura[1], Y. Aoyagi[2], and H. Horita[2], [1]*Chiba University and* [2]*Tokyo Dental College, Japan*

4. Potential Application of UWB Pulses in Lowing Blood Pressure (invited)

S. Lu, *McKessonHBOC Clinical and Biological Services/U.S. Army Medical Research Detachment, USA*

5. Induced Electric Fields in Adult and Child in Low-Frequency Fields (invited)

A. Hirata[1], T. Dawson[2], K. Caputa[2], and M. Stuchly[2], [1]*Osaka University, Japan;* [2]*University of Victoria, Canada*

Saturday, August 4, 14:00-15:40 **Room K**

K6-1 Recent Activities of Electromagnetics in Medicine and Biology in Asia-Pacific Countries (1)

Chairs : J.C. Lin, *University of Illinois, USA*
S. Ueno, *University of Tokyo, Japan*

1. Recent Advances in Bioelectromagnetic Research Activities in Japan (invited)

S. Ueno, *University of Tokyo, Japan*

2. An Interstitial Array System of Sleeved-slot Microwave Antennas For Hyperthermia Treatment of Brain Tumors (invited)

J.C. Lin[1], W. Hsu[2], and R. Chi[3], [1]*University of Illinois at Chicago, USA;* [2]*Tri-service General Hospital and* [3]*Chung Yuan Christian University, China(SRS)*

3. Studies on Biological Effects of Radio Frequency Radiation in China (Review) (invited)

Z. Cao, X. Huang, and H. Zhang, *Institute of Environmental Health Monitoring, CAPM, China(CIE)*

4. Bioelectromagnetics Research in India (invited)

J.B. Behari, *J.N.U., India*

5. Effect of ELF Current on Macrophage -Possibility of Immunomodulation by Electric Field- (invited)

T. Shimooka[1], I. Fuji[1], Y. Morita[1], K. Shimizu[1], and K. Ohsaki[2], [1]*Hokkaido University and* [2]*Hakuju Institute for Health Science Co., LTD., Japan*

Saturday, August 4, 16:00-17:40 **Room K**

K6-2 Recent Activities of Electromagnetics in Medicine and Biology in Asia-Pacific Countries (2)

Chairs : J.C. Lin, *University of Illinois, USA*
S. Ueno, *University of Tokyo, Japan*

1. Phantoms for Estimation of the Interaction between EM Waves and a Human Body (invited)

K. Ito[1], H. Kawai[1], H. Yoshimura[1], Y. Koyanagi[2], and K. Ogawa[3], [1]*Chiba University,* [2]*Matsushita Communication Industrial Co. Ltd., and* [3]*Matsushita Electric Industrial Co. Ltd., Japan*

2. Research on Biological Effects of Radio Frequency Radiation at Walter Reed Army Institute of Research (invited)

S. Lu, *McKessonHBOC Clinical and Biological Services/U.S. Army Medical Research Detachment, USA*

Saturday, August 4, 8:50-10:30 **Room K**

K7/KAB Dosimetry for Wireless Communications

Chairs : C. Chou, *Motrola Inc., USA*
T. Nojima, *NTT DoCoMo, Japan*

1. Spectrum Analyzer Based on Electric-Field Meter for Assessing Radio Wave Exposure Compliance. (invited)

Y. Tarusawa and T. Nojima, *NTT DoCoMo, Inc., Japan*

2. Dependence of Electromagnetic Absorption on Use Position for 2 GHz Handheld Mobile Telephones (invited)

J. Wang[1], O. Fujiwara[1], and T. Nojima[2], [1]*Nagoya Institute of Technology and* [2]*NTT DoCoMo, Inc., Japan*

3. Specific Absorption Rates in Head Phantoms of Different Shape and Size for Cellular Telephone Use (invited)

S. Watanabe[1], S. Mochizuki[2], H. Shirai[2], M. Taki[3], and Y. Yamanaka[1], [1]*Communications Research Laboratory,* [2]*Chuo University, and* [3]*Tokyo Metropolitan University, Japan*

4. Implementation of the New IEEE SCC34 Recommended Practice for Determining the Spatial-Peak SAR in the Human Head Due to Mobile Handsets (invited)

C. Chou, *Motorola, USA*

5. Exposure Setup Design for Large Scale NTP-Like Bioassays (invited)

N. Kuster[1], J. Froehlich[1], and S. Ebert[2], [1]*IT'IS and* [2]*IT'IS/ETHZ, Switzerland*

Commission K

Saturday, August 4, 10:50-12:30 **Room K**

K8/KE EMC Problems Including Human Bodies

Chairs : Y. Gimm, *Dankook University, Korea*
O. Fujiwara, *Nagoya Institute of Techonology, Japan*

1. New Proposal of Micro-thermal Therapy Using an MMIC Oscillator (invited)

Y. Kotsuka, *Tokai University, Japan*

2. Microwave Antenna Techniques for the Cure of Certain Classes of Heart Diseases (invited)

A.S. Mohan, H.M. Chiu, and A.R. Weily, *University of Technology, Sydney, Australia*

3. Formulation and Characterization of Tissue Simulating Liquids Used for SAR Measurement (500 - 2000 MHz) (invited)

M.Y. Kanda, M. Ballen, C. Chou, and Q. Balzano, *Motorola, USA*

4. Small Loop Antennas for Localized Head Exposure Setups of Rats (invited)

K. Wake[1], T. Fujimoto[2], S. Watanabe[1], Y. Yamanaka[1], T. Uno[2], and M. Taki[3], [1]*Communications Research Laboratory,* [2]*Tokyo University of Agriculture and Technology, and* [3]*Tokyo Metropolitan University, Japan*

5. SAR Reduction of Cellular Phone Terminals by the Application of Magnetic Materials (invited)

Y. Gimm[1], K. Kim[1], E. Chang[2], E.T. Kim[2], and C.H. Ra[3], [1]*Dankook University,* [2]*SB Telecom, and* [3]*Ban Seok Zeropa, South Korea*

Poster Sessions

Poster for Union Session

PU-01 Some Studies for SPS Concept by Constellation Flight

I. Mikami[1], Y. Ezaki[1], K. Takada[1], M. Omura[1], M. Satoh[1], H. Matsumoto[2], K. Hashimoto[2], and N. Shinohara[2], [1]*Mitsubishi Electric Corporation and* [2]*Kyoto University, Japan*

PU-02 Microwave Power Transmission Experiment in Space with Phase Controlled Magnetron for Solar Power Satellite/Station

N. Shinohara, H. Matsumoto, and K. Hashimoto, *Kyoto University, Japan*

PU-03 Study on Noise and Efficiency of Magnetron for Microwave Power Transmission

T. Mitani[1], N. Shinohara[1], H. Matsumoto[1], K. Hashimoto[1], M. Aiga[2], and T. Tsukada[2], [1]*Kyoto University and* [2]*Matsushita Electronic Instruments Corp., Japan*

Commission A (Poster)

PA1-01 High Resolution Room-Temperature Determination of the Loss Tangent of Sapphire Using the Whispering-Gallery-Mode Method

J.G. Hartnett, M.E. Tobar, and E.N. Ivanov, *University of Western Australia, Australia*

PA1-03 Accuracy Evaluation of Optically Pumped Primary Frequency Standard CRL-O1

H. Ito, A. Hasegawa, K. Fukuda, M. Kumagai, M. Kajita, N. Kotake, M. Hosokawa, and T. Morikawa, *Communications Research Laboratory, Japan*

PA1-04 Development of Cesium Atomic Fountain at CRL

M. Kumagai, H. Ito, K. Fukuda, A. Hasegawa, M. Kajita, and M. Hosokawa, *Communications Research Laboratory, Japan*

PA1-05 Improvement of Launching Technology for Atomic Fountain Frequency Standard

K. Fukuda[1], T. Suzuki[2], H. Ito[1], A. Hasegawa[1], and M. Hosokawa[1], [1]*Communications Research Laboratory and* [2]*Meiji University, Japan*

PA2-01 Millisecond Pulsar Timing Observation at CRL

Y. Hanado, Y. Shibuya, M. Hosokawa, M. Sekido, T. Goto, and M. Imae, *Communications Research Laboratory, Japan*

PA2-02 Doppler Frequency Acquisition by 4Way Method in SELENE

N. Kawano[1], K. Asari[1], Y. Kono[2], T. Iwata[3], and T. Takano[4], [1]*National Astronomical Observatory of Japan,* [2]*the Graduate University for Advanced Studies,* [3]*National Space Development Agency of Japan, and* [4]*Institute of Space and Astronautical Science, Japan*

PA2-03 NTP Time Dissemination in Taiwan

F. Chu, M. Li, and C. Liao, *Telecommunication Labs. Chunghwa Telecom Co., Ltd., China(SRS)*

PA2-04 Precision of TOA Measurements for Pulsar Time Scale

A.E. Rodin, *Kashima Space Research Center CRL, Japan*

PA3-01 Accurate Optical Frequency Measurement System at Telecommunication Region using a Mode-locked Fiber Laser

A. Onae[1], K. Sugiyama[1], F. Hong[1], J. Ishikawa[1], H. Matsumoto[1], K. Nakagawa[2], and Y. Tachikawa[3], [1]*National Research Laboratory of Metrology,* [2]*University of Electro-Communications, and* [3]*Yokogawa Electric Corporation, Japan*

PA3-02 Frequency Stabilization of an Er-Yb:Glass Laser against a Sub-Doppler Line of $^{13}C_2H_2$ at 1.54 μm

G. Galzerano[1], C. Svelto[1], E. Bava[1], and A. Onae[2], [1]*Politecnico di Milano, Italy* [2]*National Research Laboratory of Metrology, Japan*

PA4-01 RF Attenuation Measurement System Using Optical Fiber

A. Widarta and T. Kawakami, *Electrotechnical Laboratory, Japan*

PA4-02 A Method to Determine Antenna Factors by a Transmission Measurement

T. Morioka and K. Komiyama, *Electrotechnical Laboratory, Japan*

PA4-03 Comparison between Measured and Calculated Loop Antenna Factor in 3-antenna Method

K. Furuya, T. Kawakami, and H. Yajima, *Electrotechnical Laboratory, Japan*

PA4-04 A Novel TSL2 Calibration Technique of Network Analyzer with One-path Configuration for Antenna Measurement

M. Hirose and K. Komiyama, *Electrotechnical Laboratory, Japan*

Commission B (Poster)

PB-01 Polarimetric Calibration of Radar Cross Section Measurements

L.A. Muth, *NIST, U.S.A.*

PB-04 Scattering Analysis of Inhomogeneous Cylinder by Atomic Model Method

H. Hosono and T. Hosono, *Nihon University, Japan*

PB-05 Transient Scattering of Electromagnetic Waves by a Dispersive Dielectric Sphere

A. Itoh[1] and T. Hosono[2], [1]*Tokyo National College of Technology and* [2]*Nihon University, Japan*

PB-07 Electromagnetic Scattering by Multiple Multi-Layered Circular Cylinders Embedded in a Dielectric Space in Case of Oblique Incidence

I.O. Vardiambasis and F. Vallianatos, *Technological Educational Institute of Crete, Greece*

PB-08 Wiener-Hopf Technique for the Vector Diffraction by a Circular Waveguide Cavity

D.B. Kuryliak[1], S. Koshikawa[2], K. Kobayashi[3], and Z.T. Nazarchuk[1], [1]*Karpenko Physico-Mechanical Institute, Ukraine;* [2]*Antenna Giken Co., Ltd and* [3]*Chuo Univesity, Japan*

PB-10 On Approximation of Integral Equations in Electromagnetic Scattering by Bodies with Curvilinear Boundary

A.B. Samokhin, *Moscow Institute of Radiotechnics, Electronics and Automatics, Russia*

PB-11 Method of Analytical Regularization in the Wave Scattering by Thin Dielectric Screens

A.I. Nosich, *IRE NASU, Ukraine*

PB-13 The Turbulent Refraction Index and the Fractional Brownian Motion

D.G. Perez and M.J. Garavaglia, *Facultad de Ciencias Exactas UNLP and Centro de Investigaciones Opticas (CIOp), Argentina*

PB-14 Electromagnetic Properties of a Two-Dimensional Chiral Photonic Crystal

A. Kusunoki and M. Tanaka, *Oita University, Japan*

PB-17 Microwave Frequency Separation Devices for High Power

A. Soroka, B. Makarenko, and I. Tsakanian, *Research Institute of Radio Engineering Measurements JSC (AO NIIRI), Ukraine*

PB-18 Non-Conventional Adaptive Beamforming of ESPAR Antenna

B. Shishkov, J. Cheng, and T. Ohira, *ATR Adaptive Communications Research Laboratories, Japan*

PB-19 DILFAST - A New Semi-Blind Space-Tme Processing Algorithm

E. Bonek[1] and J.K. Laurila[2], [1]*Technische Universität Wien and* [2]*Forschungs zentrum Telecommunikation Wien ftw., Austria*

PB-20 An Efficient Design Method of Cylindrical-Dual-Mode Conical-Horn Antennas with High Efficiency and Low Cross Polarization

H. Deguchi, M. Tsuji, and H. Shigesawa, *Doshisha University, Japan*

PB-22 Analytical and Computer-Aided Studies on Wake-fields in R.F. Cavity of Particle Accelerators

S. Kar, *University of Calcutta, India*

PB-23 Four Dimensional Property of Electromagnetic Field

M. Nakajima, *Japan*

PB-25 Finding Method of Radiated Emission Sources Distribution on a Wire Using CISPR Measurement System

Y. Ishida[1], Y. Yamaguchi[2], and M. Tokuda[2], [1]*Fukuoka Industrial Technology Center and* [2]*Kyushu Institute of Technology, Japan*

PB-26 NSA Characteristics of the Semi-Anechoic Chamber Composed of Absorbers with Different Absorbing Characteristics

R. Hamaura, T. Shimizu, Y. Takiguchi, and M. Tokuda, *Kyushu Institute of Technology, Japan*

PB-27 Deposition of ITO Film with Low Electric Resistance Rate by DC Magnetron Sputtering Method

J. Wu[1], R. Murakami[1], M. Kondo[1], and Y. Kim[2], [1]*The University of Tokushima, Japan;* [2]*Korea Maritime University, South Korea*

PB-31 A Fast Method for Simulating Four-Element Circular Antenna arrays of Identical Elements

C. Ozdemir, *Mersin University, Turkey*

PB-32 Fast Multigrid Solver for High Frequency Simulation

D.C. Dibben, *The Japan Research Institute Ltd., Japan*

PB-33 Application of Multigrid Method for Electromagnetic Wave Propagation

M. Yokota, *Miyazaki University, Japan*

PB-34 A New FDTD Parallel Algorithm for Propagation and Scattering Characterization on Big Urban Areas

G. Rodriguez and Y. Miyazaki, *Toyohashi University of Technology, Japan*

PB-35 Four-Element TEM Horn Array Radiating Ultrawide Band EMP

J. Wang[1], C. Tian[2], G. Luo[1], Y. Chen[1], and D. Ge[2], [1]*Northwest Institute of Nuclear Technology and* [2]*Xidian University, China(CIE)*

Commission C (Poster)

PC-01 Optimum TPC Command Sequence in WCDMA

C. Chen, B. Liu, F. Xi, X. Jin, Q. Quan, and P. Zhang, *Beijing University of Posts and Telecommunications, China(CIE)*

PC-02 Utilization and Performance study of the Second Generation Wavelet Coding for Compression of Satellite Images

E.A. Korany, M.M. El_sherbiny, and S.M. Saad, *University of Alexandria, Egypt*

PC-03 Performance of A Wireless CDMA System Using An Adaptive with Direction Antennas in Cell Sit

Q. Quan, C. Chen, F. Xi, and P. Zhang, *Beijing University of Posts and Telecommunications, China(CIE)*

PC-05 Implementation of a Novel Digital Audio Broadcasting (DAB) Platform for Multimedia Signals

I.O. Vardiambasis, N. Manouselis, and P. Karampiperis, *Technical University of Crete, Greece*

Commission E (Poster)

PE-01 Validation of Single Station Lightning Location Technique

C.J. Rodger, J.B. Brundell, and R.L. Dowden, *LF*EM Research Ltd., New Zealand*

PE-04 Dynamical Behaviors of Sprites

H. Su[1], R. Hsu[1], S.B. Mende[2], R.L. Rairden[3], T.H. Allin[4], and T. Neubert[4], [1]*National Cheng Kung University, Taiwan;* [2]*Space Science Laboratory, University of California and* [3]*Lockheed-Martin Research Laboratories, USA;* [4]*Danish Meteorological Institute, Denmark*

PE-06 Global Triangulation of Intense Lightning Discharges

M. Fuellekrug, *Frankfurt University, Germany*

PE-07 3D Modelling of VLF Radio Wave Propagation in Terrestrial Waveguide Allowing for Localized Large-Scale Ionosphere Perturbation

O.V. Soloviev, *St.Petersburg State University, Russia*

PE-08 Observational plan of sprites in northern Scandinavia

S. Nozawa[1], K. Adachi[1], Y. Ogawa[1], R. Fujii[1], and Y. Takahashi[2], [1]*Nagoya University and* [2]*Tohoku University, Japan*

PE-09 Development of a Spectrometer to Measure the Blue Components of Sprites and Elves

J. Kurihara[1], K. Oyama[1], and Y. Takahashi[2], [1]*The Institute of Space and Astronautical Science and* [2]*Tohoku University, Japan*

PE-10 Strategy of Sprites and Elves Observation by ISUAL/onboard ROCSAT-2 Satellite

Y. Takahashi[1], H. Fukunishi[1], S.B. Mende[2], H. Su[3], J. Chern[3], L. Lee[3], and R. Hsu[3], [1]*Tohoku University, Japan;* [2]*University of California, USA;* [3]*National Cheng Kung University, China(SRS)*

PE-11 Sprite observations from the Space Shuttle during MEIDEX

Y.Y. Yair[1], C.G. Price[2], Z. Levin[2], and A.D. Devir[2], [1]*The Open University of Israel and* [2]*Tel-Aviv Univeristy, Israel*

PE-13 Shielding and Absorption by a Multilayered Material for Electromagnetic Waves with Oblique Incidence

Y. Yoshimura[1], I. Nagano[2], S. Yagitani[2], and T. Ueno[2], [1]*Kanazawa Univ., Indust. Res. Inst. of Ishikawa and* [2]*Kanazawa Univ., Japan*

PE-14 Investigation on Via-Induced Parallel-Plate Resonances in Multilayer Printed Circuit Boards

M. Iwanami and S. Hoshino, *Association of Super-advanced Electronics Technologies(ASET), Japan*

PE-15 Effects of LSI Operation Modes on Radiated Emission from PCB

S. Haga, K. Nakano, and T. Sudo, *Association of Super-advanced Electronics Technologies(ASET), Japan*

PE-16 Termination Scheme Comparison for a High-Speed Differential Signal Pair

T. Sudo and J. Kudo, *Toshiba Corporation, Japan*

PE-17 FDTD Modeling of Common-Mode Current due to a Trace on a PCB with a Wire

M. Tanaka[1], Y. Kayano[1], J.L. Drewniak[2], and H. Inoue[1], [1]*Akita University, Japan;* [2]*University of Missouri-Rolla, USA*

PE-18 EMI Component Model for PCB Analysis

U. Keller[1], P. Kralicek[1], M. Faferko[1], W. John[1], and H. Garbe[2], [1]*Fraunhofer Institute Microintegration and Reliability and* [2]*University of Hannover, Germany*

PE-20 Modified PMU to Measure the Harmonics Power flow on the Transmission Line

T. Funaki, Z. Kawasaki, and K. Matsuura, *Osaka University, Japan*

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PF-01 Antenna Phase Radiation Pattern and Satellite Doppler Tracking

J. Ping, Y. Kono, and N. Kawano, *National Astronomical Observatory, Japan*

PF-02 In-situ Gas Sensor and Oxygen Absorption Measurement at 60, 119GHz

T. Suzuki, M. Sano, H. Sasanuma, K. Shioda, R. Saitoh, and Y. Watanabe, *Nippon Institute of Technology, Japan*

PF-03 Total Interference Analysis on a Triple Site Diversity Earth-Space System

A.D. Panagopoulos, T.D. Kritikos, S.N. Livieratos, and J.D. Kanellopoulos, *National Technical Univeristy of Athens, Greece*

PF-04 Outage Performance Analysis of a Triple Orbital Diversity Earth-Space System

A.D. Panagopoulos and J.D. Kanellopoulos, *National Technical Univeristy of Athens, Greece*

PF-05 Studies on Rain Attenuation at 11.7 GHz over Southern India

V.R. Sarangam[1], T.R. Rama[1], M. Prasad[2], B. Reddy[3], and V.G. Reddy[1], [1]*S V University,* [2]*National Physical Laboratory, and* [3]*National Geophysical Research Institute, India*

PF-06 Relationship between a Z-R Relation and Physical Snowfall Parameters

T. Shiina[1], K. Muramoto[2], and H. Servomaa[2], [1]*Toyama National College of Technology and* [2]*Kanazawa University, Japan*

PF-07 Empirical Estimation Method of Rain-Rate and Fade Duration Statistics in Korean Territory

J. Lee, Y. Kim, Y. Choi, and H. Lee, *ETRI, South Korea*

PF-08 Data Distribution Statistical Method to Train an Artificial Neural Network to Perform the Rain Attenuation Prediction in Earth-Space Paths

G.A. Alencar[1] and L.P. Caloba[2], [1]*Gama Filho University and* [2]*Federal University of Rio de Janeiro, Brazil*

PF-09 Rain Attenuation Characteristics for Satellite Communications at Ku-Band

R. Saotome[1], N. Katayama[1], A. Abdullah[1], M. Yamada[1], and K. Tokushige[2], [1]*Tokyo University of Technology and* [2]*Takushoku University, Japan*

PF-10 Influence of the Particle Shapes on Numerical Modeling of Radio-waves Propagation and Scattering

R. Talhi[1], C.H. Kuo[2], M.R. Tripathy[1], and M. Pyee[1], [1]*CNRS - LPCE, France;* [2]*Ming Chi Institute of Technology, China(SRS)*

PF-11 Performance Measurement of POST-PARTNERS Earth Station Located in Indonesia

Iskandar, H. Kurniawan, and U. Sastrokusumo, *Institute of Technology Bandung, Indonesia*

PF-12 Study on Wet Antenna at Ku-band for Further Considerations of Propagation Measurement and Antenna Design

J. Suryana[1], U. Sastrokusumo[2], H. Wundarto[2], K. Igarashi[3], and H. Minakoshi[3], [1]*Lab. of Radio Telecommunication and Microwave and* [2]*Post-Partners, Institute of Technology Bandung, Indonesia;* [3]*Communications Research Laboratory, Japan*

PF-13 Comparison of Regression and Curve-fitting Techniques on Rain vs. Satellite Beacon Signal Data

J.N. Monje[1], R.S. Reyes[1], K. Igarashi[2], R. Jacob[1], and D. Lim[1], [1]*Ateneo de Manila University, Philippines;* [2]*Communications Research Laboratory, Japan*

PF-14 Statistical Properties of Space-Time Channel Parameters in Suburban Microcellular Environment

J. Fu[1], H. Zhu[2], J. Takada[1], and T. Kobayashi[3], [1]*Tokyo Institute of Technology,* [2]*NOKIA-Japan, Co., Ltd., and* [3]*Tokyo Denki University, Japan*

PF-15 Numerical Estimation of the Electromagnetic Wave Scattering from Building Surfaces

H. Budiarto and J. Takada, *Tokyo Institute of Technology, Japan*

PF-16 Base Station Polarization Diversity for Private Mobile Communications

K. Mori[1], E. Moriyama[1], and H. Arai[2], [1]*YRP Advanced Mobile Communication Systems Research Laboratories and* [2]*Yokohama National University, Japan*

PF-17 Baseline Estimation using Phase Fringes and Ocean Elevation Models

S. Knedlik and O. Loffeld, *University of Siegen, Germany*

PF-20 On the Study of FDI Coherence and Phase Related to Radar Pulse Length and Receiver Filter

J. Chen[1], Y. Chu[1], and J. Roettger[2], [1]*National Central University, China(SRS);* [2]*Max-Planck-Institut fuer Aeronomie, Germany*

PF-21 TRMM Precipitation Radar Algorithms

K. Okamoto[1], R. Meneghini[2], T. Iguchi[3], J. Awaka[4], and T. Kozu[5], [1]*Osaka Prefecture University, Japan;* [2]*NASA/GSFC, USA;* [3]*Communications Research Laboratory,* [4]*Hokkaido Tokai University, and* [5]*Shimane University, Japan*

PF-22 A Study on the Width of Bright Band Observed by the TRMM Precipitation Radar

J. Awaka[1], T. Iguchi[2], and K. Okamoto[3], [1]*Hokkaido Tokai University,* [2]*Communications Reaseach Laboratory, and* [3]*Osaka Prefecture University, Japan*

PF-23 Rain Rate Estimation using Wind Profiler at KMITL

C. Somboonlarp[1], N. Leelaruji[1], N. Hemmakorn[1], and Y. Ohno[2], [1]*King Mongkut's Institute of Technology Ladkrabang, Thailand;* [2]*Communications Research Laboratory, Japan*

PF-24 A Study on Tropical Convective Cloud Systems Using Atmospheric Wind Profilers

K. Krishna Reddy[1], T. Kozu[2], and K. Nakamura[3], [1]*Communications Research Laboratory,* [2]*Shimane University, and* [3]*Nagoya University, Japan*

PF-25 Rainfall Rate Estimation Using Microwave Radars and an Optical Lidar

H.T. Servomaa and K. Muramoto, *Kanazawa University, Japan*

PF-26 A Basic Study of Synthetic Aperture Precipitation Radar

T. Kozu and J. Kitagawa, *Shimane University, Japan*

PF-27 Vertical Profiling of Liquid Cloud Properties Retrieved from 95-GHz Cloud Radar and Microwave Radiometer

H. Kumagai[1], H. Okamoto[1], H. Horie[1], H. Kuroiwa[1], and S. Iwasaki[2], [1]*Communications Research Laboratory and* [2]*Kobe University, Japan*

PF-28 Design and Development of an FM-CW Radar at 94GHz For Observations of Cloud Particles

Y. Suga[1], S. Hoshi[1], T. Takano[1], S. Shimakura[1], H. Kumagai[2], T. Takamura[1], and T. Nakajima[3], [1]*Chiba University,* [2]*Communications Research Laboratory, and* [3]*The University of Tokyo, Japan*

PF-31 Ground-based Millimeter-wave Radiometer with Superconducting Receiver for Measurements of Stratospheric Chlorine Monoxide in Chile

T. Nagahama[1], Y. Fukui[1], A. Mizuno[1], T. Onishi[1], K. Xiao[1], N. Mizuno[1], A. Morihira[2], H. Ogawa[3], Y. Yonekura[3], and H. Nakane[4], [1]*Nagoya University,* [2]*Fujitsu VLSI Ltd.,* [3]*Osaka Prefecture University, and* [4]*National Institute for Environmental Studies, Japan*

PF-32 Ground-Based Millimeter-Wave Radiometer for Stratospheric Observation at Eureka, Canada

S. Ochiai, A. Yamazaki, Y. Irimajiri, and H. Masuko, *Communications Research Laboratory, Japan*

PF-33 Superconducting Submillimeter-Wave Limb-Emission Sounder (JEM/SMILES) aboard the International Space Station for Observing Stratospheric Ozone Layer

T. Manabe[1], M. Seta[1], Y. Kasai[1], S. Ochiai[1], H. Masuko[1], J. Inatani[2], and JEM/SMILES Mission Team[2], [1]*Communications Research Laboratory and* [2]*National Space Development Agency of Japan, Japan*

PF-34 Atmospheric Refractivity and Temperature Profiles Derived from GPS Limb-sounding: Development of Retrieval Algorithms for the COSMIC Mission

C. Huang and Y. Liou, *National Central University, China(SRS)*

PF-36 Ocean Wave Observation Applied Doppler Signal from Specula Reflection Obtaining by MWR

M. Kondo[1], K. Kawai[1], H. Hirano[1], and T. Fujisaka[2], [1]*Tokyo University of Mercantile Marine and* [2]*Mitsubishi Electric Corp., Japan*

Commission G (Poster)

PG1-04 Studies on Atmospheric Radio Noise (ARN) over Southern India

V. Sarangam[1], R.R. T[1], B. Reddy[2], D. Lakshmi[3], and G.V. Reddy[1], [1]*S V University,* [2]*National Geophysical Research Institute, and* [3]*National Physical Laboratory, India*

PG1-06 Old Satellite Data Reprocessed for Ionospheric Modeling

D. Bilitza[1], N. Papitashvili[1], J. Grebowsky[2], and B. Schar[3], [1]*Raytheon ITSS,* [2]*NASA, GSFC, and* [3]*Emergent Inc., USA*

PG3-01 Comprehensive Observations of a Large-Scale Traveling Ionospheric Disturbance During the Magnetic Storm of September 15, 1999

K. Shiokawa[1], Y. Otsuka[1], T. Ogawa[1], N. Balan[2], K. Igarashi[3], A.J. Ridley[4], D.J. Knipp[5], A. Saito[6], and K. Yumoto[7], [1]*Nagoya University,* [2]*Kyoto University, and* [3]*Communications Research Laboratory, Japan;* [4]*University of Michigan,* [5]*United States Air Force Academy, and* [6]*Cornell University, USA;* [7]*Kyushu University, Japan*

PG3-02 Observations of Large-scale Traveling Ionospheric Disturbances Using GPS Networks

T. Tsugawa[1], A. Saito[2], and Y. Otsuka[3], [1]*Kyoto University, Japan;* [2]*Cornell University, USA;* [3]*Nagoya University, Japan*

PG3-04 Effect of Interplanetary Magnetic Field on the Height of Equatorial Ionosphere

T. Maruyama[1], K. Nozaki[1], and L.Z. Sizova[2], [1]*Communication Research Laboratory, Japan;* [2]*IZMIRAN, Russia*

PG3-05 Annual and Semiannual Variations of the Mid Latitude Ionosphere over the MU Radar

S. Kawamura[1], N. Balan[1], Y. Otsuka[2], and S. Fukao[1], [1]*Kyoto University and* [2]*Nagoya University, Japan*

PG3-06 The Critical Frequency foF2 Variations at Equator During Geomagnetic Storms

L.Z. Sizova[1] and M.I. Pudovkin[2], [1]*IZMIRAN and* [2]*St. Petersburg State University, Russia*

PG4-01 Small-Scale Variations in the Thermosphere and Ionosphere Associated With an Auroral Arc

H. Shinagawa[1], R. Fujii[1], S. Nozawa[1], S. Oyama[2], and M. Ishii[2], [1]*Nagoya University and* [2]*Communications Research Laboratory, Japan*

PG4-02 Neutral Dynamics in the Polar Thermosphere Deduced from Optical Measurements

M. Ishii[1], M. Conde[2], R.W. Smith[2], M. Krynicki[2], E. Sagawa[1], and S. Watari[1], [1]*Communications Research Laboratory, Japan;* [2]*Geophysical Institute, University of Alaska Fairbanks, USA*

PG4-03 Vertical Winds Observed with FPI in the Auroral Thermosphere around the Auroral Oval

S. Oyama[1], M. Ishii[1], H. Shinagawa[2], M. Kubota[1], and Y. Murayama[1], [1]*Communications Research Laboratory and* [2]*Nagoya University, Japan*

PG4-04 Estimation of Joule and Aurora Particle Heating in the Dayside Thermosphere Using EISCAT Svalbard Radar Data

M. Suzuki[1], H. Fujiwara[1], S. Nozawa[2], S. Maeda[3], and H. Fukunishi[1], [1]*Tohoku University,* [2]*Nagoya University, and* [3]*Kyoto women's University, Japan*

PG4-06 Simultaneous EISCAT Svalbard Radar and DMSP Satellite Observations of Ion Upflow in the Dayside Ionosphere

Y. Ogawa[1], S. Nozawa[1], S.C. Buchert[1], R. Fujii[1], and S. Ohtani[2], [1]*Nagoya University, Japan;* [2]*The Johns Hopkins University, USA*

PG4-07 Low Electron Temperature Region around the Dayside Cusp Observed with ESR

M. Sugino[1], S.C. Buchert[1], S. Nozawa[1], R. Fujii[1], and T. Hagfors[2], [1]*Nagoya University, Japan;* [2]*Max-Planck-Institut fuer Aeronomie, Germany*

PG4-08 Demagnetization of Electrons in the Turbulent E Region

S. Saito[1], R. Fujii[2], and S.C. Buchert[2], [1]*University of Tromso, Norway;* [2]*STEL, Nagoya University, Japan*

PG4-09 Source of Plasma Irregularities in the Subauroral F Region as Observed by the SuperDARN Radars

K. Hosokawa[1], T. Iyemori[1], A.S. Yukimatu[2], N. Sato[2], and M. Sugino[3], [1]*Graduate School of Science, Kyoto University,* [2]*National Institute of Polar Research, and* [3]*Solar-Terrestorial Environment Laboratory, Japan*

PG4-10 Relationship between Neutrals and Ions in the Auroral E-Region Verified by Simultaneous FPI and VHF Radar Observations

T. Sakanoi[1], H. Fukunishi[1], S. Okano[1], and K. Igarashi[2], [1]*Tohoku University and* [2]*Communications Research Laboratory, Japan*

PG4-11 Effect of Tenuous Solar Wind on High Latitude Ionospheric Convection

N. Nishitani[1], T. Ogawa[1], N. Sato[2], H. Yamagishi[2], and A.S. Yukimatu[2], [1]*Solar-Terrestrial Environment Laboratory, Nagoya University and* [2]*National Institute of Polar Research, Japan*

PG5-02 Experimental and Theoretical Statistics of Ionospheric Scintillation in Equatorial Zone

K. Makaratat[1], A. Decharat[1], T. Bunchuk[1], N. Hemmakorn[1], K. Igarashi[2], and H. Minakoshi[2], [1]*King Mongkut's Institute of Technology Ladkrabang, Thailand;* [2]*Communications Research Laboratory, Japan*

PG5-03 On Relation of Equatorial Ionospheric Scintillation Phenomena and Geomagnetic Activity

H. Kagami, H. Minakoshi, and K. Igarashi, *Communications Research Laboratory, Japan*

PG5-04 Characteristic of Ionospheric Scintillation Occuring in Equatorial Regoin

O. Sangaroon[1], J. Griwan[1], A. Lasakul[1], K. Janchitrapongvej[1], J. Nakasuwan[2], and Y. Moriya[3], [1]*King Mongkut's Institute of Technology and* [2]*Rajamangala Institute of Technology, Thailand;* [3]*Tokai University, Japan*

PG5-05 Absorption of ELF Atmospherics during the Period of Higher Geomagnetic Activity

B.K. De, *Tripura University, India*

PG5-07 Characteristics of 12- and 3-m E-Region Irregularities as Observed at Syowa, Antarctica

A.V. Koustov[1], R.A. Makarevitch[1], T. Ogawa[2], N. Nishitani[2], K. Igarashi[3], K. Ohtaka[3], N. Sato[4], H. Yamagishi[4], and S. Yukimatu[4], [1]*University of Saskatchewan, Canada;* [2]*University of Nagoya,* [3]*Communications Research Laboratory, and* [4]*National Institute of Polar Research, Japan*

PG5-09 Some New Aspects of the Low Latitude E Region Irregularities Revealed by the Gadanki MST Radar

A.K. Patra[1], S. Sripathi[2], V.S. Kumar[2], and P.B. Rao[2], [1]*Space Physics Laboratory and* [2]*National MST Radar Facility, India*

PG5-11 Study of Ionospheric E-region Irregularity Associated with Meteor Trail

N. Yamada[1], M. Yamamoto[1], S. Fukao[1], and R.T. Tsunoda[2], [1]*Kyoto University, Japan;* [2]*SRI International, USA*

PG5-12 Observations of Field-Aligned Irregularities in the Ionospheric E-region over Japan

M. Yamamoto and S. Fukao, *Kyoto University, Japan*

PG5-13 Numerical Simulation of Polarization Electric Field as a Source of Midlatitude Field-Aligned Irregularities

T. Yokoyama, M. Yamamoto, and S. Fukao, *Kyoto University, Japan*

PG5-14 Effects of Neutral Atmosphere Dynamics on the E-Region Structure

L.M. Kagan, *Radiophysical Research Institute, Russia*

PG5-15 The 2 - 16 Day Recurrence Cycle as Seen on Sporadic E Layer Occurrence and Planetary Wave Observed with MF Radar

K. Igarashi and H. Kato, *Communicatiosn Research Laboratory, Japan*

PG5-16 Horizontal Changes in TEC over Japan Observed by the NNSS Receiver Chain

Y. Ohta[1], T. Maruyama[2], T. Okuzawa[1], K. Ohtaka[2], A. Morioka[3], and S. Watanabe[4], [1]*The University of Electro-Communications,* [2]*Communications Research Laboratory,* [3]*Tohoku University, and* [4]*Hokkaido University, Japan*

PG5-17 Planetary Waves Influence On The Sporadic E-layer

A.D. Akchurin and O.N. Sherstyukov, *Kazan State University, Russia*

PG5-18 Spatial Structure of F-region Large-scale Quasistationar Irregularities

V.H. Depuev and S.A. Pulinets, *IZMIRAN, Russia*

PG5-19 Observations of Very High-Density Plasma in the Polar Ionosphere by Akebono Satelite

Y. Ichikawa, T. Abe, and K. Oyama, *The Institute of Space and Astronautical Science, Japan*

PG7-01 Radio Holography Observation of the Lower Ionosphere by Means of Analysis of GPS/MET Radio Occultation Data

A. Pavelyev[1], T. Tsuda[1], K. Hocke[1], K. Igarashi[2], and J. Wickert[3], [1]*Kyoto University and* [2]*Communications Research Laboratory, Japan;* [3]*GFZ Potsdam, Germany*

PG7-02 Comparison of Auroral and Cosmic Noise Absorption 2-D Images as Observed with 256-element Imaging Riometer

H. Mori[1], Y. Murayama[1], M. Ishii[1], S. Kainuma[1], H.C. Stenbaek-Nielsen[2], and T.J. Hallinan[2], [1]*Communications Research Laboratory, Japan;* [2]*Geophysical Institute, University of Alaska Fairbanks, USA*

PG7-04 AGW Power Variation Around the Height of Mesospehric Wind Reversal Observed with Tromso MF-Radar

T.F. Shibata[1], R. Funane[1], S. Nozawa[2], and C.M. Hall[3], [1]*University of Electro-Communications and* [2]*Solar-Terrestrial Environment Laboratory, Nagoya University, Japan;* [3]*Tromso Geophysical Observatory, University of Tromso, Norway*

PG7-05 GPS Phase Fluctuations Observed with the GSI GPS Network in Japan During a Geomagnetic Storm of February 12, 2000

Y. Otsuka, Y. Sahai, and T. Ogawa, *Solar-Terrestrial Environment Laboratory, Nagoya Univ., Japan*

PG7-06 Round-the-World Signals Peculiarities on the Paths of Russian Chirp-Sounders Network

V.I. Kurkin[1], V.E. Nosov[1], V.A. Ivanov[2], V.V. Shumaev[2], N.V. Ryabova[2], and V.P. Uryadov[3], [1]*Institute of Solar-Terrestrial Physics,* [2]*Mary State Technical University, and* [3]*Radiophysical Research Institute, Russia*

PG7-07 Measurement of Electron Density Profile in the Lowest Ionosphere Using the SRP-4 Rocket Payload

K. Ishisaka[1], T. Okada[1], T. Nishio[1], J.G. Hawkins[2], I. Nagano[3], and H. Matsumoto, [1]*Toyama Prefectural University,* [2]*University of Alaska, Fairbanks,* [3]*Kanazawa University and* [4]*Kyoto University, Japan*

PG7-08 A Simple Method for Determining GPS Receiver Bias Using Elevation Angle Dependency of the Receiver for Mapping TEC

R. Yamazaki[1], K. Igarashi[1], and T. Maruyama[2], [1]*Communications Research Laboratory and* [2]*Hiraiso Solar Terrestrial Research Center, CRL, Japan*

PG7-09 Effect of a Solar Eclipse on Transequatorial HF Propagation

V.I. Kurkin[1], G.V. Kotovich[1], V.E. Nosov[1], and S.J. Anderson[2], [1]*Institute of Solar-Terrestrial Physics, Russia;* [2]*Defence Science & Technology Organisation, Australia*

PG7-10 Evaluation of GPS-based Ionospheric TEC measurements

M. Sekido, T. Kondo, E. Kawai, and M. Imae, *Communications Research Laboratory, Japan*

PG7-11 Seasonal Variations of the Ionospheric Total Electron Content in the Equatorial Anomaly Regions

H. Tsai, J. Liu, W. Tsai, and C. Liu, *National Central University, China(SRS)*

PG7-12 The Structure of the Topside Ionosphere Observed by PWS Topside Sounder Experiment On-board Akebono Satellite in the Auroral Precipitation Region

O. Kodama and T. Ono, *Tohoku University, Japan*

PG7-13 Investigation of the Wake Effect and Associated Plasma Turbulence by Using Sounding Rocket Experiments

M. Yamamoto[1], T. Ono[1], and H. Oya[2], [1]*Tohoku University and* [2]*Fukui Institute of Technology, Japan*

PG9-03 Precursors of ULF Abnormal Electromagnetic Rediation before the ML7.1 Hetian Earthquake

S. Yang and A. Du, *Institute of Geology and Geophysics,Chinese Academy of Sciences, China(CIE)*

PG9-04 Voltage-changes Induced by Stick-slips of Granites

A. Takeuchi and H. Nagahama, *Tohoku University, Japan*

PG9-14 The Observation of Broadband Co-seismic Electromagnetic Waves at Tottori-ken Seibu Earthquake

T. Yoshida and M. Nishi, *Hiroshima City University, Japan*

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M. Seto[1], K. Murayama[2], Y. Kitamura[1], and T. Watanabe[1], [1]*Tohoku Institute of Technologu and* [2]*Kyoushinn Gikenn, Japan*

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H. Sakuma[1], K. Kawamura[2], and K. Otsuki[1], [1]*Tohoku University and* [2]*Tokyo Institute of Technology, Japan*

PG9-17 Mechanism for Generation of the Meter Range Electromagnetic Noise from an Atmosphere before Earthquakes.

K.A. Boyarchuk, A.V. Karelin, and V.N. Oraevsky, *IZMIRAN, Russia*

PG9-18 Statistical Analysis of the Ionospheric Disturbances before Earthquakes in Taiwan Region

K.A. Boyarchuk, A.M. Lomonosov, S.A. Pulinets, and N.I. Maloushina, *IZMIRAN, Russia*

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T. Gaivoronska, *IZMIRAN, Russia*

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C. Chen, *National Central University, China(SRS)*

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Z. Deng, H. Xu, Y. Wang, M. Cheng, and F. Tang, *Institute of Geology, China Seismological Bureau, China(CIE)*

PG9-24 Intercorrelation Earthquakes Epicentre Arrangement with Deep Crust Electrical Conductivity and P-velocity Structures in the Central Tien-Shan

A.K. Rybin, G.G. Tshelochkov, and V.U. Batalev, *Scientific Station of IVTRAN, Kyrgyz*

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M. Hata[1], I. Takumi[2], H. Yasukawa[1], and S. Yabashi[2], [1]*Aichi Prefectural University and* [2]*Nagoya Institute of Technology, Japan*

PG9-27 ULF Magnetic Location of Earthquake Hearts in Seismic Active Zone

Y. Kopytenko[1], V. Ismaguilov[1], K. Hattori[2], O. Molchanov[3], and M. Hayakawa[4], [1]*Institute of Terrestrial Magnetizm, Ionosphere and Radiowave Propagation, St-Petersburg Filial, Russia;* [2]*Chiba University,* [3]*NASDA, and* [4]*The University of Electro-Communications, Japan*

PG9-28 Atmospheric Electric Field Observation for Mechanism of Ionospheric Disturbance Associated with Earthquakes in Taiwan

M. Kamogawa[1], J. Liu[2], Y. Chuo[2], H. Fujiwara[1], and S. Uyeda[3], [1]*Waseda University, Japan;* [2]*National Central University, China(SRS);* [3]*RIKEN International Frontier Research Group on Earthquakes, Japan*

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H. Fujiwara[1], M. Kamogawa[1], J. Liu[2], and Y. Chuo[2], [1]*Waseda University, Japan;* [2]*National Central University, China(SRS)*

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K. Sakai, A. Yanada, Y. Yaji, T. Takano, and S. Shimakura, *Chiba University, Japan*

PG9-33 ULF Magnetic Emission Induced by Seismic Activity due to Inductive Seismo-Electromagnetic Effect

O. Molchanov[1], A. Kulchitsky[2], N. Korovkin[3], and M. Hayakawa[4], [1]*Earth Observation Research Center, NASDA, Japan;* [2]*Saint Petersburg State Technical University and* [3]*Moscow Lomonosov State University, Russia;* [4]*The University of Electro-Communications, Japan*

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T. Takano, K. Sakai, A. Yamada, Y. Yaji, H. Higasa, and S. Shimakura, *Chiba University, Japan*

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S.S. Ghosh, *Pohang University of Science and Technology (POSTECH), South Korea*

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O.V. Dudnik, *Kharkiv National University, Ukraine*

PH-07 A Smoothness Constraint Modeling of Electron Density Profile in the Plasmasphere Deduced from Wave Data

Y. Goto, Y. Kasahara, and T. Sato, *Kyoto University, Japan*

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T. Sakai, S. Ujigawa, and S. Shimakura, *Chiba University, Japan*

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T. Imachi[1], I. Nagano[1], S. Yagitani[1], M. Tsutsui[2], and H. Matsumoto[3], [1]*Kanazawa University,* [2]*Kyoto Sangyo University, and* [3]*Kyoto University, Japan*

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Y. Yonekura[1], H. Ogawa[1], N. Mizuno[2], H. Saito[2], R. Abe[2], N. Koide[2], A. Mizuno[2], and Y. Fukui[2], [1]*Osaka Prefecture University and* [2]*Nagoya University, Japan*

PJ-02 FTS Observations of Atmospheric Transmission at Pampa la Bola

S. Matsushita[1] and H. Matsuo[2], [1]*Harvard-Smithsonian Center for Astrophysics, USA;* [2]*National Astronomical Observatory of Japan, Japan*

PJ-03 Wide Field Imagings with Atacama Large Millimeter/ Submillimeter Array

K. Morita, *National Astronomical Observatory of Japan, Japan*

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H. Ogawa[1], Y. Yonekura[1], K. Kimura[1], A. Mizuno[2], N. Mizuno[2], S. Asayama[2], Y. Fukui[2], and H. Andoh[3], [1]*Osaka Prefecture University,* [2]*Nagoya University, and* [3]*Toyota National College of Technology, Japan*

PJ-05 A portable 810 GHz SIS Receiver with a Low-Power-Consumption Cryocooler

K. Tatematsu[1], Y. Sekimoto[1], T. Noguchi[1], J. Inatani[2], S. Yamamoto[3], T. Sato[4], and T. Kamba[5], [1]*National Astronomical Observatory of Japan,* [2]*NASDA,* [3]*University of Tokyo,* [4]*Sumitomo Heavy Industries, and* [5]*Mitsubishi Electric Logistics Support and Space Systems, Japan*

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N. Yamaguchi[1], N. Ukita[1], H. Ezawa[1], K. Kohno[1], R. Kawabe[1], S. Yamamoto[2], and ASTE Team[3], [1]*National Astronomical Observatory of Japan,* [2]*The University of Tokyo, and* [3]*ASTE Team, Japan*

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Y. Kankaku, Y. Kawakami, and T. Takano, *Chiba University, Japan*

PJ-08 Design and Performance of Polarization Converters for Millimeter and Submillimeter Wave Using Artificial Anisotropic Dielectric Medium

T. Takano, Y. Kawakami, and Y. Kankaku, *Chiba University, Japan*

PJ-09 Australia Telescope Compact Array Local Oscillator Upgrade

R. Subrahmanyan and M.R. Leach, *Australia Telescope National facility, Australia*

PJ-10 Indium Phosphide Monolithic Microwave Integrated Circuits for Millimetre-Wave Receiver Systems

R.G. Gough[1], H.P. Kanoniuk[1], M.W. Sinclair[1], J.W. Archer[2], and S.P. Mahon[2], [1]*CSIRO Australia Telescope National Facility and* [2]*CSIRO Telecommunications and Industrial Physics, Australia*

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G.R. Graves, M.A. Bowen, S.A. Jackson, and M.W. Sinclair, *CSIRO, Australia*

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P.P. Roberts, CSIRO, *Australia Telescope National Facility, Australia*

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C. Chin[1], M. Wong[1], S. Shi[2], W.L. Shan[2], W. Zhang[2], T. Noguchi[3], and H.W. Cheng[1], [1]*Academia Sinica, China(SRS);* [2]*Purple Mountain Observatory, Chinese Academy of Science, China(CIE);* [3]*NAOJ, Japan*

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A. Ueda[1], T. Noguchi[1], Y. Sekimoto[1], M. Ishiguro[1], and T. Ishibashi[2], [1]*National Astronomical Observatory of Japan and* [2]*NTT Photonics Laboratories, Japan*

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M.W. Sinclair, R.G. Gough, G.R. Graves, G.J. Carrad, M.R. Leach, R.J. Bolton, P.B. Sykes, and L.J. Reilly, *CSIRO Australia Telescope National Facility, Australia*

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X. Liu[1], I.E. Molotov[2], S.F. Likhachev[2], X. Hong[3], S. Ananthakrishnan[4], and V. Balasubramanian[5], [1]*Urumqi Astronomical Observatory, China(CIE);* [2]*Astro Space Center of P.N. Lebedev Physical Institute, Russia;* [3]*Shanghai Astronomical Observatory, China(CIE);* [4]*National Centre for Radio Astrophysics, TIFR, Pune and Radio Astronomy Centre, NCRA-TIFR, Uthagamandalam, India*

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Z. Shen[1], D. Jiang[2], S. Kameno[3], and Y. Chen[2], [1]*The Institute of Space and Astronautical Science, Japan;* [2]*Shanghai Observatory, China(CIE);* [3]*National Astronomical Observatory, Japan*

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A.E. Rodin and M. Sekido, *Kashima Space Research Center CRL, Japan*

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J. Nakajima, Y. Koyama, M. Sekido, and T. Kondo, *Kashima Space Research Center/CRL, Japan*

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S. Kameno[1], M. Inoue[1], K. Fujisawa[1], Z. Shen[2], and K. Wajima[2], [1]*National Astronomical Observatory of Japan and* [2]*The Institute of Space and Astronautical Science, Japan*

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S. Kameno[1], M. Inoue[1], S. Sawada-Satoh[2], Z. Shen[2], and K. Wajima[2], [1]*National Astronomical Observatory of Japan and* [2]*The Institute of Space and Astronautical Science, Japan*

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M. Mutoh, M. Inoue, S. Kameno, K. Fujisawa, and K. Asada, *National Astronomical Observatory of Japan, Japan*

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K. Fujisawa, *National Astronomical Observatory of Japan, Japan*

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M. Inoue, *National Astronomical Observatory of Japan, Japan*

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K. Wajima[1], N. Kawaguchi[2], Y. Murata[1], and H. Hirabayashi[1], [1]*The Institute of Space and Astronautical Science and* [2]*National Astronomical Observatory, Japan*

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M. Yamashita[1], K. Osaki[2], and K. Shimizu[3], [1]*Hokkaido Institute of Technology,* [2]*Hakuju Institute for Health Science Co. Ltd., and* [3]*Graduate School of Engineering, Hokkaido University, Japan*

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Y. Yamaguchi[1], A. Miwa[1], Y. Yoshida[1], M. Masada[1], T. Shigemitsu[2], and M. Kato, [1]*Faculty of horticulture, Chiba university,* [2]*Central research institute of electric power industry, and* [3]*Hokkaido university school of medicine, Japan*

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T. Oda[1], T. Shigemitsu[1], R. Sano[1], and Y. Matsushita[2], [1]*Central Research Institute of Electric Power Industry / Bio-Science and* [2]*Tokyo Electric Power Company, Japan*

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T. Koana[1], M. Okada[1], Y. Takashima[2], M. Ikehata[3], and J. Miyakoshi[4], [1]*Railway Technical Research Institute/Tokyo Institute of Technology,* [2]*Tokyo Institute of Technology,* [3]*Railway Technical Research Institute, and* [4]*Kyoto University, Japan*

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M. Ikehata[1], M. Iwasaka[2], S. Ueno[2], J. Miyakoshi[3], H. Takeyama[4], T. Matsunaga[4], and T. Koana[1], [1]*Railway Technical Research Institute,* [2]*Tokyo University,* [3]*Kyoto University, and* [4]*Tokyo University of Agriculture and Technology, Japan*

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K. Formicki, A. Tanski, and A. Winnicki, *Agricultural University of Szczecin, Poland*

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H. Okano and C. Ohkubo, *National Institute of Public Health/Pip Tokyo Co., Japan*

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J. Karpowicz and K. Gryz, *Central Institute for Labour Protection, Poland*

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S. Nishizawa[1], W. Spreitzer[2], H.O. Ruoss[2], and F. Landstorfer[3], [1]*Aoyama Gakuin University, Japan;* [2]*Robert Bosch GmbH and* [3]*University of Stuttgart, Germany*

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K. Yamazaki, T. Kawamoto, and T. Shigemitstu, *Central Research Institute of Electric Power Industry, Japan*

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H. Masuda[1], A. Ushiyama[1], K. Wake[2], S. Watanabe[2], M. Taki[3], and C. Ohkubo[3], [1]*National Institutejof Public Health,* [2]*Communications Research Laboratory, and* [3]*Tokyo Metropolitan University, Japan*

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J. karpowicz and K. Gryz, *Central Institute for Labour Protection, Poland*

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D.A. Pasichiy, *RADMIR Scientific-research Institute of Radio Engineering Measurements JSC, Ukraine*

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R. Liu and S. Ueno, *University of Tokyo, Japan*

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PK7-01 SAR Absorption in the Brains of Children Compared to Adult Mobile Phone Users at 900 MHz

V. Anderson, *Monash University, Australia*

PK7-02 Energy Deposition in Spherical Model of a Human Head Due to Wireless Phone in GHz Band

Y. Kamimura, K. Ueno, and Y. Yamada, *Utsunomiya University, Japan*

PK7-03 Microwave Dosimetry: From Prolate Spheroids to Thermoregulatory Models

P.A. Mason[1], J.M. Ziriax[2], W.D. Hurt[1], P. Gajsek[1], J.A. D'Andrea[2], and M.R. Murphy[1], [1]*United States Air Force and* [2]*United States Navy, USA*

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J.M. Ziriax[1], J.A. D'Andrea[1], S. Lu[2], S. Matur[2], and D. Cox[1], [1]*U.S. Navy, Naval Health Research Center Detachment at Brooks AFB and* [2]*McKessonHBOC BioServices, USA*

PK7-05 Measurement of Specific Absorption Rates Caused by Hand-Held Amateur Radio Communication Devices

S. Watanabe[1], Y. Akiyama[2], R. Ishikawa[2], H. Asou[2], and Y. Yamanaka[1], [1]*Communications Research Laboratory and* [2]*NTT Advanced Technology Corporation, Japan*

PK7-06 Effect of Hand Holding a Cellular Phone on the SAR Distribution in the Head

S. Mochizuki[1], S. Watanabe[2], M. Taki[3], Y. Yamanaka[2], and H. Shirai[1], [1]*Chuo University,* [2]*Communications Research Laboratory, and* [3]*Tokyo Metropolitan University, Japan*

PK8-01 Numerical Calculations of "Foot Current" as a Alternative Method of Evaluation of Occupational Exposure

K. Gryz, J. Karpowicz, and S. Wincenciak, *Central Institute for Labour Protection, Poland*

Instructions for Oral Presentation

All presenting authors are requested to Register for AP-RASC '01 in order to present the paper at the Oral Sessions.

(1) Working Language
The working language of the Symposium is English.

(2) Visual Equipment
Each conference room is provided with one overhead projector for viewgraphs.
Neither slide projector nor PC projector is available.

(3) In order to ensure that the program runs smoothly, all presenting authors and session chairs are requested to present themselves at the session desk at least 15 minutes before their sessions begin.

(4) Please take out your viewgraphs after your presentation.

(5) Presentation Time
Each paper in the regular session, is allotted 15 minutes for presentation and 5 minutes for discussion.
Tutorial Lecture is allotted 30 minutes for presentation and 10 minutes for discussion.

Instructions for Poster Presentation

All presenting authors are requested to Pre-Register for AP-RASC '01 in order to present the paper at the Poster Sessions.

(1) Please follow the time schedule indicated below.
All presenting authors have to stand near their own posters during this time period.

(2) A 1.0m(W) by 2.1m(H) poster board is prepared for each paper. The paper number will be indicated on the boards. Pins, tapes and scissors for mounting posters will be prepared in the Poster Rooms. Thick boards or plastic panels cannot be mounted on the poster board, so the poster should be prepared on sheets of paper.

(3) Time Schedule:
Preparation: after August 2 (Thu.) 17:00
Session: August 3 (Fri.) 16:00-19:00
Removal: August 3 (Fri.) 19:00-21:00

(4) Presenting authors are requested to bring the poster by themselves. The Secretariat will NOT receive any packages sent by the authors beforehand. Electricity for the poster presentation will not be available. Tables and chairs will NOT be provided in the Poster Rooms.

Conference Events

Organizing Committee Meeting

Wednesday, August 1, 11:30-12:30, Room M5 (Members Only)

Opening Ceremony

Wednesday, August 1, 13:30-14:00, Room U.

All participants are welcome to the Opening Ceremony. This Ceremony will be followed by the Union Session, which will take place in the same room.

Welcome Reception

Wednesday, August 1, 18:00, Cafeteria I in Building No. 5 (Free of charge)

All participants are invited to the reception shortly after the Union Session without any advanced booking. Free drinks and light snacks are served in Cafeteria I .

International Committee Meeting

Thursday, August 2, 12:40-13:40, Room M5 (International Advisary Board and International Steering Committee Members Only)

Business Meetings

Thursday, August 2, 18:00-20:30

Meeting rooms will be available for URSI Commissions or other groups for relevant purpose. Please note the bulletin board in the Registration area, where you may find the notice of the business meetings of your interest.

Banquet

Saturday, August 4, 19:00, Tokyo Dome Hotel

All participants are cordially invited to the casual banquet to be held on the evening of August 4 (Saturday) at Tokyo Dome Hotel even without advanced booking. Tokyo Dome Hotel is in the Korakuen Amusement Park about a 10-minute walk from the conference site.

Accompanying Persons' Program

Accompanying Persons' Program is not prepared. Those who wish to participate in any of the Conference Events are requested to register on-site for 3,000 JPY for each person. She/he will be provided with the final program and a tag of the registrant, but not with the Conference Digest.

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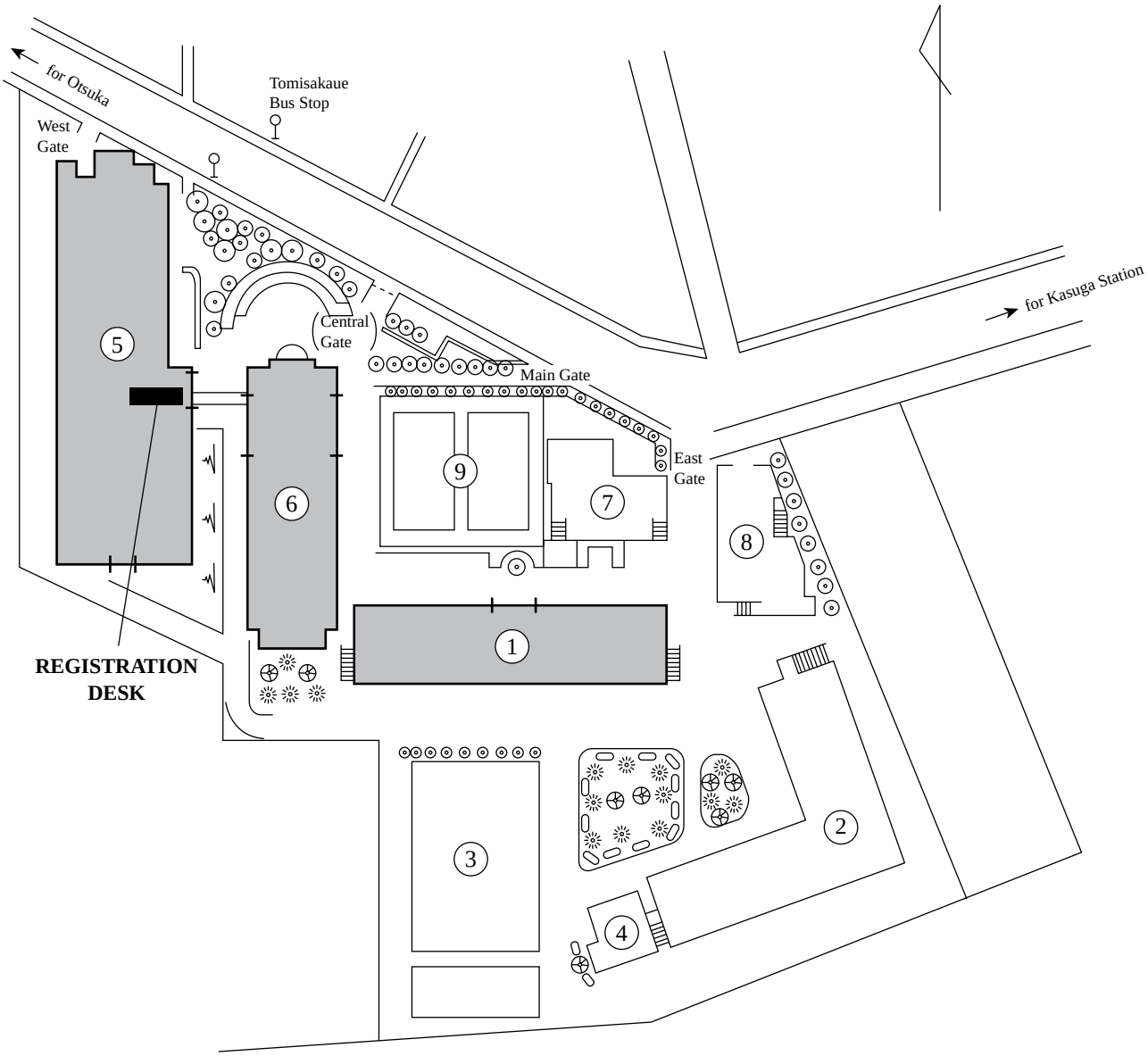
Memo

Floor Guide of Chuo University

-Map of the Conference Site-

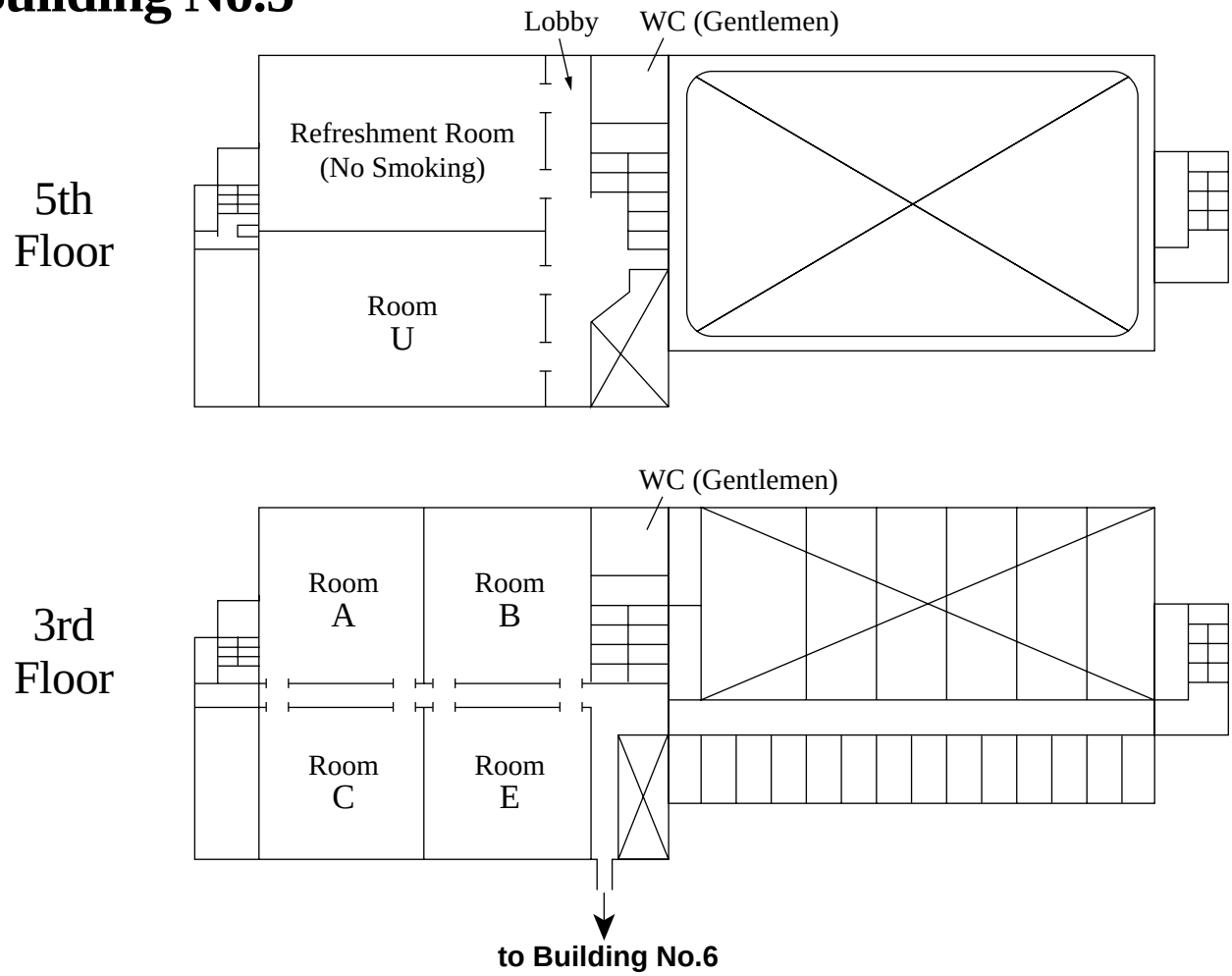
(Chuo University, Korakuen Campus)



1. Building No.1 (Room M6, M7, Cafeteria II)
2. Building No.2
3. Building No.3
4. Building No.4
5. Building No.5 (Room U, A-K, X, Y, Cafeteria I)
6. Building No.6 (Room P1-P7, Room M1-M5)
7. Building No.7 (General Store)
8. Building No.8
9. Outdoor Athletic Facilities

Floor Guide of Chuo University

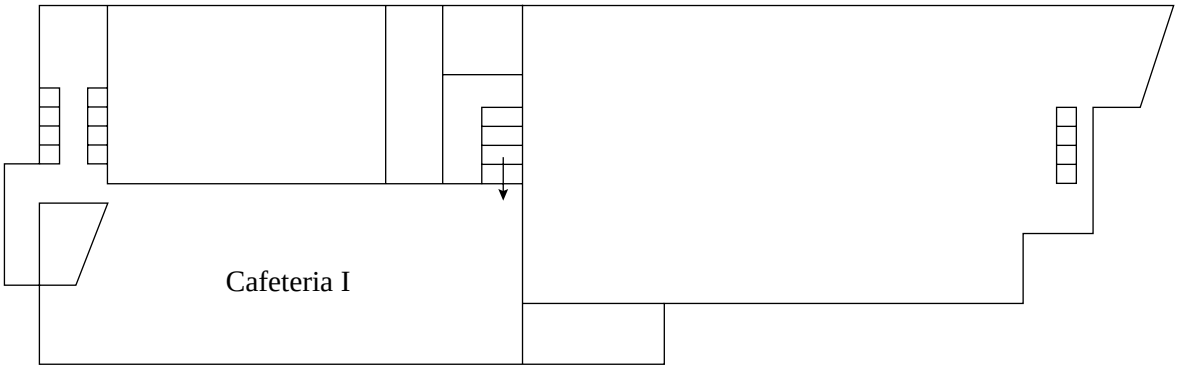
Building No.5



Floor Guide of Chuo University

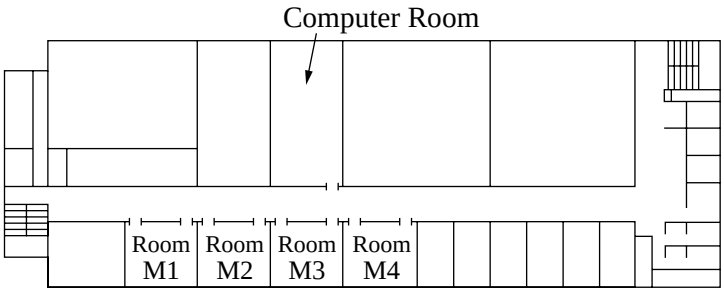
Building No.5

1st Basement

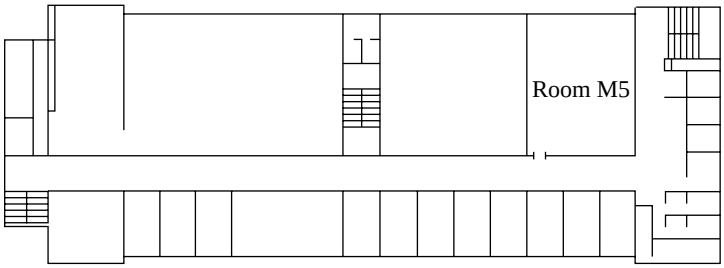


Building No.6

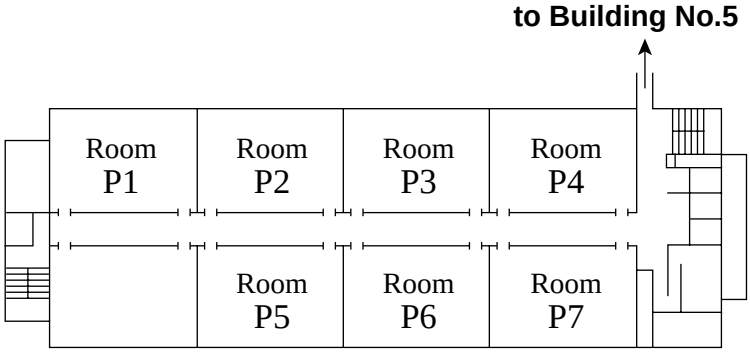
8th Floor



7th Floor



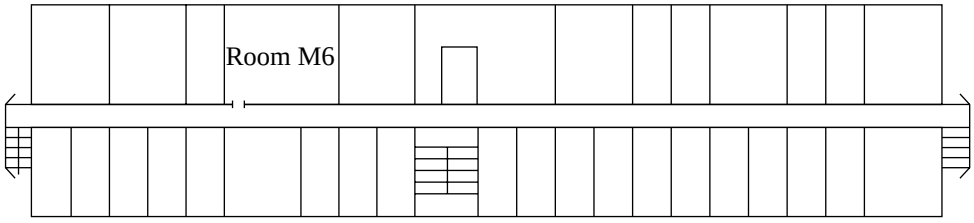
3rd Floor



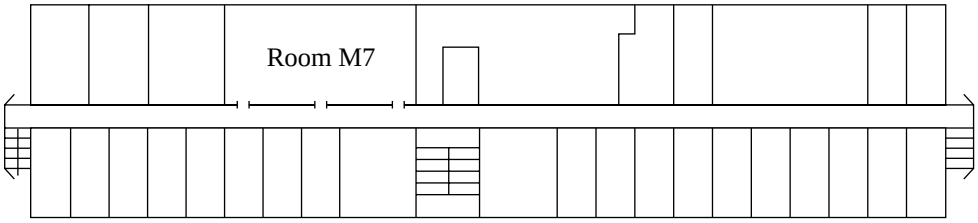
Floor Guide of Chuo University

Building No.1

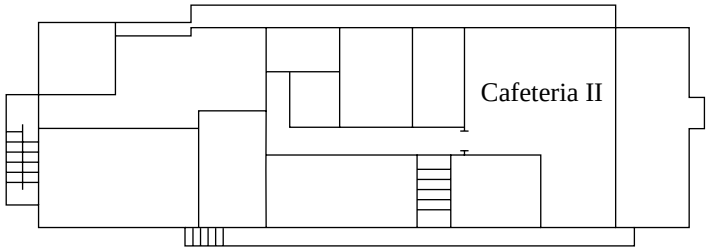
6th Floor



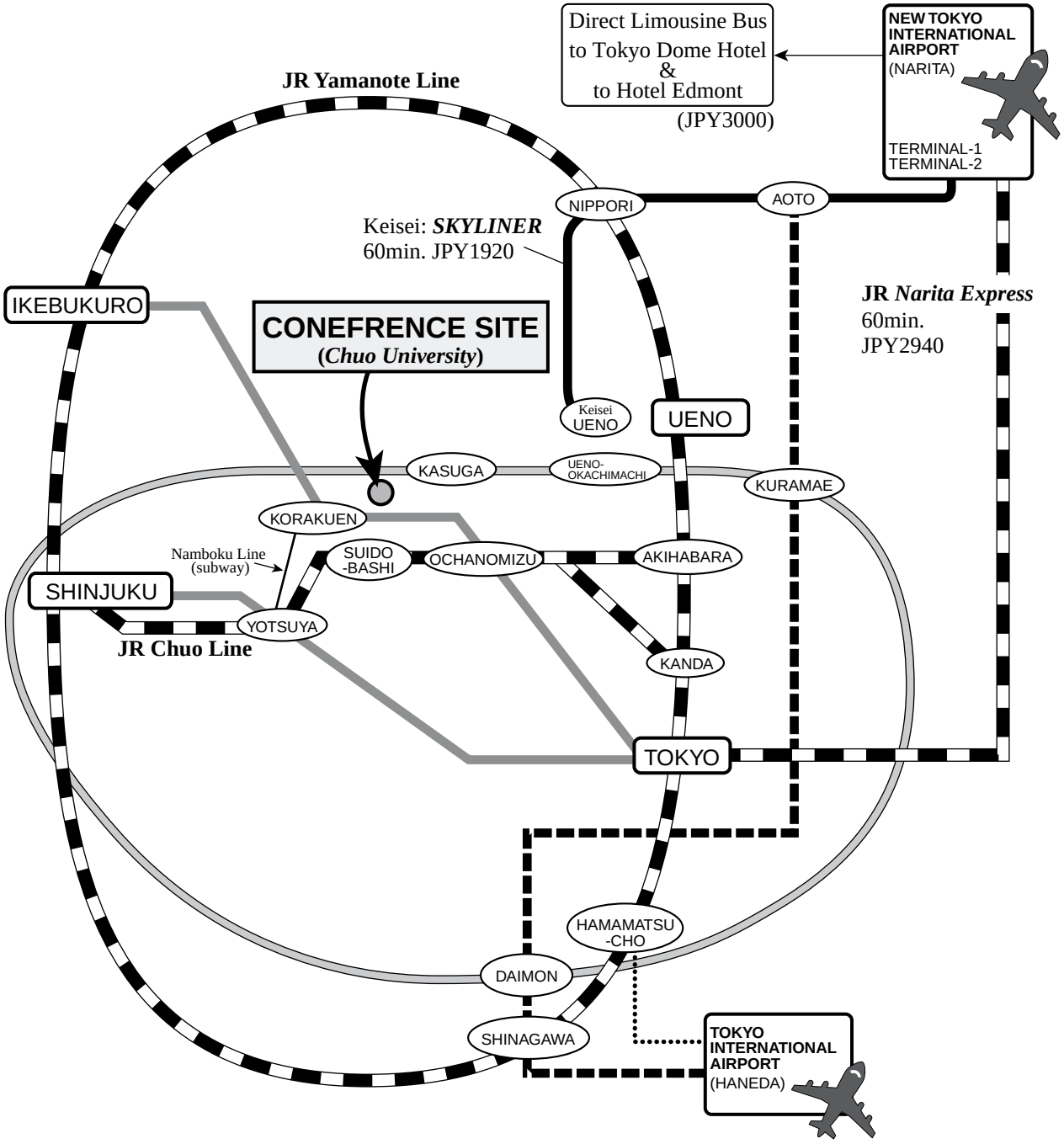
2nd Floor



1st Basement



Access Map



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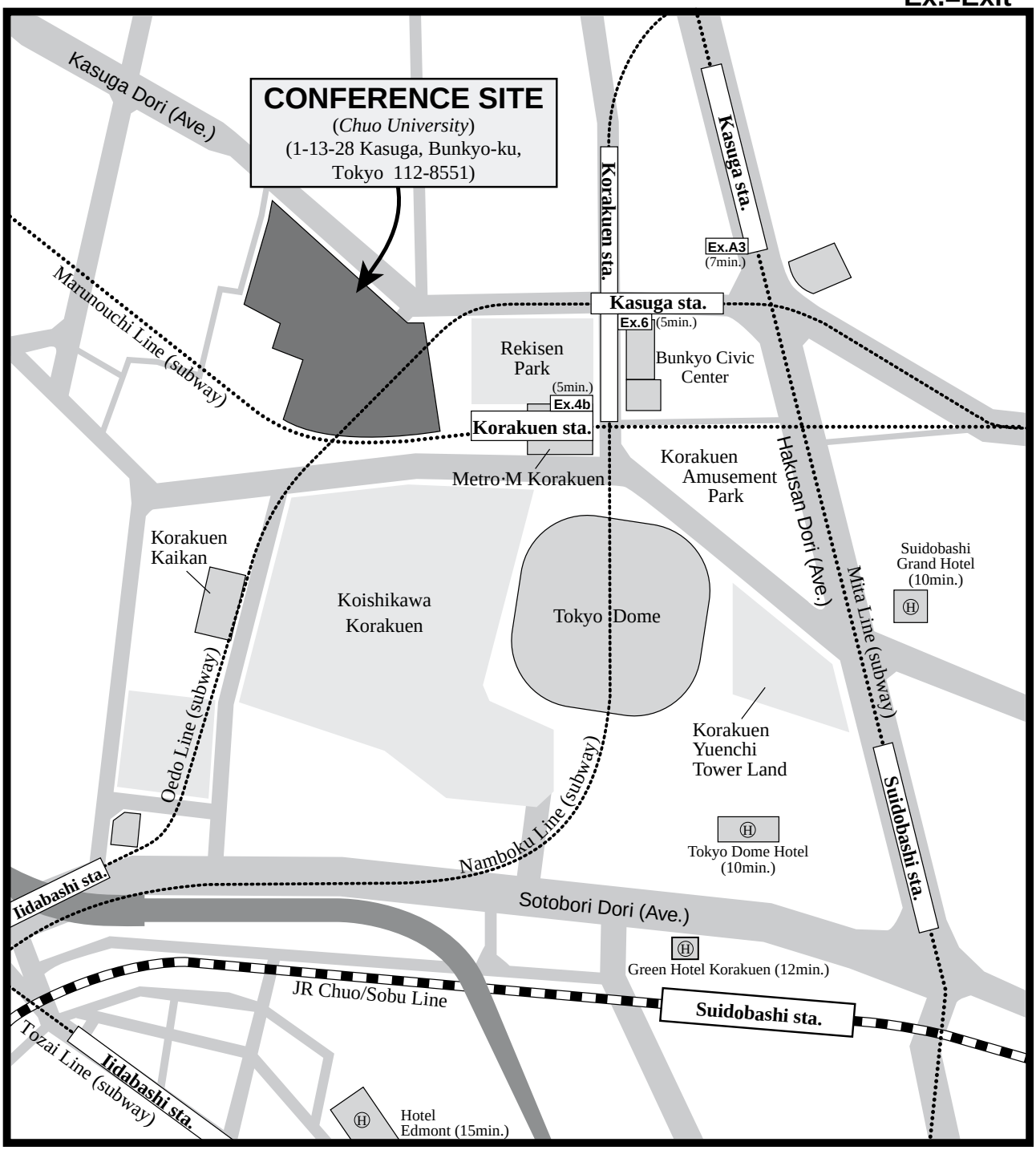
- JR
- Keisei Line
- Keihin Kyuko/Asakusa Line (subway)
- Tokyo Monorail
- Marunouchi Line (subway)
- Oedo Line (subway)

Area Map

*Ex.=Exit



① 5 min. walk from ┌ Korakuen sta., Subway ┌ Namboku Line
                    │   └ Marunouchi Line
                    └ Kasuga sta., Subway Oedo Line
② 7 min. walk from Kasuga sta., Subway Mita Line
③ 12 min. walk from Suidobashi sta., JR Chuo/Sobu Line

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