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Welcome to Hawaii
The Ultimate Global Gathering Place

On behalf of the organizing committee, it is my pleasure to welcome you to our beautiful Islands of Hawaii. Besides the beauty of our State, we are delighted to offer you informative conference and stimulating technical sessions that discuss state-of-the-art wireless communications technology. Plenary speakers were invited to share with us new innovations and exciting research opportunities in this growing technology. In addition, we scheduled the second National Science Foundation Wireless Communications Grantees Workshop in Topical Conference to help enrich the intellectual environment and enhance benefits from the conference. The Progress in Electromagnetic Research Symposium (PIERS) will also be held during an overlapping period with the topical conference, and this should broaden benefits and enhance technical exchange in areas other than wireless communications. I truly hope that you will enjoy your stay in Hawaii and find the prepared technical program stimulating, informative, and of lasting favorable impact on future research in the wireless communications area.

Regarding the social program, Hawaii is a magnificent set of tropical islands with unique beauty and ample opportunities to relax, and enjoy the numerous tourist and sight seeing programs. Possibly more than any place else on earth, Hawaii offers variety of activities that fit every need, taste, desire, and mode of relaxation. So, please take advantage of your stay, and enjoy the breathtaking sites that you can only find and see in Hawaii. To ensure your enjoyment, however, we prepared a couple of very popular tourist attractions, including a visit to the Polynesian Cultural Center, the number one tourist attraction in Hawaii, and also a luau dinner as it is one of the traditional dinners for visitors. Our staff will be delighted to help you schedule other world famous and very popular site seeing tours including a visit to the SS Arizona at Pearl Harbor, Hanauma Bay Nature Preserve, for snorkeling, and the north shore for world class surfing.

We are very happy to welcome you in Hawaii, and we certainly hope that you will enjoy the breathtaking sites in Honolulu, and find the scheduled technical sessions of lasting impact on enabling the next generation wireless communications technology. The members of the organizing committee and I are looking forward to welcoming you in Hawaii.

Magdy F. Iskander
General Chair

STEERING COMMITTEE

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**Hawaii General Information**

**Oahu** is the main point of entry for Hawaii and home to over 75% of the Hawaiian population. It has maintained its importance as a naval base and was made famous when the Japanese bombing of Pearl Harbor occurred here on December 7, 1941. While it is more crowded than the nearby islands, Oahu is still home to some beautiful beaches, luxury resorts and is a great place to visit.
2003 IEEE Conference REGISTRATION HOURS
Wednesday .................. October 15 ............... 7:30 AM-5:00 PM
Thursday .................... October 16 ..............  7:30 AM-5:00 PM
Friday ........................ October 17 ............... 7:30 AM-5:00 PM

LOCAL WEATHER
Hawaii has two seasons: the summer (dry season) and the winter (wet season). Both seasons are warm as there is very little variation in temperature year-round. But, the wet season can be daunting for the visitor, often bringing gray clouds and showers. The best bet for constant sun on Oahu is Waikiki Beach. The average temperature on Oahu for the month of October is 82 during the day and 72 in the evening.

TRANSPORTATION OPTIONS
Bus
Oahu has a municipal bus system called – what else? - The Bus. You can ride anywhere on the island for $1.50. For a private route map, check the local convenience or drug stores. For more information, call The Bus at (808) 848-5555.

Trolley
Two-hour tours of 20 sites in Oahu depart from the Hilton Hawaiian Village at 15 minute intervals every day between 8 AM and 4 PM.

Car/Limousine Service
Duke’s Limousine (www.dukeslimo.com)........ (808) 738-1878
Allstate............................................................ (808) 845-9301

Taxi Service
You can usually catch a taxi from any hotel. Restaurants will call a taxi for you. Drop rates are $1.50 and $1.50 per mile.

Allstate............................................................ (808) 845-9301
Rabi Transportation & Tour.......................... (808) 922-4900
M W Transportation Inc................................. (808) 593-8555
Royal Taxi & Tour Corporation...................... (808) 946-8282
Alpha Hawaii Taxi & Tours .............................. (808) 923-1111
Charley’s Taxi & Tours .................................  (808) 531-2333
HMK Taxi & Tours ........................................ (808) 591-1333

BUSINESS HOURS ON OAHU
Stores
10 or 11 AM to at least 5 PM Monday-Saturday with restricted hours on Sunday. Stores in Waikiki tend to keep later hours, especially during the tourist season.

Restaurants
Lunch 11:30 AM – 2:30 PM. Dinner 5:30 – 10 PM. Bars/ Nightclubs until 2 AM, at which time that are legally required to stop serving alcohol. Clubs with cabaret licenses can stay open until 4 AM.

THINGS TO DO ON OAHU
DOLE PLANTATION

Originally opened as a fruit stand in 1950, it re-opened to the public as Hawaii’s “Pineapple Experience” in 1989 after an extensive remodeling of its previous facilities. In May of 1997, Dole plantation completed another $125,000 interior renovation that simulates building facades patterned after old Haleiwa Town. Dole Plantation welcomes nearly one million visitors a year. Guests of the Plantation enjoy a variety of attractions and activities including the Pineapple Garden Maze, the Guinness Book of World Record’s 1998 “World’s Largest Maze;” informational displays and presentations about pineapple and the history of Dole; and the plantation center offering hundreds of unique pineapple related and Dole brand items, including the world famous “DoleWhip.” Every week, Dole Plantation sells more that 3,500 fresh Hawaii-grown pineapple for consumption at the store or for shipment around the world. It is near Wahiawa on the way to the North Shore, approximately a 45 minute drive from Waikiki. Admission to the Dole Plantation is free. Admission to the Maze is $4.50 Adults, $2.50 Children.

HISTORIC CHINATOWN

There are several ways to tour the historic Chinatown district of Honolulu, the oldest its kind in the United States. Contact the Chinese Chamber of Commerce at (808) 533-3181 regarding their two-hour tours through the area every Sunday morning. Additionally, the Hawaii Heritage Center at (808) 521-2749 leads tours through the area on Friday mornings.

HONOLULU ZOO

A top notch zoo located in downtown Honolulu, this is home to a number of endangered and local species. In the last few years, the African Savannah has been attracting visitors with its 10 acres filled with African Animals. The zoo is 43 acres in total and is often crowded. Go early to beat the masses.

IOLANI PALACE

Iolani Palace was the official residence of King Kalakaua from 1882 until his death in 1891 and of his sister-successor, Queen Lili'uokalnai, until the overthrow of the Hawaiian Monarchy in 1893. It is an interesting site to visit for its preservation of the royal environs. Guided tours are available.

KODAK HULA SHOW

This Waikiki institution started in 1937 as an opportunity for visitors to expose their Kodak film to performances of Hawaiian dance in an outdoor setting. The one hour free show includes young and old and offers brief instructions on the hula.

NATIONAL CEMETERY OF THE PACIFIC

This crater is a national cemetery for 35,000 folks from Asia and the South Pacific who have been killed throughout three different wars. There are some famous and some unknown buried in the tombs here, and the headstones are marked accordingly. Be sure to read the text as you pass through.

SEA LIFE PARK

This is a popular destination for visitors to Honolulu. Catch a bird’s eye view of the life of any of a number of aquatic species, including the dolphin, penguin and sea lion. This is 62 acres of marine life. A great place to bring kids as there is also a petting pool here. Regular Admission:

Adults $24, Juniors 4-12 $12. At Splash U., you can touch, feed, and teach high flying dolphins how to jump, dance, and sing. $79 Adults, $67 Kids which
includes admission to the park. At Seawalk, you can walk in their Hawaiian Reef Tanks among a kaleidoscope of marine life. $99 Adults Minimum age is 12. Includes admission to the park. Dolphin Adventures allows you to learn about daily dolphin life and interact directly with them. $99 Adults. Minimum age is 13. Includes admission to the park. Parking is $3. Shuttle Service available from select Waikiki Hotels $5.

**USS Arizona Memorial** This is a lengthy trip; but, well worth the time spent. You will wait at the visitor center for a shuttle to take you out to the Memorial of the USS Arizona, the historic ship whose sinking by the Japanese at Pearl Harbor on December 7, 1941 marked the US entrance into WW II. The ship is still partially submerged under the water and the memorial is a marker seated upon the hull. The wait is longer the later you arrive and, including the tour, can take up to 4 hours. The visitor center has some interesting pieces of the USS Arizona’s history to explore as you wait.

**Waikiki Aquarium** Experience life under the sea in its entire splendor. The Waikiki Aquarium is home to one of the most impressive collections of underwater species. View the chambered nautilus, a shark, exhibit, and the endangered monk seal all at one location. A recent $3 million facelift has brought a reef environment to the park.

**Emergency Numbers**

<table>
<thead>
<tr>
<th>Service</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance/Fire/Police</td>
<td>911</td>
</tr>
<tr>
<td>AAA Emergency Road Service</td>
<td>(800) 222-4357</td>
</tr>
<tr>
<td>Child Crisis Service</td>
<td>(808) 521-2377</td>
</tr>
<tr>
<td>Handicapped Crisis Line</td>
<td>(808) 538-0279</td>
</tr>
<tr>
<td>Poison Control Center</td>
<td>(808) 941-4411</td>
</tr>
<tr>
<td>Rape Crisis Line</td>
<td>(808) 524-7273</td>
</tr>
<tr>
<td>Youth Crisis Hotline</td>
<td>(808) 843-5200</td>
</tr>
<tr>
<td>Straub Doctors on Call – Van Dispatch for Hospital and Hotel Clinics</td>
<td>(808) 971-6000</td>
</tr>
<tr>
<td>Queen’s Medical Center (24 Hour)</td>
<td>(808) 538-9011</td>
</tr>
<tr>
<td>or (808) 521-4555</td>
<td></td>
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</tbody>
</table>

**Social Events**

Welcome Reception ..................... Tuesday, October 14
Banquet ..................................... Wednesday, October 15
Luau ......................................... Thursday, October 16
Polynesian Cultural Center .......... Saturday, October 18
### Technical Program at a Glance

#### Wednesday, October 15

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Workshop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Plenary Session I</td>
<td>Lanai</td>
</tr>
<tr>
<td>AM</td>
<td>Plenary Session II</td>
<td>Waianae</td>
</tr>
<tr>
<td>AM</td>
<td>NSF Workshop on Wireless Communications I</td>
<td>Lanai</td>
</tr>
<tr>
<td>AM</td>
<td>Advanced Modeling Tech. for Microwave Devices</td>
<td>Waianae</td>
</tr>
<tr>
<td>AM</td>
<td>Broadband and Multiband Antennas</td>
<td>Hilo</td>
</tr>
<tr>
<td>AM</td>
<td>Wireless System Architectures and Analysis</td>
<td>Puna</td>
</tr>
<tr>
<td>AM</td>
<td>NSF Workshop on Wireless Communications II</td>
<td>Lanai</td>
</tr>
<tr>
<td>PM</td>
<td>Algorithmic Approaches for Wireless Comm.</td>
<td>Waianae</td>
</tr>
<tr>
<td>PM</td>
<td>Wireless System Antennas</td>
<td>Hilo</td>
</tr>
<tr>
<td>PM</td>
<td>RF Technologies for Wireless Systems</td>
<td>Puna</td>
</tr>
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</table>

#### Thursday, October 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Workshop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Plenary Session III</td>
<td>Lanai</td>
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<tr>
<td>AM</td>
<td>Plenary Session IV</td>
<td>Waianae</td>
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<tr>
<td>AM</td>
<td>NSF Workshop on Wireless Communications III</td>
<td>Lanai</td>
</tr>
<tr>
<td>AM</td>
<td>Biological Effects of Electromagnetic Radiation</td>
<td>Waianae</td>
</tr>
<tr>
<td>AM</td>
<td>Advanced Applications of Wireless Technologies</td>
<td>Hilo</td>
</tr>
<tr>
<td>AM</td>
<td>High-Gain and Frequency Selective Antennas</td>
<td>Puna</td>
</tr>
<tr>
<td>AM</td>
<td>NSF Workshop on Wireless Communications IV</td>
<td>Lanai</td>
</tr>
<tr>
<td>PM</td>
<td>Wireless Channel Characterization I</td>
<td>Waianae</td>
</tr>
<tr>
<td>PM</td>
<td>Special Session: Fractal and Multiband Antennas</td>
<td>Hilo</td>
</tr>
<tr>
<td>PM</td>
<td>MIMO and Diversity Antenna Systems</td>
<td>Puna</td>
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</tbody>
</table>

#### Friday, October 17

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Workshop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Millimeter-Wave Technologies for Wireless Systems</td>
<td>Lanai</td>
</tr>
<tr>
<td>AM</td>
<td>Antennas for Mobile Devices</td>
<td>Waianae</td>
</tr>
<tr>
<td>AM</td>
<td>Waveguide Technology for Antennas and Feeds</td>
<td>Hilo</td>
</tr>
<tr>
<td>AM</td>
<td>Technologies for Adaptive Array Antennas</td>
<td>Puna</td>
</tr>
<tr>
<td>PM</td>
<td>Beamforming and Smart Antennas</td>
<td>Lanai</td>
</tr>
<tr>
<td>PM</td>
<td>Electromagnetic Modeling Techniques</td>
<td>Waianae</td>
</tr>
<tr>
<td>PM</td>
<td>Technologies for Ultra-Wideband Communication</td>
<td>Hilo</td>
</tr>
<tr>
<td>PM</td>
<td>Wireless Channel Characterization II</td>
<td>Puna</td>
</tr>
</tbody>
</table>
### Plenary Session I

**Chairs:** M. F. Iskander  
M. Ando

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Topic</th>
</tr>
</thead>
</table>
| 8:00  | Research Trend of Millimeter-Wave Systems and Technologies at Communication Research Laboratory  
H. Ogawa, Communication Research Laboratory, Japan |
| 8:45  | Motivators Driving Army Research in Wireless Communications  
D. Palmer, Army Research Office, USA |
| 9:30  | Technology Research Needs for Mixed-Signal Wireless IC Design  
D. Edwards, SRC, USA |

**Coffee Break**

**Organizer:** Cam Nguyen

**Chair:** Cam Nguyen

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Topic</th>
</tr>
</thead>
</table>
| 10:30 | Opening Remarks  
C. Nguyen, National Science Foundation, USA |
| 10:40 | Emerging Research and Education Programs in Electrical Engineering at NSF  
V. Varadan, National Science Foundation, USA |
| 11:00 | New Directions in Wireless Networking Research  
J. Evans, National Science Foundation, USA |
| 11:20 | Research Directions in Wireless Communications  
C. Nguyen, National Science Foundation, USA |
| 11:40 | Engineering Research Centers and Industry/University Cooperative Research Centers Programs  
J. Mink, National Science Foundation, USA |
| 12:00 | SOC Technology for Future Wireless Communications  
R. Hewes, Texas Instruments Incorporated, USA |

**Panel Discussion**  
Moderators: C. Nguyen, M. Iskander  
Panelists:  
V. Varadan, National Science Foundation, USA  
J. Evans, National Science Foundation, USA  
C. Nguyen, National Science Foundation, USA  
R. Hewes, Texas Instruments, USA  
D. Edwards, SRC, USA
Oct 15 8:00 AM – 10:15 AM  Waianae

2  Plenary Session II

Chairs:  
K. Tanaka  
P. L. E. Uslenghi

8:00  Historical Review of Reflector Antenna Systems Developed by MELCO  
S. Makino, Mitsubishi Electric Corporation, Japan

8:45  Some Remarks on Maxwell Solvers for Computational Electromagnetics  
H. Ikuno, Kumamoto University, Japan

9:30  Space Solar Power Station  
H. Matsumoto, Kyoto University, Japan

10:15-10:30  Coffee Break

Oct 15 10:30 AM – 12:10 PM  Waianae

4  Advanced Modeling Techniques for Microwave Devices

Chair:  
M. Kuroda

10:30  Numerical Approach for the Modeling of MEMS Structures Including Accelerated Motion Effects  
K. Kawano, N. Miura, M. Kuroda, Tokyo University of Technology, Japan, M. M. Tentzeris, Georgia Institute of Technology, USA

10:50  Integrated Electrothermal Modeling of RF MEMS Switches for Improved Power Handling Capability  
B. D. Jensen, Z. Wang, L. Chow, K. Saitou, K. Kurabayashi, University of Michigan, J. L. Volakis, Ohio State University,

11:10  Application of Electro-Thermal Simulation and Non-Invasive In-Situ Waveform Probing Techniques To GSM PA  
C. Wei, J. Gering, M. Gerard, S. Boerman, S. Sprinkle, J. Hu, P. Dai, R. Burton, Y. Tkachenko, Skyworks, USA

11:30  A New Consideration of Correlation Between External Noise Sources in HEMT Two Temperature Model  
S. Saghafi, F. Arfaei, Amirkabir University of Technology, Iran

11:50  Three-dimensional Simulation of Surface Plasmon Polariton Nanometric Optical Circuits by Volume Integral Equation  
K. Tanaka, M. Tanaka, Gifu University, Japan
Oct 15  10:30 AM – 12:10 PM  Hilo

5  Broadband and Multiband Antennas

Chair:  R. Miyamoto

10:30  An Application of a Narrow Slot Cut in the Ground to Improve Multi-Band Operation of a Small Antenna
P. Kabacik, A. Byndas, R. Hossa, Wroclaw University of Technology, Poland, M. E. Bialkowski, National University of Singapore, Singapore

10:50  A Dual Band Omni-Directional Antenna for Cellular Mobile Radios
H. Yagi, Y. Ebine, NTT DoCoMo, Inc., T. Shimura, Nihon Dengyo Kosaku Co., Ltd., Japan

11:10  Design of Broadband Printed Slot Antennas for Wireless Millimeter-wave Applications
M. Nedil, Université du Québec, L. Talbi, Université du Québec en Outaouais, T. Denidni, Université du Québec, Canada

11:30  Wideband Wire T-monopole Antenna
T. Nishimura, N. Kuga, Tokyo Polytechnic University, H. Araki, Yokohama National University, K. Madono, A. Ito, Japan Radio Co., Ltd., Japan

11:50  A Novel GSM/DCS Dual-band Cellular Communications Antenna
T. Liu, W. Zhang, Southeast University, China

Oct 15  10:30 AM – 12:30 PM  Puna

6  Wireless System Architectures and Analysis

Chair:  G. Proehl

10:30  Performance Bounds and Measurements For AC-coupled Direct-Conversion Transceivers Under the Presence of 1/f
A. Georgiadis, R. Point, Global Communication Devices,

10:50  Effect of Power Amplifier Impairments in Designing OFDM Based Wireless Communication Systems
J. Liu, H. Arslan, L. P. Dunleavy, University of South Florida, USA

11:10  RF Front-End Input Modeling and De-Embedding
Greg Proehl, STMicroelectronics, USA

11:30  An Efficient Encoding Scheme for Ultra-Fast Flash ADC
J. Choudhury, C. Cavanaugh, G. Seetharaman, University of Lousiana at Lafayette, USA

11:50  A Study of Nonlinearity Calibration for Six-Port Direct Conversion Receivers
A. Honda, K. Sakaguchi, J. Takada, K. Araki, Tokyo Institute of Technology, Japan

12:10  AGC and IF Amplifier Circuits Design
C. Ling-yun, S. Wen-tao, L. Han-wen, Shanghai Jiao Tong University, F. Zhen-he, Shanghai University, China
11

Oct 15  1:30 PM – 5:30 PM  Lanai
7  NSF Workshop on Wireless Communications II

Chairs:  L. E. Larson
         J. Bernhard

1:30  Wireless Antennas - Making Wireless Communications
     Perform Like Wireline Communications
     Y. Hua, Y. Mei, Y. Chang, University of California at
     Riverside, USA

2:00  Microwave Device and Circuit Challenges for Next
     Generation Wireless Applications
     L. E. Larson, University of California, San Diego, USA

2:30  Implanted Antennas for Biotelemetry: Antennas, Safety and
     Communications Issues
     Y. Rahmat-Samii, University of California, Los Angeles, USA

3:00-3:30  Coffee Break

3:30  Progress in Retrodirective Arrays for Wireless
     W. A. Shiroma, R. Y. Miyamoto, G. S. Shiroma, University of
     Hawaii, USA, J. Tuovinen, MilliLab, Finland, W. E. Forsyth,
     B. T. Murakami, M. A. Tamamoto, A. T. Ohta, University of
     Hawaii, USA

3:50  Reconfigurable Portable Antenna Systems for High-Speed
     Wireless Communication
     J. T. Bernhard, G. H. Huff, J. Feng, S. Zhang, G. Cung,
     University of Illinois at Urbana-Champaign, USA

4:10  MIMO Technology for Point-to-Point and Multi-User
     Wireless Communication
     M. A. Jensen, A. L. Swindlehurst, Brigham Young University,
     USA

4:30  Smart and Multibeam Diversity Antenna Arrays with High-
     bandwidth Analog Signal Processing
     D. Anderson, E. Fotheringham, D. Popovic, Z. Popovic, S.
     Ronisch, P. Smith, Univ. of Colorado at Boulder, USA

4:50  Adaptive Processing in the Presence of Near Field Scatterers
     T. K. Sarkar, Syracuse University, USA

5:10  Perspectives and Challenges in III-V Devices and System-
     Level Integration for Future Wireless Applications
     J. E. Schutt-Aine, M. Feng, University of Illinois, Urbana, USA
Chairs: D. Wenzel
T. Nomoto

1:30  Analysis of FHMA Performance Based on Non-period Chaotic Frequency Hopping Sequences

1:50  MAI Mitigation by SIC for a Multicarrier CDMA System
J. Kim, Kwangwoon University, H. HUH, Samsung Electronics, Korea

2:10  Multiuser Detector Combining Multicarrier Transmission and Decorrelating Detector in a Rayleigh Fading Channel
J. Kim, Kwangwoon University, Korea, W. Choi, University of Texas, USA

2:30  Composition and Transmission of Pictures in Mobile Environment by using Extraction of Focused Region
M. Kamata, A. Sugiura, T. Hayashi, Toyohashi University of Technology, Japan

2:50  Design of Integrated Gateway System's Configuration for Wireless-Internet Service in Cdma2000 and W-CDMA
S. Kim, J. Ryu, W. Ryu, Electronics and Telecommunications Research Inst., Korea

3:10  Bandwidth-Efficient Modulation for Wireless
D. C. Wenzel, J. J. Poklemba, The Aerospace Corporation,

3:30  Speed-Aware Multicarrier Transmission and Resource Allocation Scheme for the Uplink Channel of Highly Mobile
L. A. Loyola, T. Miki, The University of Electro-communications, Japan

3:50  Measurement of Interference Reduction Applied To Bluetooth Networks by using Semi-synchronous
T. Nakaya, A. Sugiura, Toyohashi University of Technology, Japan

4:10  Multiuser Code Acquisition in DS/CDMA Systems
T. Khan, Kyushu University, N. Eshima, Oita Medical University, Y. Jitsumatsu, T. Kohda, Kyushu University, Japan

4:30  Turbo-Coded ARQ Scheme for a CDMA Packet Radio System
J. Kim, Kwangwoon University, Korea

4:50  Detection of CDMA Multimedia Packet in a Wireless Infrared Channel
J. Kim, E. Kim, Kwangwoon University, Korea

5:10  Detection of a DS/CDMA Signal with Phase Noise in a Mobile Satellite Channel
J. Kim, H. Park, Kwangwoon University, Korea
Wireless System Antennas

Chairs:  S. Long
         K. Sawaya

1:30  A Circularly Polarized Patch Antenna Enclosed by a Folded Conducting Wall
      H. Nakano, S. Shimada, J. Yamauchi, Hosei University, M. Miyata, Mitsumi Electric Co. LTD, Japan

1:50  Deterministic Subarray Feed Line Adjustment Method for Array Antennas
      N. Takemura, M. Ohtsuka, H. Miyashita, S. Makino, Mitsubishi Electric Corporation, Japan

2:10  Accurate Measurement Method using Fiber-optics for an Antenna on a Portable Telephone
      T. Fukasawa, K. Shimomura, M. Ohtsuka, Mitsubishi Electric Corporation, Japan

      B. A. Cetiner, A. Grau, H. Jafarkhani, F. De Flavis, University of California, Irvine, USA

2:50  Radiation Pattern of an Electrically Long, Sleeve Choke-Loaded Monopole Using Magnetic and Dielectric Beads
      T. F. Kennedy, S. A. Long, J. T. Williams, University of Houston, USA

3:10-3:30  Coffee Break

3:30  Effect of Silicon Substrate on the Transmission Characteristics of Integrated Antenna
      T. Kikkawa, A. H. Rashid, S. Watanabe, Hiroshima University, Japan

3:50  A Horizontal Polarized Omni-Directional Pattern Notch
      N. Kuga, Tokyo Polytechnic University, H. Arai, Yokohama National University, Japan

4:10  Dual-mode Patch Antenna Switched by PIN Diode
      Q. Chen, M. Kurahashi, K. Sawaya, Tohoku University

4:30  Design of Broadband Modified Folded Slot Antennas for C-Band Wireless Applications
      R. Usaha, M. Ali, University of South Carolina, USA

4:50  Reconfigurable Stacked Patch Antenna for Satellite and Terrestrial Applications
      V. K. Kunda, M. Ali, University of South Carolina, USA

5:10  Design of a Dual-band Chip Antenna with Material Loading Technique
      Chi-Fang Huang and Pei-Lan Yeh, Tatung University,
10 RF Technologies for Wireless Systems

Chairs: O. Boric-Lubecke
H. Matsue

1:30 Future Systems and Technologies for Broadband Wireless Access Services

1:50 On a Simplified Rat-Race and Its Experiment using Commercial Chip Capacitors and Inductors
I. Sakagami, Y. Hao, Toyama University, Y. Iwata, Fujitsu Support and Service Inc, Japan

2:10 3-Pole Bandpass Filters using Short-Ended Half-Wavelength Resonators and Their Applications To a Duplexer
K. Wada, Y. Aihara, T. Kamiyama, O. Hashimoto, Aoyama Gakuin University, Japan

2:30 A 1.0V 10.2GHz CMOS Frequency Divider with Differential Injection Locking
M. Fujishima, K. Yamamoto, The University of Tokyo, Japan

2:50 A 802.11a WLAN Oscillator with High Q Embedded Passives on Laminate-Type Organic Package
A. Bavisi, S. Dalmia, M. Swaminathan, F. Ayazi, Georgia Institute Of Technology, USA

3:10-3:30 Coffee Break

3:30 A Dual-band Image-reject Mixer for GPS with 64dB Image Rejection
M. Haruoka, Y. Utsurogi, T. Matsuoka, K. Taniguchi, Osaka University, Japan

3:50 An Investigation of Grounding Techniques in Microwave Amplifiers
C. Suh, J. M. Bell, K. S. Ching, T. A. Heffner, W. W. Hui, G. S. Shiroma, C. Song, R. K. Sorensen, W. A. Shiroma, University of Hawaii, USA

4:10 Design Considerations for Monolithic Si-Based RF VCOs in Wireless Single-Chip Systems
S. Raman, D. S. Sanderson, A. S. Klein, Virginia Tech, USA

4:30 Design of a 49-GHz AlSb/InAs HEMT Monolithic Grid Oscillator
C. Song, W. A. Shiroma, University of Hawaii, R. Tsai, K. Padmanabhan, B. Bayuk, A. Gutierrez-Aitken, Northrop Grumman Space Technology, USA

4:50 Low Temperature Cofired Ceramic (LTTC) Technology for Ridge Waveguide Filters & Multiplexers
K. A. Zaki, University of Maryland, USA

5:10 Fabrication and Analysis of New MEMS IF Filters
M. Motiee, A. Khajepour, R. R. Mansour, University of Waterloo, Canada
Oct 16 8:00 AM – 10:15 AM  

**Plenary Session III**

**Chair:** Y. Rahmat-Samii

8:00  
Realized Case of Smart Antenna in Mobile Communication Systems  
Y. Doi, S. Nakao, J. Kitakado, T. Ito, Sanyo Electric Co., Ltd., T. Miyata, Sanyo Telecommunications Co., Ltd., T. Ohgane, Y. Ogawa, Hokkaido University, Japan

8:45  
Smart Antennas for Future Reconfigurable Wireless Communication Networks  
C. A. Balanis, Arizona State University, USA

9:30  
Theoretical Prediction of Radio Channel Statistics  
H. L. Bertoni, Polytechnic University, USA

**10:15-10:30 Coffee Break**

Oct 16 10:30 AM – 12:00 Noon  

**NSF Workshop on Wireless Communications III**

**Chair:** C. Nguyen

10:30  
Antenna Technologies and Propagation Models for Advanced Wireless Communication Systems  
M. F. Iskander, University of Hawaii at Manoa, USA

11:00  
Advanced and Intelligent RF Front End Technology  
K. Leong, T. Itoh, University of California, Los Angeles, USA

11:30  
The Failure of Broadband Wireless: Where do we go from here?  
E. Ayanoglu, University of California, Irvine, USA
Oct 16  8:00 AM – 10:15 AM  Waianae

**Plenary Session IV**

**Chair:**
M. Ando  
M. Jensen

8:00  Ultrawideband Promises and Problems  
*R. A. Scholtz, University of Southern California, USA*

8:45  DoCoMo’s Mobile Communications: Today and Tomorrow  
*K. Tsujimura, NTT DoCoMo, Inc., Japan*

9:30  Research and Development At NHK STRL-Toward the  
Realization of the Mid-to Long-Term Vision-  
*T. Nomoto, NHK (Japan Broadcasting Corporation), Japan*

10:15-10:30  Coffee Break

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Oct 16  10:30 AM – 12:10 PM  Waianae

**Biological Effects of Electromagnetic Radiation**

**Chair:**
Z. Yun

10:30  Evaluation of Induced SAR in the Human Body Due To EM  
Waves Emitted from a Dipole Antenna At 400 MHz Band  
*T. Fujino, A. Hirata, T. Shiozawa, Osaka University, Japan*

10:50  Comparison of Maximum Temperature Increase in the Infant  
and Adult Head Models Due To Dipole Antenna  
*M. Fujimoto, A. Hirata, Osaka University, J. Wang, O.  
Fujisawa, Nagoya Institute of Technology, T. Shiozawa,  
Osaka University, Japan*

11:10  Study on Effective Area of Ankle Cross-Section for  
Estimation of Ankle SAR with Induced Foot-Current of a  
Human Body Standing on Ground Plane  
*Y. Tanaka, S. Watanabe, Y. Yamanaka, Communications  
Research Laboratory, M. Taki, Tokyo Metropolitan  
University, M. Takahashi, Tokyo University of Agriculture and  
Technology, Japan*

11:30  Novel Iteration Procedures of a Hybrid Method Combining  
MoM and Scattered-Field FDTD Method for Electromagnetic  
Dosimetry  
*S. Mochizuki, S. Watanabe, Communications Research  
Laboratory, M. Taki, Tokyo Metropolitan University, Y.  
Yamanaka, Communications Research Laboratory, H. Shirai,  
Chuo University, Japan*

11:50  An Implanted Antenna in the Spherical Human Head: SAR  
and Communication Link Performance  
*J. Kim, Y. Rahmat-Samii, UCLA, USA*
**Advanced Applications of Wireless Technologies**

**Chair:** V. Lubecke

10:30 **Wireless IP Phone using Bluetooth for ITS Application**  
*C. Dermawan, A. Sugiura, Toyohashi University of Technology, Japan*

10:50 **Wireless LAN PC Card Sensing of Vital Signs**  
*O. Boric-Lubecke, University of Hawaii, USA, G. Awater, Woodside Networks, Netherlands, V. M. Lubecke, University of Hawaii, USA*

11:10 **Early Detection of Mentally Retarded Children by Displaying Face Images using Bluetooth Wireless Technology**  
*R. Kirana, A. Sugiura, Toyohashi University of Technology, Japan*

11:30 **Modified Silicon Base Station Chips As Biomedical Sensors**  
*A. D. Droitcour, Stanford University, O. Boric-Lubecke, V. Lubecke, University of Hawaii at Manoa, J. Lin, University of Florida, G. T. A. Kovacs, Stanford University, USA*

11:50 **Array Coherence Tomography (ACT) Imaging in Clutter Environment**  
*A. Ishimaru, S. Jaruwatanadilok, Y. Koga, University of Washington, USA*

**High-Gain and Frequency Selective Antennas**

**Chair:** S. Makino

10:30 **A Singular Characteristic of Single-Layer Frequency Selective Surface with the Element Optimized by GA**  
*M. Ohira, H. Deguchi, M. Tsuji, H. Shigesawa, Doshisha University, Japan*

10:50 **An Experimental Study of Electrical Characteristics of Mesh Reflecting Surface for Communication Satellite’s Antenna**  
*A. Miura, M. Tanaka, Communications Research Laboratory, Japan*

11:10 **Retrodirective Antenna Technology for CubeSat Networks**  
*S. S. Sung, J. D. Roque, B. T. Murakami, G. S. Shiroma, R. Y. Miyamoto, W. A. Shiroma, University of Hawaii, USA*

11:30 **Off Beam Characteristics of a Shaped Lens Antenna**  
*Y. Tajima, Y. Yamada, A. Kezuka, National Defence Academy, Japan*
17  NSF Workshop on Wireless Communications IV

Lanai

Oct 16  1:30 PM – 4:30 PM

Chairs:  T. Itoh
         J. Volakis

1:30  Implementation Issues in Cognitive Radios
     R. Brodersen, University of California, Berkeley, USA

1:50  Towards Wireless Single Chip Systems: Challenges for RF
      Integration in SoC
     S. Raman, Virginia Tech, USA

2:10  Signal Reconstruction by Path Integral Methods
     R. D. Nevels, J. Jeong, Texas A&M University, USA

2:30  Higher Order Electromagnetic Modeling for Wireless
      Technology Applications
     B. M. Notaros, M. Djordjevic, M. M. Ilic, University of
     Massachusetts Dartmouth, USA

2:50  Carbon Nanotube Resonator Sensors for Remote Sensing
      Systems
     A. Pham, University of California, Davis, USA

3:10-3:30  Coffee Break

3:30  After GETWEBs: Virginia Tech Geography's Continuing
      Research Into Spatial Modeling for Wireless Systems
     L. W. Carstensen, C. W. Bostian, G. E. Morgan, Virginia Tech,
     USA

3:50  An Interdisciplinary Effort To Develop a Wireless Embedded
      Sensor System To Monitor and Assess Corrosion in the
      Tendons of Prestressed Concrete Girder
     J. T. Bernhard, K. Hietpas, E. C. George, D. Kuchma, H.
     Reis, University of Illinois at Urbana-Champaign, USA

4:10  A Concept Paper for Attracting U.S. Students to RF Engineering
     J. Volakis, Ohio State University, USA
October 16 1:30 PM – 4:50 PM

Wireless Channel Characterization I

Chairs: K. L. Melde
        T. Denidni

1:30 Evaluation of Route Diversity Performances in Millimeter-wave BFWA Mesh Networks by Correlated Multivariate Gamma Distributions
        S. Nomoto, S. Konishi, S. Nanba, Y. Kishi, KDDI R&D Labs., Japan

1:50 Ultra Wide Band Channel Sounding for Indoor Wireless Propagation Environments
        T. Takeuchi, H. Makai, Kyoto Sangyo University, Japan

2:10 Simplified Analysis for Indoor Propagation of a WLAN
        R. Sato, Niigata University, H. Shirai, Chuo University, Japan

2:30 Slepian Semi-Wavelets and Their Use in Modeling of Fading Envelope
        X. Shen, Y. Guo, Ohio University, G. G. Walter, University of Wisconsin, USA

2:50 Statistical Characteristics of Microwave and Millimeter Wave Indoor Wireless Channels
        K. L. Melde, C. L. Hammond, University of Arizona, USA

3:10-3:30 Coffee Break

3:30 Recent Improvements in Beam Tracing
        E. Di Giampaolo, Universita dell'Aquila, F. Bardati, Universita Roma Tor Vergata, Italy, M. Sabbadini, European Space Agency, Netherlands

3:50 Dual Polarization Diversity Reception Modeling for Indoor Propagation Channel
        M. Otmani, Three Rivers College, L. Talbi, University of Quebec, T. Denidni, INRS-Telecommunications, Canada

4:10 MIMO Capacity Calculation and Fading Estimation for Indoor/Outdoor Wireless Communication Environments
        Z. Yun, M. F. Iskander, Z. Zhang, University of Hawaii at Manoa, USA

4:30 Wireless Communications Channel Modeling Based on Numerical Solutions of Maxwell Equations
        K. Lam, P. Xu, L. Tsang, City University of Hong Kong, Hong Kong, Q. Li, University of Washington, USA, K. Lai, City University of Hong Kong, Hong Kong

4:50 3D Propagation in Urban Environments using Fresnel-Kirchhoff Integrals
        Y. Xu, Q. Tan, D. Erricolo, P. L. E. Uslenghi, University of Illinois At Chicago, USA
Organizer: R. Mittra

Chair: R. Mittra

1:30 Design, Simulation, Fabrication and Measurement of a Multiband Fractal Yagi Antenna
J. P. Gianvittorio, Y. Rahmat-Samii, UCLA, USA

1:50 A New Design Methodology for Modular Broadband Arrays Based on Fractal Tilings
D. H. Werner, W. Kuhirun, P. L. Werner, The Pennsylvania State University, USA

2:10 Design of a Multi-band Antenna Array using CTS and Photonic Band Gap Technologies
M. F. Iskander, University of Hawaii at Manoa, R. Isom, Raytheon Systems, T. A. Heffner, Z. Yan, University of Hawaii at Manoa, W. Milroy, Thinkom Solutions, USA

2:30 Improved Multiband Performance with Self-Similar Fractal Antennas
D. Anagnostou, University of New Mexico, USA, M. T. Chryssomallis, Demokritos University of Thrace, Greece, J. C. Lyke, Airforce Research Lab, C. G. Christodoulou, University of New Mexico, USA

2:50 Fractal and Multiband Communication Antennas

3:10-3:30 Coffee Break

3:30 Fractal PIFA, Dipole and Monopole Antennas
T. Hoo, P. Hall, University of Birmingham, United Kingdom, P. Song, Hong Kong Applied Science and Technology Research Institute, China

3:50 Mutual Coupling Effects in Space-Filling-Curve Antennas
J. Zhu, A. Hoorfar, Villanova University, N. Engheta, University of Pennsylvania, USA

4:10 Broadening the Range of Resonance Tuning in Multiband Small Antennas
P. Kabacik, R. Hossa, A. Byndas, Wroclaw University of Technology, Poland, M. Bialkowski, National University of Singapore, Singapore

4:30 Novel Multi-fingered Antenna
O. B. Leong, Y. Y. Kyi, L. M. Seng, National University of Singapore, Singapore
Oct 16  1:30 PM – 4:50 PM  Puna

20  MIMO and Diversity Antenna Systems

Chairs:  H. Arslan  
   C. Waldschmidt

1:30  Measurements and Simulations of Compact MIMO-Systems Based on Polarization Diversity
   C. Waldschmidt, C. Kuhnert, T. Fuegen, W. Wiesbeck, 
   University of Karlsruhe, Germany

1:50  Analysis of Compact Arrays for MIMO Based on a Complete RF System Model
   C. Waldschmidt, C. Kuhnert, S. Schulteis, W. Wiesbeck, 
   University of Karlsruhe, Germany

2:10  Performance Characterization of Different Receiving Diversity Techniques for a Given Area and the Same Antenna
   A. Grau, B. A. Cetiner, F. De Flaviis, University of California, 
   Irvine, USA

2:30  Performance Evaluation of Space-Time Coded Smart Antenna Systems in Frequency Selective Channels
   M. Hefnawi, S. Millette, Royal Military College of Canada, 
   Canada

2:50  Incorporation of RF-adaptive Array Antenna into MIMO Receivers
   Y. Nakaya, T. Toda, Fujitsu Ltd., S. Hara, Osaka University, 
   J. Takada, Tokyo Institute of Technology, Y. Oishi, Fujitsu 
   Ltd., Japan

3:10-3:30  Coffee Break

3:30  Spatial Multiplexing and Diversity Gain in OFDM-Based MIMO Systems
   H. M. Karkhanechi, B. Levy, UCDavis, USA

3:50  Orthogonal Transmit Diversity for Self-Interference Suppression in Multi-Antenna Telemetry Links
   M. A. Jensen, A. L. Anderson, Brigham Young University, USA

4:10  Network Theory Analysis of Coupled Antenna Diversity Performance
   M. A. Jensen, J. W. Wallace, Brigham Young University, USA

4:30  A Mutual Coupling Model for MIMO Systems
   M. K. Ozdemir, Syracuse university, H. Arslan, University of 
   South Florida, E. Arvas, Syracuse university, USA
Chairs: H. Ogawa  
A. Akeyama

8:00 Millimeter-Wave Ad-hoc Wireless Access System - (1)  
System Overview -  

8:20 Millimeter-wave Ad-Hoc Wireless Access System - (2)  
Proposal of System Architecture To IEEE802.15TG3a.  
R. E. Fisher, USA, Y. Shiraki, K. Tokuda, Oki Electric Industry Co., Ltd., K. Hamaguchi, Communications Research Laboratory, Y. Shoji, Communications Research Laboratory, H. Ogawa, Communications Research Laboratory, Japan

8:40 Millimeter-Wave Ad-hoc Wireless System - (3) High Speed OFDM System in 70GHz Indoor Environment-  
K. Obara, N. Kuribayashi, T. Hirose, SIEMENS K.K., A. Akeyama, NTT Advanced Technology Corp., A. Kanazawa, Y. Shoji, K. Hamaguchi, H. Ogawa, Communications Research Laboratory, Japan

9:00 Millimeter-wave Ad-Hoc Wireless Access System - (4)  
Transceiver Technologies-  
S. Nishi, Oki Electric Industry Co,.Ltd, K. Maruhashi, S. Kishimoto, K. Ohata, H. Shimawaki, NEC Corporation, Y. Shoji, H. Ogawa, Communications Research Laboratory,

9:20 Millimeter-Wave Ad-hoc Wireless Access System - (5)  
Propagation Characteristics in Indoor Environments-  

9:40-10:00 Coffee Break

10:00 Integration of Millimeter-Wave Planar Antennas with Photonic Crystal Structures  
G. Burns, I. Thayne, University of Glasgow , United Kingdom

10:20 Millimeter-wave Substrate Integrated Waveguide Ferrite Phase Shifter for Wireless Communication Application  
W. Che, E. K. Yung, City University of Hong Kong, China, K. Wu, Ecole Polytechnique de Montreal, Canada

Y. Miura, T. Shirotsuki, T. Taniguchi, Y. Kazama, Japan Radio Co., Ltd., Y. Kimura, Saitama University, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

11:00 A Proposal of Optical Wireless Communication with RF Subcarrier  
H. Takano, S. Shimamoto, Global Information and Telecommunication Institute, Waseda University, Japan
Chairs: H. Shirai
M. Taguchi

8:00 A Loop Antenna on a Chip Dielectric Material Backed by a Finite-Size Conducting Plane
H. Nakano, T. Nakajima, H. Mimaki, J. Yamauchi, Hosei University, Japan

8:20 Multi-Antenna System for a Handy Phone To Reduce Influence by User’s Hand

8:40 A Planar Sector Antenna Suitable for Small WLAN Card Terminal

9:00 Circular Polarization Characteristics of One-wavelength L-shaped Antenna

9:20 A CPW Koch Dipole Slot Antenna
D. Anagnostou, University of New Mexico, USA, M. Chryssomallis, Demokritos Univ. of Thrace, Greece, J. Lyke, Airforce Research Laboratory, C. Christodoulou, University of New Mexico, USA

9:40-10:00 Coffee Break

10:00 Characteristics of Built-in Folded Dipole Antenna for
S. Hayashida, T. Tanaka, H. Morishita, National Defense Academy, Y. Koyanagi, Panasonic Mobile Communications Co., LTD, K. Fujimoto, FAIS, University of Tsukuba, Japan

10:20 The Modified Slot Antenna for Cellular Phone
K. Egawa, Y. Koyanagi, H. Haruki, Panasonic Mobile Communications Co., Ltd., Japan

10:40 Improvement of Radiation Efficiencies by Applying Folded Configurations to Very Small Meander Line Antennas
M. Takiguchi, Y. Yamada, National Defense Academy, Japan

11:00 Active Inverted-F Antenna on Side of Small Conducting Plate – Part 2 -
M. Taguchi, K. Tanaka, Nagasaki University, Japan

11:20 A Wideband Dual Frequency Printed Dipole Antenna using a Parasitic Element
K. Chang, H. Kim, K. Hwang, Yonsei Univ., S. Sim, S. Yoon, KIST, Y. Yoon, Yonsei Univ., Korea
23  Waveguide Technology for Antennas and Feeds

Chairs: K. Sakakibara  
        K. Tanaka

8:00 Radiation Properties of a Tilted-flange Parallel-plate  
D. N. Chien, K. Tanaka, M. Tanaka, Gifu University, Japan

8:20 Feeding Circuit of phased Array Composed of Four Slotted Waveguides with Only One Phase Shifter using Block Excitation Technique  
K. Sakakibara, N. Kikuma, Nagoya Institute of Technology, Japan

8:40 Frequency-scanning Antennas with Low Sidelobes using Stub-loaded Ridge-rectangular Leaky Waveguides  
M. Tsuji, T. Harada, H. Deguchi, H. Shigesawa, Doshisha University, Japan

9:00 A 120-degree Beamwidth Post-Wall Waveguide Slot Array with a Three-Way Power Divider on a Single-Layer Dielectric Substrate  
S. Yamamoto, N. Hikino, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

9:20 Analysis of Novel Slotted Waveguide Structure for Antenna Arrays Application  
K. -. Lim, V. -. Koo, J. N. Djuanda, T. -. Lim, Multimedia University, Malaysia

9:40-10:00 Coffee Break

10:00 1m² Order Single-Layer Slotted Waveguide Arrays for Plasma Excitation  
T. Hirano, Y. Nakano, M. Ando, Tokyo Institute of Technology, M. Goto, A. Sasaki, T. Okamoto, K. Azuma, Y. Nakata, Advanced LCD Technologies Development Center

10:20 Method of Moments Analysis of a Waveguide Round-Ended Wide Slot by using Numerical-Eigenmode Basis Functions  
M. Zhang, T. Hirano, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

10:40 Analysis and Design of a Waveguide Slot and a Reflection-canceling Inductive Wall  
S. Park, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

11:00 A New Method for the Propagation Characteristics Of Asymmetric Ridged Waveguide  
X.J. Zhang, C. Xu, W.M. Song, Institute of Electronics, Chinese Academy of Sciences, China

11:20 Surface Wave in a Semiconductor Substrate with a Ground  
M. El-Dessouki, T. Wong, Illinois Institute of Technology, USA

11:40 Diaphragm Effects in Rectangular Waveguide Filled with Different Frequency Dependent Dielectric Materials  
R. Ramiz, Yildiz Technical University-YILDIZCELL, Turkey
Technologies for Adaptive Array Antennas

Chairs:  J. Bernhard  
         Z. Yun

8:00  DOA-based Adaptive Array Testbed System  
      M. Kim, K. Ichige, H. Arai, Yokohama National University, Japan

8:20  Optimization for Adaptive Antenna Arrays with Mutually Coupled Elements Via Spatially Smoothed ESPRIT  
      F. I. Tseng, J. Vankataruman, Rochester Institute of Technology, USA

8:40  A Modified Pattern Reconfigurable Microstrip Antenna for IC Fabrication and Integration with RF MEMS Switches  
      G. H. Huff, J. Feng, J. T. Bernhard, Electromagnetics Laboratory, University of Illinois at Urbana-Champaign,

9:00  Phased Arrays Operating in a Near Field Environment  
      T. K. Sarkar, K. Kim, Syracuse University, USA, M. Salazar-Palma, Politecnic University of Madrid, Spain

9:20  Smart Wireless Antenna Arrays  
      Y. Hua, Y. Mei, Y. Chang, University of California at Riverside, USA

9:40-10:00  Coffee Break

10:00  Wideband Nulling Capability Estimate of a Tapped Delay Line Beamformer  
       L. Y. Materum, J. S. Marciano, Jr., University of the Philippines, Philippines

10:20  Subband Adaptive Array for Multirate Multicode DS-CDMA  
       N. X. Tran, T. Taniguchi, Y. Karasawa, The University of Electro-Communications, Japan

10:40  SMILE Antenna Arrays for Wireless Communication  
       Y. E. Wang, T. Itoh, UCLA, USA

11:00  Low-cost Nonplanar Microstrip-line Ferrite Phase Shifter Utilizing Circular Polarization  
       R. K. Sorensen, M. F. Iskander, University of Hawaii at Manoa, J. J. Lee, Raytheon Electronic Systems Company, USA
25 Beamforming and Smart Antennas

Chairs: J. Bornemann
        Z. Popovic

1:30 A Simple Algorithm for the Control of Reactances in Beam
Steering Applications with Parasitic Elements
B. Schaer, ETH Zurich, Switzerland, R. Karumudi, J.
Bornemann, University of Victoria, Canada, R. Vahldieck,
ETH Zurich, Switzerland

1:50 A Beamforming Method for a Reactively Steered Adaptive
Array Antenna with RF-MEMS Device
Y. Irie, S. Hara, Osaka University, Y. Nakaya, T. Toda, Y.
Oishi, Fujitsu Limited, Japan

2:10 A Smart Antenna Employing Digital Beamforming for
WLAN Surveillance
T. W. Nuteson, G. S. Mitchell, D. S. Haque, J. S. Clark, IV,
The Aerospace Corporation, USA

2:30 Acceleration of Beamforming Speed for RF MEMS-
Implemented Phased Array Antenna
S. Hara, Y. Irie, Graduate School of Engineering, Osaka
University, Y. Nakaya, T. Toda, Y. Oishi, Fujitsu Ltd., Japan

2:50 SDMA Experiments using a 64-element Receiving DBF
Antenna in the Ka-band
H. Tohyama, Kogakuin University, R. Miura, M. Oodo,
Communications Research Laboratory, K. Kosaka,
Association of Radio Industries and Businesses, I. Ohtomo,
Kogakuin University, Japan

3:10-3:30 Coffee Break

3:30 Eigenvalue-Decomposition-Based Recursive Least-Squares
Algorithm for OFDM Communications Over Fast Time-
Varying Channels
P. S. Wijesena, T. Taniguchi, Y. Karasawa, University of
Electro-Communications, Japan

3:50 Improved On-Off Algorithm for Adaptive Antenna Arrays in
CDMA Mobile Communications Systems
K. Ghanem, T. Denidni, Université du Québec, Canada

4:10 Smart Antennas with Optical Processing for Broadband Blind
Source Separation
P. Smith, E. Fotheringham, D. Z. Anderson, Z. Popovic,
Univ. of Colorado at Boulder, USA

4:30 Performance of a Base Station Feedback-Type Adaptive
Array Antenna with Decision Feedback Equalizer At Mobile
J. Choi, Y. Akaiwa, Kyushu University, Japan
Chairs: E. Bleszynski
        H. Ikuno

1:30 Proposal of Non-Uniform Mesh FDTD with Uniaxial PML
       (UPML)
       H. Jiang, K. Tsunekawa, NTT DoCoMo, Inc., Japan

1:50 Improvement of the Accuracy in FDTD Analysis of Printed
       Rectangular Antennas by using Quasi-static Approximation
       T. Arima, T. Uno, M. Takahashi, Tokyo University of
       Agriculture and Technology, Japan

2:10 FPGA Implementation of the FDTD Data Flow Machine
       S. Matsuoka, H. Kawaguchi, Muroran Institute of
       Technology, Japan

2:30 High Accuracy FDTD Analysis of Short Dipole Antenna by
       Utilizing a Quasi-Static Approximation
       P. Pongpaibool, T. Uno, Tokyo University of Agriculture and
       Technology, Japan

2:50 Novel Interpretation of Physical Optics Errors, Fictitious
       Penetrating Rays and Corrections by Hybrid Use of PO and
       AFIM
       T. Shijo, M. Ando, Tokyo Institute of Technology, Japan

3:10-3:30 Coffee Break

3:30 Computer Simulation of Electromagnetic Transmission
       Through Perfectly Conducting Plate with Subwavelength
       M. Tanaka, K. Tanaka, Gifu University, Japan

3:50 Novel Calculation Rule in Multipole Algorithm
       T. Yamamoto, Yamagata University, Japan, S. Ohnuki, W. C.
       Chew, University of Illinois at Urbana-Champaign, USA

4:10 Block Toeplitz Fast Integral Equation Solver for Large
       Finite Periodic and Partially Periodic Antenna Arrays
       E. Bleszynski, M. Bleszynski, T. Jaroszewicz, Monopole
       Research, USA

4:30 Effective Interlaced FFT Computation Scheme for Adaptive
       Integral Method
       N. T. H, O. B. Leong, K. P. S, C. S. T, National University of
       Singapore, Singapore

4:50 Multiresolution Techniques in the Moment Method Solution
       To Integral Equations Arising in Electromagnetic Problems
       M. Leong, B. Ooi, S. Wong, The National University of
       Singapore, Singapore
Technologies for Ultra-Wideband Communication

Chairs: T. Sarkar
A. Elsherbeni

1:30 Measurement and Calculation of Electric Field Waveforms in the Vicinity of Small Antennas Excited by a Pulse
T. Iwasaki, T. Hirao, L. Hamada, The University of Electro-Communications, Japan

1:50 UWB Signal Sources, Antennas & Propagation
J. R. Andrews, Picosecond Pulse Labs, USA

2:10 Recent Development of SRD- and FET-Based Sub-nanosecond Pulse Generators for Ultra-Wideband
J. Han, M. Miao, C. Nguyen, Texas A&M University, USA

2:30 Ultra-wideband Communication using a SAW Correlator Zero-IF Architecture

2:50 Wideband Slot Bow-Tie Antennas for Radar Applications
A. A. Eldek, A. Z. Elsherbeni, C. E. Smith, The University of Mississippi, USA

3:10-3:30 Coffee Break

3:30 Widebandwidth Baseband Communication: Fact or Fiction?
T. K. Sarkar, Syracuse University, USA, M. Salazar-Palma, Politecnic University of Madrid, Spain

3:50 Multivalued Transmission System for UWB-CDMA using Modified Hermite Pulse Shape
H. Harada, T. Sato, R. Kohno, Yokohama National University, Japan

4:10 Blind Multiuser Detection for Impulse Radio UWB Systems
Z. Xu, P. Liu, J. Tang, University of California, USA

4:30 Blind Channel Estimation for Multiple Access UWB Communications Based on Periodic Time Hopping and Pulse-Rate Modeling
Z. Xu, J. Tang, P. Liu, University of California, USA

4:50 Design and Analysis of UWB Band Pass Filter
H. Ishida, K. Araki, Tokyo Institute of Technology, Japan

5:10 Design Issues of Ultra-Wideband Systems for High-rate Wireless PANs: Modulation Schemes and Coexistence with
J. Lee, T. Lee, Sungkyunkwan University, Korea
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<td>On Spatial Correlation of Rainfall Rate Focusing on Heavy Rain Periods</td>
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<td>Grade of Service Signal Density Enhancement: Modeling Indoor Penetration Loss in Various Environments</td>
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