

GSMM 2018 – Technical Program

| Tuesday, May 22, 2018 | | |
|---|--|---|
| 8:30 – 9:00 | Opening | |
| 9:00 – 9:45 | Keynote 1, Flatirons Room Advanced 5G Phased-Arrays and Transceivers Using Silicon Technologies: THE END OF THE MARCONI ERA IS NEAR Gabriel Rebeiz (UCSD) | |
| 9:45-10:30 | Keynote 2, Flatirons Room Past Evolution and Future Prospects of Silicon mm-Wave ICs for Autonomous Navigation and 5G Applications Sorin Voinigescu (Univ. Toronto) | |
| 10:30 – 11:00 Coffee Break, Exhibition | | |
| 11:00 – 12:00 | THz Devices and Applications Chair: Erich Grossman (NIST), Long’s Peak Rm | 5G Summit Flatirons Room |
| 11:00 | Uncompressed HD and Ultra-HD Video Streaming Using Terahertz Wireless Communications Kathirvel Nallappan, Hichem Guerboukha, Chahe Nerguizian and Maksim Skorobogatiy (Ecole Polytechnique de Montreal, Canada) | Synergy Between 5G and DoD Dev Palmer (Lockheed Martin) |
| 11:30 | Comparison of Micromachined Dielectric and Metallic Waveguides for THz applications Pekka Pursula, Matteo Cherchi, Antti E. I. Lamminen, Mikko Kantanen, Jaakko Saarilahti and Vladimir Ermolov (VTT Technical Research Centre of Finland, Finland) | Phased Array Industrialization Peter Moosbrugger (Ball Aerospace) |
| 12:00 – 13:30 Lunch and Learn: Test Tools to Assess 5G Solutions Jan McKinnis, Ball Aerospace and John Meister, Keysight | | |
| 13:30 – 15:30 | Active Devices for 5G and IoT Applications Chair: Ron Ginley (NIST), Long’s Peak Room | 5G Summit Flatirons Room |
| 13:30 | 57 GHz 130uW CMOS Millimeter-wave oscillator for ultra low power sensor node Mizuki Motoyoshi, Noriharu Suematsu and Suguru Kameda (Tohoku University, Japan) | Millimeter-wave Antennas for 5G Antti Räisänen, et al. (Aalto) |
| 14:00 | A 24-44 GHz UWB LNA for 5G Cellular Frequency Bands Vikas Chauhan and Brian Floyd (North Carolina State University, USA) | Hardware Challenges for 5G Farshid Aryanfar (Compound Waves) |
| 14:30 | 26 GHz-Band Direct Digital Signal Generation by a Manchester Coding 1-Bit Band-Pass Δ-Σ Modulator using Its 7th Nyquist Zone Masafumi Kazuno, Mizuki Motoyoshi, Suguru Kameda and Noriharu Suematsu (Tohoku University, Japan) | mmWave Filters and Front-End Modules Dimitrios Peroulis (Purdue) |
| 15:00 | Measurement Uncertainty for Compact Modeling and mmWave Circuit Design Jerome Cheron, Dylan Williams (NIST) | High-Efficiency Power Amplifiers for 5G Peter Asbeck (UCSD) |

| Tuesday, May 22, 2018 (continued) | | |
|--|---|---|
| 15:30 – 16:00 | Coffee Break, Exhibition and Poster Session | |
| 16:00 – 17:00 | GSMN Poster Session Atrium | 5G Summit Flatirons Room |
| | Investigation of ethanol sensing capability of graphitic carbon nitride resonator at terahertz Uzma Memon, Arif Ibrahim and S Duttagupta (Indian Institute of Technology Bombay, India) | Open-access Cloud-Based 5G Testbeds Ivan Seskar (Rutgers) |
| | 3D Printed V-band Rod Antenna With Constant Gain Based on Spoof Surface Plasmon Polaritons Qingle Zhang, Baojie Chen and Chi Hou Chan (City University of Hong Kong, Hong Kong) | |
| | Self-Organizing mmWave Networks: A Power Allocation Scheme Based on Machine Learning Roohollah Amiri and Hani Mehrpouyan (Boise State University, USA) | Strategies and Equipment for mmWave 5G Roger Nichols (Keysight) |
| 17:00 – 18:00 | Panel Session: What do we need to build 5G mmWave mobile handsets? (bandwidth, efficiency, battery life, complexity, cost) Dylan Williams, NIST (moderator), Flatirons Room | |
| 18:00 | Welcome Reception (Atrium) | |

Wednesday, May 23, 2018

| | | |
|---|--|--|
| <p align="center">8:30 – 9:15</p> | <p align="center">Keynote 1, Flatirons Room Direct Digital RF/MMW technologies - Challenges for Beyond Nyquist Frequency Range Noriharu Suematsu (Tohoku Univ.)</p> | |
| <p align="center">9:15 – 10:00</p> | <p align="center">Keynote 2, Flatirons Room The QUEST for Fundamentally New SI-Traceable Electric Field and Power Measurement Techniques Christopher L. Holloway (NIST)</p> | |
| <p align="center">10:00 – 10:30 Coffee Break, Exhibition</p> | | |
| <p align="center">10:30 – 11:20</p> | <p align="center">Electric-Field Measurements with Rydberg Atoms Chair: Mathew Simons (NIST), Long's Peak Room</p> | <p align="center">mmWave Wireless System Implementation – I Chair: Dylan Williams (NIST), Flatirons Room</p> |
| <p align="center">10:30</p> | <p align="center">Measurements of high-intensity radio-frequency electric fields with Rydberg vapors Georg Raithel (University of Michigan and Rydberg Technologies, USA); David Anderson (Rydberg Technologies, USA)</p> | <p align="center">Modular Wideband 1-15 GHz Transmitter Channelizer for High Data Rate Communication Mohamed Hussein Eissa (IHP Microelectronics Institute, Egypt); Andrea Malignaggi (TU Berlin, Germany); Goran Panic (IHP GmbH, Germany); Lukasz Lopacinski (BTU Cottbus, Germany); Rolf Kraemer (IHP Microelectronics, Frankfurt/Oder and; BTU-Cottbus, Germany); Dietmar Kissinger (IHP, Germany)</p> |
| <p align="center">10:55</p> | <p align="center">High-resolution antenna near-field imaging and sub-THz measurements with a small atomic vapor-cell sensing element David Anderson (Rydberg Technologies, USA); Georg Raithel (University of Michigan and Rydberg Technologies, USA); Christopher Holloway (NIST, USA); Eric Paradis (Eastern Michigan University, USA); Rachel Sapiro (Rydberg Technologies, USA)</p> | <p align="center">I-Q Mismatch Estimation and Compensation in Millimeter-Wave Wireless Systems Yifan Zhu, Christopher Hall, Akbar Sayeed (University of Wisconsin-Madison, USA)</p> |
| <p align="center">11:20 – 12:10</p> | <p align="center">Environmental Sensing at 183 GHz Chair: Erich Grossman (NIST), Long's Peak Room</p> | <p align="center">mmWave Wireless System Implementation – II Chair: Kate Remley (NIST), Flatirons Room</p> |
| <p align="center">11:20</p> | <p align="center">Using a 6 Degree of Freedom Robot for Accurate Antenna Pattern Measurements at 118 and 183 GHz (Invited) David Novotny, Josh Gordon, Ron Wittman and Michael Francis (National Institute of Standards and Technology, Boulder, CO, USA)</p> | <p align="center">Reality Check on 5G New Radio conformance testing for mmWave frequencies - A Test and Measurement perspective (Invited) Andreas Roessler (Rohde & Schwarz)</p> |
| <p align="center">11:45</p> | <p align="center">A Pseudo-Correlation MMIC-based 183 GHz Water Vapor Radiometer Katherine Cortés, Rodrigo A. Reeves and Miguel Figueroa (Universidad de Concepcion, Chile); Pekka Kangaslahti (Jet Propulsion Laboratory, California Institute of Technology, USA); Wagner Ramirez, Lilian Mora, Pablo Cartes, David Arroyo, Gonzalo Burgos and Brian Molina (Universidad de Concepcion, Chile)</p> | <p align="center">An Efficient Hybrid Diagonalization for Multiuser mmWave Massive MIMO Systems Qineng Zhang, Yuanan Liu, Gang Xie, Jinchun Gao and Kaiming Liu (Beijing University of Posts and Telecommunications, P.R. China)</p> |

| Wednesday, May 23, 2018 (continued) | | |
|--|--|--|
| 12:10 – 13:30 | Lunch and Learn: 5G Performance Measurements Michael Foegelle, ETS-Lindgren | |
| 13:30 – 14:45 | Hardware to Enable mmWave Sensing Chair: Richard Chamberlin (NIST), Long's Peak Room | Measurements and Simulations for Channel Modeling – I Chair: Jelena Senic (NIST), Flatirons Room |
| 13:30 | Millimeter-Wave Polarization-Inclusive Remote Sensing System Based on Dually-Polarized Six-Port Junction Walid Dyab, Ahmed Sakr and Ke Wu (Polytechnique Montreal, Canada) | Empirical Investigation of Antenna Beamwidth Effects on the ITU-R Building Entry Loss (BEL) Model Based on 32 GHz Measurements Juyul Lee, Kyung-Won Kim, Myung-Don Kim, Jae-Joon Park and Hyun Kyu Chung (ETRI, Korea) |
| 13:55 | W-band Amplitude-only Direction Finding with Curved-Aperture Horn Antennas Jake Cazden, Muhannad Altarifi, Ljubodrag Boskovic and Dejan Filipovic (University of Colorado at Boulder, USA) | Vegetation Attenuation for Several Evergreen Shrubs at 31 and 5 GHz Mohanad Mohsen and David W Matolak (University of South Carolina, USA) |
| 14:25 | Enabling Passive Components for High-Power Wideband Millimeter Wave Repeater Applications Sara Manafi, Mauricio Pinto, Dejan Filipovic, Zoya Popović and Gregor Lasser (University of Colorado at Boulder, USA) | Temporal and Spatial Characteristics of mmWave Propagation Channels for UAVs Wahab Gulzar (Mirpur University of Science Technology, Pakistan); Özgür Özdemir and Ismail Güvenç (North Carolina State University, USA) |
| 14:45 – 15:30 | Coffee Break, Exhibition | |
| 15:30 – 17:10 | Implementation of Antenna Arrays Chair: Ari Feldman (NIST), Long's Peak Room | Measurements and Simulations for Channel Modeling – II Chair: Maria Becker (NIST), Flatirons Room |
| 15:30 | Implementation of Millimeter Wave Antenna Arrays by Diffusion Bonding Eduardo Garcia-Marin, Jose Luis Masa-Campos and Pablo Sanchez-Olivares (Universidad Autonoma de Madrid, Spain) | A Stochastic Framework of Millimeter Wave Signal for Mobile Users: Experiment, Modeling and Application in Beam Tracking Yawen Fan and Husheng Li (University of Tennessee, USA); Chao Tian (Texas A&M University, USA); Jingchao Bao (The University of Tennessee, USA) |
| 15:55 | A 60 GHz 8x8 Planar Array Antenna with Corporate Feed Network using Meandered Probe Fed Patch in LTCC Technology Tyler Reid (San Diego State University and Kyocera International Inc., USA); Satish K. Sharma (San Diego State University, USA) | Worst Month Tropospheric Attenuation Variability Analysis: ITU Model vs. Rain Gauge Data for Air-Satellite Links Jinwen Liu and David W. Matolak (University of South Carolina, USA) |
| 16:20 | New Manufacturing Technologies For 5G Millimeter Wave Antennas Xiaoliang Sun, Adrián Tamayo-Domínguez and José-Manuel Fernández-González (Universidad Politécnica de Madrid, Spain) | Coverage Enhancement for mmWave Communications using Passive Reflectors Wahab Gulzar (Mirpur University of Science & Technology, Pakistan); Ismail Güvenç, Özgür Özdemir and Yavuz Yapıcı (North Carolina State University, USA); Yuichi Kakishima (DOCOMO Innovations, Inc., USA) |
| 16:45 | A Bi-material Fully Aerosol Jet printed W-band Quasi-Yagi-Uda Antenna Yuxiao He, Michael Thomas Craton, Prem Chahal and John Papapolymierou (Michigan State University, USA) | Measurement of On-Body Propagation Loss for Directional Millimeter-Wave WBAN Kohei Akimoto, Mizuki Motoyoshi, Suguru Kameda and Noriharu Suematsu (Tohoku University, Japan) |
| 18:00 | Banquet | |

| Thursday, May 24, 2018 | | |
|------------------------|---|---|
| 8:30 – 9:15 | <p style="text-align: center;">Keynote 1, Flatirons Room</p> <p style="text-align: center;">Advanced Channel Measurements for THz Communications</p> <p style="text-align: center;">Thomas Kürner (TU Braunschweig)</p> | |
| 9:15 – 10:00 | <p style="text-align: center;">Keynote 2, Flatirons Room</p> <p style="text-align: center;">Miniaturized Spaceborne and Terrestrial Antennas for Satellite Communication and Navigation</p> <p style="text-align: center;">Quan Xue (S. China Univ. Tech.)</p> | |
| 10:00 – 10:30 | <p style="text-align: center;">Coffee Break</p> | |
| 10:30 – 12:10 | <p style="text-align: center;">Design and Measurement of Antennas for 5G</p> <p style="text-align: center;">Chair: Damir Senic (NIST), Long's Peak Room</p> | <p style="text-align: center;">Millimeter-Wave and THz Communications</p> <p style="text-align: center;">Chair: Jeffrey Jargon (NIST), Flatirons Room</p> |
| 10:30 | <p style="text-align: center;">64 Element 28GHz Phased Array 5G Prototyping Platform</p> <p style="text-align: center;">Gary Raney (Ball Aerospace and Technologies Corp, USA); Bryce Unruh, Ray Lovestead and Bryan Winther (Ball Aerospace, USA)</p> | <p style="text-align: center;">Design and prototyping of 60 GHz Mesh Networks</p> <p style="text-align: center;">Jianhua Mo (Samsung, USA); Hao Chen and Wenxun Qiu (Samsung Research America, USA); Prasad Netalkar (NYU Tandon School of Engineering, USA); Boon Loong Ng (Samsung Telecommunications America, USA); Gary Xu (Samsung Research America, USA); Jianzhong Zhang (Samsung, USA)</p> |
| 10:55 | <p style="text-align: center;">mm-Wave Homogeneous Flat Lens Antenna System Exploiting Mainstream PCB Process for 5G Access Point</p> <p style="text-align: center;">Wenyao Zhai (Huawei Technologies Canada Research Center, Canada)</p> | <p style="text-align: center;">Vehicle Antenna Position Dependent Path Loss for Millimeter-Wave V2V Communication</p> <p style="text-align: center;">Jae-Joon Park, Juyul Lee, Kyung-Won Kim, Lee Kwang Chun and Myung-Don Kim (ETRI, Korea)</p> |
| 11:20 | <p style="text-align: center;">Antenna Decoupling with a 3D Printed Tapered Ribbed Structure</p> <p style="text-align: center;">Bradley Allen, Ljubodrag Boskovic and Dejan Filipovic (University of Colorado at Boulder, USA)</p> | <p style="text-align: center;">Compact Upconverters and Downconverters for Millimeter-Wave Communication Links</p> <p style="text-align: center;">Eric Bryerton (Virginia Diodes, Inc., USA)</p> |
| 11:45 | <p style="text-align: center;">Accurate Measurement for Millimeter-wave Antenna Based on the Extrapolation Range</p> <p style="text-align: center;">Xiao Liu and Meng Donglin (National Institute of Metrology, P.R. China)</p> | <p style="text-align: center;">Figures of Merit for Active Antenna Enabled 5G Communication Networks</p> <p style="text-align: center;">Jan McKinnis (Ball Aerospace, USA); Ian Gresham (Anokiwave Inc., USA); Randy Becker (Keysight, USA)</p> |
| 12:10 – 13:30 | <p style="text-align: center;">Boxed Lunch/Awards Presentation (Atrium)</p> | |
| 14:00 – 16:30 | <p style="text-align: center;">NIST Lab Tours</p> | |