<table>
<thead>
<tr>
<th>Time</th>
<th>Monday (July 8)</th>
<th>Tuesday (July 9)</th>
<th>Wednesday (July 10)</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Registration</td>
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<tr>
<td>8:30</td>
<td>Opening</td>
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<td>Hardware Prototypes and</td>
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<td>Phy Layer Innovations</td>
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<tr>
<td>9:00</td>
<td>Keynote 1</td>
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<tr>
<td>10:00</td>
<td>Coffee &amp; Networking</td>
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<tr>
<td>10:30</td>
<td>Spectrum Sharing</td>
<td>Cognitive Radio Performance Analysis</td>
<td>Cognitive Protocols</td>
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<tr>
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<tr>
<td>13:00</td>
<td>Dynamic Spectrum Access</td>
<td>Spectrum Markets and Security</td>
<td>Interference Management and Link Adaptation</td>
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<td>14:30</td>
<td>Coffee &amp; Networking</td>
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<td>15:00</td>
<td>Spectrum Sensing I</td>
<td>WiFiUS</td>
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<td>16:30</td>
<td>Spectrum Sensing II</td>
<td>Panel</td>
<td>“Research Challenges for cognitive radio”</td>
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Spectrum Sharing

Statistical Modeling Framework of Live Spectrum Observation data for Opportunistic Spectrum Sharing
Tanim M Taher (Illinois Institute of Technology, USA); Kenneth Zdunek (Illinois Institute of Technology, USA); Dennis Roberson (Illinois Institute of Technology, USA);

Enforcement and Spectrum Sharing: A Case Study of the 1695-1710 MHz Band
Martin BH Weiss (University of Pittsburgh, USA); Mohammed Altamimi (University of Pittsburgh, USA); Mark McHenry (Shared Spectrum Company, USA)

A Practical Precoding Approach for Radar/Communications Spectrum Sharing
Alireza Babaei (Virginia Tech, USA); William H. Tranter (Virginia Tech, USA); Tamal Bose (University of Arizona, USA)

On the use of POMDP for Spectrum Selection in Cognitive Radio Networks
Alessandro Raschella (Universitat Politecnica de Catalunya, Spain); Jordi Perez-Romero (Universitat Politecnica de Catalunya, Spain); Oriol Sallent (Universitat Politecnica de Catalunya, Spain); Anna Umbert (Universitat Politecnica de Catalunya, Spain)

Dynamic Spectrum Access

Cooperative Spectrum Prediction in Multi-PU Multi-SU Cognitive Radio Networks
Tao Jing (Beijing Jiaotong University, China); Xiaoshuang Xing (Beijing Jiaotong University, China); Wei Cheng (University of Massachusetts Lowell, USA); Yan Huo (Beijing Jiaotong University, China); Taieb Znati (University of Pittsburgh, USA)

On the Energy Efficiency of Dynamic Spectrum Access under Dynamic Channel Conditions
Anm Badruddoza (Wichita State University, USA); Vinod Namboodiri (Wichita State University, USA); Murtuza Jadliwala (Wichita State University, USA)

Harvesting MDT Data: Radio Environment Maps for Coverage Analysis in Cellular Networks
Ana Galindo-Serrano (Orange Labs., France); Berna Sayrac (Orange Labs., France); Sana Ben Jemaa (Orange Labs., France); Janne Riihijarvi (RWTH Aachen University, Germany); Petri Mahonen (RWTH Aachen University, Germany)

Primary User DoA and RSS Estimation in Cognitive Radio Networks Using Sectorized Antennas
Janis Werner (Tampere University of Technology, Finland); Jun Wang (University of California Los Angeles, USA); Aki Hakkarainen (Tampere University of Technology, Finland); Mikko Valkama (Tampere University of Technology, Finland); Danijela Cabric (University of California Los Angeles, USA)

Spectrum Sensing - I

Enhanced Energy Detection for Multi-band Spectrum Sensing under RF Imperfections
Ahmet Gokceoglu (Tampere University of Technology, Finland); Sener Dikmese (Tampere University of Technology, Finland); Mikko Valkama (Tampere University of Technology, Finland); Markku Renfors (Tampere University of Technology, Finland)

Reducing Computational Complexity of Eigenvalue Based Spectrum Sensing for Cognitive
**Radio**
Sener Dikmese (Tampere University of Technology, Finland); Jiunn Lin Wong (Jacobs University, Germany); Ahmet Gokceoglu (Tampere University of Technology, Finland); Elena Guzzon (University of Roma TRE, Italy); Mikko Valkama (Tampere University of Technology, Finland); Markku Renfors (Tampere University of Technology, Finland)

**Whether and When to Share: Spectrum Sensing as An Evolutionary Game**
Ying Dai (Temple University, USA); Jie Wu (Temple University, USA)

**Sense in Order: Channel Selection for Sensing in Cognitive Radio Networks**
Ying Dai (Temple University, USA); Jie Wu (Temple University, USA)

**Spectrum Sensing - II**

**Linearly Combined Signal Energy based Spectrum Sensing Algorithm for Cognitive Radio Networks with Noise Variance Uncertainty**
Tadilo Endeshaw Bogale (University Catholique de Louvain, Belgium); Luc Vandendorpe (Université catholique de Louvain, Belgium)

**Suppressing RF Front-End Nonlinearities in Wideband Spectrum Sensing**
Eric Rebeiz (University of California Los Angeles, USA); Ali Shahed hagh ghadam (Tampere University of Technology, Finland); Mikko Valkama (Tampere University of Technology, Finland); Danijela Cabric (University of California Los Angeles, USA)

**Optimal Entropy-based Spectrum Sensing for Cognitive Radio Networks under Severe Path Loss Conditions**
Waleed Ejaz (Sejong University, Korea); Mahin K. Atiq (Sejong University, Korea); Hyung Seok Kim (Sejong University, Korea); Ghalib A. Shah (Al-Khawarizmi Institute of Computer Science, Pakistan)

He Li (Shanghai Jiaotong University, China); Xinxin Feng (Shanghai Jiaotong University, China); Xiaoying Gan (Shanghai Jiaotong University, China); Zhongren Gao (University of Southern California, USA)

**Cognitive Radio Performance Analysis**

**Analysis on the Probability of Electromagnetic Compatibility in Cognitive Radio**
Xu Kun (University of Chinese Academy of Sciences, China); Liao Mingxue (University of Chinese Academy of Sciences, China); He Xiaoxin (University of Chinese Academy of Sciences, China); Zheng Changwen (University of Chinese Academy of Sciences, China); Haiyun Ren (University of Chinese Academy of Sciences, China); He Xiaoxin (University of Chinese Academy of Sciences, China); Zheng Changwen (University of Chinese Academy of Sciences, China); Haiyun Ren (University of Chinese Academy of Sciences, China)

**Effect of Secondary transmission on Primary Pilot Carriers in Overlay Cognitive Radios**
Yihenew Beyene (Aalto University, Finland); Kalle Ruttik (Aalto University, Finland); Riku Jantti (Aalto University, Finland)

**Cross-Layer Performance Analysis for Cognitive Radio Network with a Random Transmission**
Protocol in Presence of Sensing Errors
S.M. Shahrear Tranzil (University of British Columbia, Canada)

On the Capacity of Wi-Fi System in TV White Space with Aggregate Interference Constraint
Yanpeng Yang (KTH Royal Institute of Technology, Sweden); Lei Shi (KTH Royal Institute of Technology, Sweden); Jens Zander (KTH Royal Institute of Technology, Sweden)

Observations on Sum User Rate for Cellular Downlink
Alex Fridman (Drexel University, USA); Jeffrey Wildman (Drexel University, USA); Steven Weber (Drexel University, USA)

Interference Management and Link Adaptation

Energy-Efficient Link Adaptation for Cognitive Radios with Heterogeneous QoS requirements
Erqing Zhang (Beijing University of Posts and Telecommunications, China); Sixing Yin (Beijing University of Posts and Telecommunications, China); Liang Yin (Beijing University of Posts and Telecommunications, China); Shufang Li (Beijing University of Posts and Telecommunications, China)

Dynamic rate adaptation in cognitive radio considering time-dependent channel access models
Alvaro Gonzalo-Ayuso (University of Cantabria, Spain); Jesus Perez (University of Cantabria, Spain)

Transmit Beamforming for Spectral Coexistence of Satellite and Terrestrial Networks
Shree Krishna Sharma (SnT, University of Luxembourg, Luxembourg); Symeon Chatzinotas (SnT, University of Luxembourg, Luxembourg); Bjorn Ottersten (SnT, University of Luxembourg, Luxembourg)

Interference control in cognitive wireless networks by tuning the carrier sensing threshold
Byungjin Cho (Aalto University, Finland); Konstantinos Koufos (Aalto University, Finland); Riku Jantti (Aalto University, Finland)

A Feature Partitioning Approach to Casebased Reasoning in Cognitive Radios
Daniel Ali (Virginia Tech, USA); Jung-Min Park (Virginia Tech, USA); Ashwin Amanna (Virginia Tech, USA)

Hardware Prototypes and Physical Layer Innovations

Design of a TV White Space Converter Prototype Towards Cognitive Radio for WLAN Routers
Iyappan Subbiah (RWTH Aachen University, Germany); Moritz Schrey (RWTH Aachen University, Germany); Arun Ashok (RWTH Aachen University, Germany); Gabor Varga (RWTH Aachen University, Germany); Andreas Achtzehn (RWTH Aachen University, Germany); Marina Petrova (RWTH Aachen University, Germany); Stefan Heinen (RWTH Aachen University, Germany)

Cognitive Repeaters for Flexible Mobile Data Traffic Offloading
Dennis Wieruch (Fraunhofer Heinrich Hertz Institute, Germany); Thomas Wirth (Fraunhofer Heinrich Hertz Institute, Germany); Oliver Braz (Fraunhofer Heinrich Hertz Institute, Germany); Alfons Dußmann (Fraunhofer Heinrich Hertz Institute, Germany)
Crowncom 2013 – Preliminary Program

Heinrich Hertz Institute, Germany); Markus Mederle (Fraunhofer Heinrich Hertz Institute, Germany); Marc Muller (Fraunhofer Heinrich Hertz Institute, Germany)

**Joint approach for PAPR reduction and predistortion by adding signal in Cognitive Radio**
Abi Gouba (IETR/SUPELEC labs, France); Yves Louet (IETR/SUPELEC labs, France)

**Adaptive Modulation in Multi-user Cognitive Radio Networks over Fading Channels**
Fotis Foukalas (Qatar University, Qatar); Tamer Khattab (Qatar University, Qatar); H. Vincen Poor (Princeton University, USA)

Spectrum Market and Security

**Combinatorial Auction Based Channel Allocation in Cognitive Radio Networks**
Wei Zhou (Beijing Jiaotong University, China); Tao Jing (Beijing Jiaotong University, China); Wei Cheng (University of Massachusetts Lowell, USA); Tao Chen (VTT Technical Research Centre of Finland, Finland); Yan Huo (Beijing Jiaotong University, China)

**Law Governed Peer-to-Peer Secondary Spectrum Marketplaces**
Rishabh Dudheria (Rutgers University, USA); Wade Trappe (Rutgers, University, USA); Naftaly Minsky (Rutgers University, USA)

**Optimizing Scanning Strategies: Selecting Scanning Bandwidth in Adversarial RF Environments**
Andrey Garnaev (St. Petersburg State University, Russia); Wade Trappe (WINLAB, Rutgers University, USA); Chun-Ta Kung (WINLAB, Rutgers University, USA)

**Detecting Multi-Channel Wireless Microphone User Emulation Attacks in White Space with Noise**
Dan Shan (University of Michigan, USA); Kai Zeng (University of Michigan, USA); Paul Richardson (University of Michigan, USA); Weidong Xiang (University of Michigan, USA)

Protocols

**Transmit and Receive Cooperative Cognition: Protocol Design and Stability Analysis**
Ahmed El Shafie (Nile University, Egypt); Amr El-Keyi (Nile University, Egypt); Tamer Khattab (Qatar University, Qatar); Mohammed Nafie (Nile University, Egypt)

**Whitespace Networks Relying on Dynamic Control Channels**
Jacek Kibilda (CTVR, Trinity College Dublin, Ireland); Justin Tallon (CTVR, Trinity College Dublin, Ireland); Keith Nolan (CTVR, Trinity College Dublin, Ireland); Luiz A. DaSilva (CTVR, Trinity College Dublin, Ireland)

**A Component-based Approach for Constructing Flexible Link-Layer Protocols**
Andre Puschmann (Ilmenau University of Technology, Germany); Mohamed A. Kalil (Ilmenau University of Technology, Germany); Andreas Mitschele-Thiei (Ilmenau University of Technology, Germany)
A Split Architecture for Random Access MAC for SDR Platforms
Paolo Di Francesco (University of Dublin, Trinity College, Ireland) Seamas McGettrick (University of Dublin, Trinity College, Ireland); Uchenna K. Anyanwu (Virginia Tech, USA); Colman O'Sullivan (University of Dublin, Trinity College, Ireland); Allen B. MacKenzie (Virginia Tech, USA) Luiz A. DaSilva(University of Dublin, Trinity College, Ireland)

Client-centric Heterogeneous Access in Cognitive WLANs
Deming Pang (National University of Defense Technology, China); Quan Liu (National University of Defense Technology, China); Gang Hu (National University of Defense Technology, China); Yingwen Chen (National University of Defense Technology, China); Ming Xu (National University of Defense Technology, China)

WiFiUS

Modified MUSIC Algorithm for DoA Estimation Using CRLH Leaky-Wave Antennas
Henna Paaso VTT Technical Research Centre of Finland, Aarne Mämmelä, VTT Technical Research Centre of Finland, Damiano Patron, Department of Electrical and Computer Engineering, Drexel University, Philadelphia, PA, USA, Kapil R. Dandekar, Department of Electrical and Computer Engineering, Drexel University, Philadelphia, PA, USA

RF-Aware Widely-Linear Beamforming and Null-Steering in Cognitive Radio Transmitters
Aki Hakkarainen, Department of Electronics and Communications Engineering, Tampere University of Technology, Tampere, Finland, Janis Werner, Department of Electronics and Communications Engineering, Tampere University of Technology, Tampere, Finland, Kapil R. Dandekar Department of Electrical and Computer Engineering, Drexel University, Philadelphia, PA, USA, Mikko Valkama, Department of Electronics and Communications Engineering, Tampere University of Technology, Tampere, Finland

Inference-Driven Dynamic Access Scheme for Interference Management in Heterogeneous Networks
Ahmed R. Elsherif, University of California, Davis, California, Zhi Ding, University of California, Davis, California, Xin Liu, University of California, Davis, California, Jyri Hämäläinen, Aalto University, Espoo, Finland, Risto Wichman, Aalto University, Espoo, Finland

On the Delay and Data Rate Performance of Throughput-Efficient Multi-Channel Access Algorithms in Cognitive Radio Networks
Luca Zappaterra, Department of Computer Science, George Washington University, Hyeong-Ah Choi, Department of Computer Science, George Washington University, Kamran Sayrafian-Pour, Information Technology Laboratory, National Institute of Standards and Technology, Gaithersburg MD, USA, Jari H. Iinatti, Centre for Wireless Communications, University of Oulu, Oulu, Finland
Performance of Transmit Beamforming for Interference Mitigation with Random Codebooks
Alexis A. Dowhuszko, Department of Communications and Networking, Aalto University, Aalto, Finland, Jyri Hämäläinen, Department of Communications and Networking, Aalto University, Aalto, Finland, Ahmed R. Elsherif, University of California, Davis, California, Zhi Ding, University of California, Davis, California

Dataflow Modeling and Design for Cognitive Radio Networks
Lai-Huei Wang, ECE Department, University of Maryland, College Park, MD, Shuvra S. Bhattacharyya, ECE Department, University of Maryland, College Park, MD, Aida Vosoughi, ECE Department, Rice University, Houston, TX, Joseph R. Cavallaro, ECE Department, Rice University, Houston, TX, Markku Juntti, Dept. of Communications Engr., Dept. of Computer Science & Engr., Univ. of Oulu, Finland, Jani Boutellier, Dept. of Communications Engr., Dept. of Computer Science & Engr., Univ. of Oulu, Finland, Jani Boutellier, Dept. of Communications Engr., Univ. of Oulu, Finland, Jani Boutellier, Dept. of Communications Engr., Univ. of Oulu, Finland, Olli Silvén, Dept. of Communications Engr., Dept. of Computer Science & Engr., Univ. of Oulu, Finland, Mikko Valkama, Dept. of Communications Engr., Tampere Univ. of Technology, Tampere, Finland