

# IEEE RFID 2014 Program Brief – Tuesday, April 8

7:30 - 8:00 MORNING COFFEE S331 A-B-C-D Hallway

8:00 - 8:30 SPEAKER BRIEFING S331 A

8:30 - 10:00 MORNING TUTORIAL SESSIONS (Part I)

<p>Tutorial 1 S331 A  <b>How the Future Looks for UHF RFID (Part I)</b>                  See conference program for details    <b>Presenter:</b>  <b>Khaled El Mahgoub</b>, Trimble Navigation, MIT Auto-ID Labs,                  Senior Member IEEE</p>	<p>Tutorial 2 S331 B  <b>RF Basics of Near-Field Communications (NFC) (Part I)</b>                  See conference program for details    <b>Presenter:</b>  <b>Somnath Mukherjee</b>, Thin Film ASA, Senior Member IEEE</p>
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10:00 - 10:15 BREAK S331 A-B-C-D Hallway

10:15 - 12:00 MORNING TUTORIAL SESSIONS (Part II)

<p>Tutorial 1 S331 A  <b>How the Future Looks for UHF RFID (Part II)</b></p>	<p>Tutorial 2 S331 B  <b>RF Basics of Near-Field Communications (NFC) (Part II)</b></p>
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12:00 - 13:00 LUNCH Outside S331 A

13:00 - 14:30 AFTERNOON TUTORIAL SESSIONS (Part I)

<p>Tutorial 3 S331 A  <b>Near Field Wireless Technology (Part I)</b>                  See conference program for details    <b>Presenter:</b>  <b>Hans Schantz</b>, CTO, Q-Track Corporation, Senior Member                  IEEE</p>	<p>Tutorial 4 S331 B  <b>Advanced RFID Prototyping with the WISP 5.0 (Part I)</b>                  See conference program for details    <b>Presenters:</b>  <b>Aaron Parks and Saman Naderiparizi</b>, University of                  Washington, Members IEEE</p>
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14:30 - 14:45 BREAK S331 A-B-C-D Hallway

14:45 - 16:30 AFTERNOON TUTORIAL SESSIONS (Part II)

<p>Tutorial 3 S331 A  <b>Near Field Wireless Technology (Part II)</b></p>	<p>Tutorial 4 S331B  <b>Advanced RFID Prototyping with the WISP 5.0 (Part II)</b></p>
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16:45 - 17:45 RFID Journal Live! General Session S320 A-B-C-D

17:45 - 18:30 RFID Journal Live! Keynote Session S320 A-B-C-D

18:30 - 20:15 RFID Journal Live! Opening Reception Exhibit Hall

20:15 IEEE RFID 2014 Reception Outside S331 A

# IEEE RFID 2014 Program Brief – Wednesday, April 9 (Morning)

7:30 - 8:00	<b>MORNING COFFEE</b>	S331 A-B-C-D Hallway
8:00 - 8:30	<b>SPEAKER BRIEFING</b>	S331 A
8:30 – 10:00	<b>OPENING PLENARY</b>	S330 E-F-G

<p><b>Welcome and Introduction</b></p> <p><b>Technical Program Overview</b></p> <p><b>Presentation of Best Paper Award</b></p> <p><b>Industry Panel</b></p> <p><b>Poster Session Teaser Talks</b></p>	<p><b>Gregory Durgin</b>, General Chair, IEEE RFID 2014</p> <p><b>Daniel Arnitz</b>, University of Washington</p> <p><b>Ken Lynch</b>, ThingMagic, A Division of Trimble (Best Paper Award Patron)</p> <p><b>Gisele Bennett</b>, Georgia Tech Research Institute, Moderator</p> <p><b>Stewart Thomas</b>, Poster Session Chair, and Poster authors</p>
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10:00 - 10:30 **BREAK** S331 A-B-C-D Hallway

10:30 – 12:00 **TECHNICAL SESSIONS**

<p>Session 1 S331 A</p> <p><b>Antennas and Propagation</b></p> <p><b>Automated Design of an HF RFID Loop Antenna Based on Parametric Geometry Modification</b> Kevin D'hoë<sup>1</sup>, Jean-Pierre Goemaere<sup>2</sup>, Nobby Stevens<sup>2</sup>, Bart Nauwelaers<sup>1</sup>, Lieven De Strycker<sup>2</sup> <sup>1</sup> Katholieke Universiteit Leuven (BE) <sup>2</sup> Catholic University College Ghent (BE)</p> <p><b>Mitigation of Proximity to Metal for Magnetically Coupled Transponders by use of Resonant Loops</b> Somnath Mukherjee Kovio, Inc. (US)</p> <p><b>An Impedance Matching Method for Optical Disc-Based UHF-RFID Tags</b> Simone Zuffanelli, Pau Aguilà, Gerard Zamora, Ferran Paredes, Ferran Martín, Jordi Bonache Universitat Autònoma de Barcelona (ES)</p> <p><b>UHF RFID Impedance Matching: When is a T-Match Not A T-Match?</b> Michael Reich, Cherish Bauer-Reich North Dakota State University (US)</p> <p><b>Session Chair:</b> Pavel Nikitin, Intermec Technologies (US)</p>	<p>Workshop 1 S 331 B</p> <p><b>Chipless RFID-Based Sensing (Part I)</b></p> <p><b>Overcoming Channel Limitations of Chipless RFID Sensors: Clutter Suppression and Multiple Access Schemes</b> Christian Mandel Technische Universität Darmstad (DE)</p> <p><b>A Low Cost Realization Process, and a Reliable Detection System to Make Chipless RFID Sensor Technology Ubiquitous</b> Arnaud Vena Université Montpellier 2 (FR)</p> <p><b>Inkjet-Printed RFID-Enabled Wireless Sensors</b> Manos M. Tentzeris Georgia Tech (US)</p>
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12:00 - 13:30 **LUNCH** Exhibit Hall

# IEEE RFID 2014 Program Brief – Wednesday, April 9 (Afternoon)

13:30 – 15:00

## TECHNICAL SESSIONS

<p>Session 2</p> <p style="text-align: right;">S331 A</p> <p><b>Applications and Software</b></p> <p><b>WINDWare: Supporting Ubiquitous Computing with Passive Sensor Enabled RFID</b>          Asanga Wickramasinghe<sup>1</sup>, Damith C. Ranasinghe<sup>1</sup>, Alanson P. Sample<sup>2</sup>  <sup>1</sup> The University of Adelaide (AU)  <sup>2</sup> Disney Research Pittsburgh (US)</p> <p><b>A Highly Accurate and Scalable Approach for Addressing Location Uncertainty in Asset Tracking Applications</b>          Rengamathi Sankarkumar, Damith C. Ranasinghe, Thuraiappah Sathyan          The University of Adelaide (AU)</p> <p><b>EPC Information Services with No-SQL Datastore for the Internet of Things</b>          Tuan Le<sup>1</sup>, Seong Hoon Kim<sup>1</sup>, Minh Nguyen<sup>1</sup>, Daeyoung Kim<sup>1</sup>, Seung Young Shin<sup>2</sup>, Kyung Eun Lee<sup>2</sup>, Rodrigo Righi<sup>3</sup>  <sup>1</sup> Korea Advanced Institute of Science and Technology (KR)  <sup>2</sup> Samsung R&amp;D (KR)  <sup>3</sup> Unisinos (BR)</p> <p><b>Session Chair:</b> Joshua D. Griffin, Northwest Nazarene University (US)</p>	<p>Workshop 1</p> <p style="text-align: right;">S 331 B</p> <p><b>Chipless RFID-Based Sensing (Part II)</b></p> <p><b>Chipless RFID Sensor: From Theory to Realization</b>          Emran Md Amin          Monash University (AU)</p> <p><b>Wireless Reading and Identification of Passive Millimeter Wave Sensors: Challenges and Solutions</b>          Herve Aubert          Laboratory for Analysis and Architecture of Systems – CNRS (FR)</p> <p><b>Wireless and Chipless Sensors for Biological and Physical Detection</b>          Zhongyang Cheng          Materials Research and Education Center, Auburn University (US)</p>
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15:00

## BREAK

S331 A-B-C-D Hallway

15:00 - 17:00

## POSTER AND DEMO SESSION

S331 C-D

See conference program for a list of poster titles, authors and affiliations, and summaries

**Session Chair:** Stewart Thomas, Duke University, US

17:00 - 18:30

## Student Competition Rectenna Shootout!

S331 C-D

See page 26 for details

19:00 - 21:00

## IEEE RFID 2014 Networking Dinner

Señor Frogs  
Meet in Hilton Lobby for bus pickup

# IEEE RFID 2014 Program Brief – Thursday, April 10 (Morning)

7:30 - 8:00 **MORNING COFFEE** S331 A-B-C-D Hallway

8:00 - 8:30 **SPEAKER BRIEFING** S331 A

8:30 – 10:00 **PLENARY** S331 E-F-G

<p><b>Welcome</b>  <b>CRFID Update</b>  <b>Best Poster Award</b>  <b>RFID State of the Industry Update</b>  <b>Introduction of Keynote Speaker</b>  <b>Keynote Speaker</b></p>	<p><b>Gregory Durgin</b>, General Chair, IEEE RFID 2014  <b>William Lumpkins</b>, Chair, IEEE Technical Committee on RFID (CRFID)  <b>Stewart Thomas</b>, Poster Session Chair  <b>Mark Roberti</b>, Founder and Editor, RFID Journal  <b>Matthew Reynolds</b>, General Vice Chair, IEEE RFID 2014  <b>Neal Patwari</b>, University of Utah</p>
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10:00 - 10:30 **BREAK** S331 A-B-C-D Hallway

10:30 – 12:00 **TECHNICAL SESSIONS**

<p>Session 3 S331 A</p> <p><b>Circuits, Devices and Interrogators</b></p> <p><b>Detection Performance of Spread Spectrum Signatures for Passive, Chipless RFID</b>          Ryan Measel, Moshe Kam, Christopher Lester, Richard Primerano, Yifei Xu          Drexel University (US)</p> <p><b>A Low-Power RF/Analog Front-End Architecture for LF passive RFID tags with Dynamic Power Sensing</b>          Fernando Paixão Cortes, Juan Martinez Brito, Rafael Cantalice, Everton Ghignatti, Alfredo Olmos, Fernando Chavez, Marcelo Lubaszewski          CEITEC SA Semiconductors (BR)</p> <p><b>Power Harvesting</b></p> <p><b>Waveform-Aware Ambient RF Energy Harvesting</b>          Joshua Ensworth, Stewart Thomas, Matthew Reynolds, Seung Yul Shin          Duke University (US)</p> <p><b>Sifting Through the Airwaves: Efficient and Scalable Multiband RF Harvesting</b>          Aaron N. Parks, Joshua R. Smith          University of Washington (US)</p> <p><b>Session Chair:</b> Josef Preishuber-Pfluegl, CISC Semiconductor GmbH (AT)</p>	<p>Workshop 2 S 331 B</p> <p><b>RFID, Wireless Sensing and IoT in Industrial Environments (Part I)</b></p> <p><b>RFID and IoT – Anecdotes, Benefits, and Challenges</b>          J. Jobin          GE Global Research (US)</p> <p><b>Influence of Consumer Technologies on RFID, Location, and Sensing in Industrial Settings</b>          Rodrigo G. Alonso          Zebra Technologies (US)</p> <p><b>UHF RFID in Automotive Manufacturing</b>          Jerry Finley          SICK, Inc. (US)</p>
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12:00 - 13:00 **LUNCH** Exhibit Hall

# IEEE RFID 2014 Program Brief – Thursday, April 10 (Afternoon)

13:30 – 15:00

## TECHNICAL SESSIONS

<p>Session 4 S331 A</p> <p><b>Localization</b></p> <p><b>Localization of Passive UHF RFID Tags Based on Inverse Synthetic Apertures</b> Martin Scherhäufl<sup>1</sup>, Markus Pichler<sup>1</sup>, Andreas Stelzer<sup>2</sup> <sup>1</sup> Linz Center of Mechatronics GmbH (AT) <sup>2</sup> Johannes Kepler University of Linz (AT)</p> <p><b>Fusing RFID and Computer Vision for Probabilistic Tag Localization</b> Michael Goller<sup>1</sup>, Christoph Feichtenhofer<sup>2</sup>, Axel Pinz<sup>2</sup> <sup>1</sup> Enso Detego GmbH (AT) <sup>2</sup> University of Technology Graz (AT)</p> <p><b>Protocols and Security I</b></p> <p><b>Novel Modulo Based Aloha Anti-Collision Algorithm for RFID Systems</b> Mohammed Hakeem, Kaamran Raahemifar, Gul N. Khan Ryerson University (CA)</p> <p><b>Improved Physical Layer Collision Recovery Receivers for RFID Readers</b> Jelena Kaitovic, Markus Rupp Vienna University of Technology (AT)</p> <p><b>Session Chair:</b> Daniel Arnitz, University of Washington (US)</p>	<p>Workshop 2 S 331 B</p> <p><b>RFID, Wireless Sensing and IoT in Industrial Environments (Part II)</b></p> <p><b>Enabling Distributed Intelligent Systems using RFID</b> Lynn DeRose GE Global Research (US)</p> <p><b>The Information Conundrum – How to Make Your Water and Wastewater Data Count</b> Kyle Reissner GE Intelligent Platforms (US)</p> <p><b>Applications of Visual Electronic Tagging in Manufacturing and Industrial Logistics</b> George E. Daddis Jr. Omni-ID (US)</p>
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15:00 – 15:15  
15:15 – 16:30

## BREAK TECHNICAL SESSIONS

S331 A-B-C-D Hallway

<p>Session 5A S331 A</p> <p><b>Protocols and Security II</b></p> <p><b>Improving the Performance of UHF RFID Communication in a Small Scale Fading Channel</b> Grzegorz Smietanka, Jürgen Götze Technical University Dortmund (DE)</p> <p><b>Batch Clone Detection in RFID-Enabled Supply Chain</b> Jie Shi, Su Mon Kywe, Yingjiu Li Singapore Management University (SG)</p> <p><b>On the Power of Active Relay Attacks using Custom-Made Proxies</b> Michael Hutter, Thomas Korak University of Technology Graz (AT)</p> <p><b>Session Chair:</b> Peter J. Hawrylak, University of Tulsa (US)</p>	<p>Session 5B S 331B</p> <p><b>Sensors</b></p> <p><b>Development of a Nanoparticle Time-Temperature Sensor for Passive and Active RFID</b> Gregory Kenning Indiana University of Pennsylvania (US)</p> <p><b>A Feasibility Study on Simultaneous Data Collection from Multiple Sensor RF Tags with Multiple Subcarriers</b> Yuki Igarashi<sup>1</sup>, Yuki Sato<sup>1</sup>, Yuusuke Kawakita<sup>2</sup>, Jin Mitsugi<sup>1</sup>, Haruhsia Ichikawa<sup>2</sup> <sup>1</sup> Keio University (JP) <sup>2</sup> University of Electro-Communications (JP)</p> <p><b>An Inductively Coupled Passive Tag for Remote Basic Volatile Sensing</b> Sharmistha Bhadra, Mike McDonald, Douglas Thomson, Michael Freund, Greg E. Bridges University of Manitoba (CA)</p> <p><b>Session Chair:</b> Rahul Bhattacharyya, Massachusetts Institute of Technology (US)</p>
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16:30

CONFERENCE ENDS