

# IEEE RFID 2015

## Program Brief

April 15 - 17, 2015  
San Diego Convention Center  
San Diego, CA (USA)



# IEEE RFID 2015 Program Brief – Wednesday, April 15

7:30 - 8:30 MORNING COFFEE 31A

8:00 - 8:30 SPEAKER BRIEFING 31B

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

<p>Tutorial A 31B  <b>Backscatter Communication Techniques for the Internet of Things (Part I)</b>                  See Guidebook program for details  <b>Presenters:</b>  <b>Vamsi Talla and Bryce Kellog</b>, University of Washington</p>	<p>Tutorial B 31C  <b>Near Field Wireless Technology (Part I)</b>                  See Guidebook program for details  <b>Presenter:</b>  <b>Hans G. Schantz</b>, CTO, Q-Track Corporation</p>
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10:00 - 10:15 BREAK 31A

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

<p>Tutorial A 31B  <b>Backscatter Communication Techniques for the Internet of Things (Part II)</b></p>	<p>Tutorial B 31C  <b>Near Field Wireless Technology (Part II)</b></p>
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12:00 - 13:00 LUNCH 31A

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

<p>Workshop A 31B  <b>Bluetooth Low Energy &amp; BLE Beacons for Active RFID Applications (Part I)</b>                  See Guidebook program for details  <b>Presenters:</b>  <b>Mark Jakusovszky and Jim Springer</b>, EM Microelectronic</p>	<p>Workshop B 31C  <b>Energy Harvesting and Transfer – Present and Future (Part I)</b>                  See Guidebook program for details  <b>Organizer:</b>  <b>Daniel Arnitz</b>, University of Washington</p>
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14:30 - 14:45 BREAK 31A

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

<p>Workshop A 31B  <b>Bluetooth Low Energy &amp; BLE Beacons for Active RFID Applications (Part II)</b></p>	<p>Workshop B 31C  <b>Energy Harvesting and Transfer – Present and Future (Part II)</b></p>
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16:45 – 18:30 RFID Journal Live! Keynote Session General Sessions Room

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

20:30 IEEE RFID 2015 Reception 31A

# IEEE RFID 2015 Program Brief – Thursday, April 16 (Morning)

7:30 - 8:30	<b>MORNING COFFEE</b>	31A
8:00 - 8:30	<b>SPEAKER BRIEFING</b>	31B
8:30 – 10:00	<b>OPENING PLENARY</b>	33ABC

<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>Invited Speaker</b></p> <p><b>Poster Session Teaser Talks</b></p>	<p><b>Matt Reynolds</b>, General Chair, IEEE RFID 2015</p> <p><b>Alanson Sample</b>, Technical Program Chair, IEEE RFID 2015</p> <p><b>Bernd Schoner</b>, ThingMagic, A Division of Trimble (Best Paper Award Patron)</p> <p><b>Fred Tubb</b>, President and CEO, iControl</p> <p><b>Stewart Thomas</b>, Poster Session Chair, and Poster authors</p>
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10:00 - 10:30	<b>BREAK</b>	31A
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## 10:30 – 12:00 TECHNICAL SESSIONS

<p>Session 1A</p> <p><b>Protocols &amp; Security (Part I)</b></p> <p><b>An Improved Dynamic Framed Slotted ALOHA Anti-collision Algorithm based on Estimation Method for RFID Systems</b> Ying Yu, Yifan Chen Hunan University (CN)</p> <p><b>Coding for Tag Collision Recovery</b> Hessam MahdaviFar, Alexander Vardy University of California, San Diego (US)</p> <p><b>Forward Error Correction in Passive UHF Gen2 Communications</b> Charlie Albright, Spencer Kaiser, Luke Oglesbee, Daniel W. Engels Southern Methodist University (US)</p> <p><b>Novel Notch Modulation Algorithm for Enhancing the Chipless RFID Tags Coding Capacity</b> Ahmed Elawamry, Maher Khaliel, Abdelfattah Fawky, Mohamed El-Hadidy, Thomas Kaiser Universität Duisburg-Essen (DE)</p> <p><b>Session Chair:</b> Peter J. Hawrylak, University of Tulsa (US)</p>	<p>31B</p>	<p>Session 1B</p> <p><b>Energy Harvesting and Wireless Power</b></p> <p><b>Parametric Analysis and Design Guidelines of RF-to-DC Dickson Charge Pumps for RFID Energy Harvesting</b> Blake Marshall, Marcin Morys, Gregory Durgin Georgia Institute of Technology (US)</p> <p><b>Ultra-low Power 2.4GHz RF Energy Harvesting and Storage System with -25dBm Sensitivity</b> Ken Gudan<sup>1</sup>, Jonathan J. Hull<sup>1</sup>, Joshua Ensworth<sup>2</sup>, Matthew Reynolds<sup>2</sup>, Shuai Shao<sup>1</sup> <sup>1</sup> Ricoh Innovations Inc. (US) <sup>2</sup> University of Washington (US)</p> <p><b>Wi-Fi RF Energy Harvesting for Battery-Free Wearable Radio Platforms</b> Vamsi Talla<sup>1</sup>, Stefano Pellerano<sup>2</sup>, Hongtao Xu<sup>2</sup>, Ashoke Ravi<sup>2</sup>, Yorgos Palaskas<sup>2</sup> <sup>1</sup> University of Washington (US) <sup>2</sup> Intel (US)</p> <p><b>A Novel Hybrid Powered RFID Sensor Tag</b> Yuchen Dong<sup>1</sup>, Asanga Wickramasinghe<sup>1</sup>, Han Xue<sup>1</sup>, Said Al-Sarawi<sup>1,2</sup>, Damith C. Ranasinghe<sup>1</sup> <sup>1</sup> The University of Adelaide (AU) <sup>2</sup> Centre for Biomedical Engineering (AU)</p> <p><b>Session Chair:</b> Joshua Smith, University of Washington (US)</p>	<p>31C</p>
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12:00 - 13:30	<b>LUNCH</b>	Exhibit Hall
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# IEEE RFID 2015 Program Brief – Thursday, April 16 (Afternoon)

13:30 – 14:45

## TECHNICAL SESSIONS

<p>Session 2A</p> <p style="text-align: right;">31B</p> <p><b>Protocols &amp; Security (Part II)</b></p> <p><b>Secret Sharing Based Unidirectional Key Distribution with Dummy Tags in Gen2v2 RFID-enabled Supply Chains</b>          Kentaroh Toyoda, Iwao Sasase          Keio University (JP)</p> <p><b>Internet of Things (IoT)</b></p> <p><b>Oliot EPCIS: New EPC Information Service and Challenges towards the Internet of Things</b>          Jaewook Byun, Daeyoung Kim          KAIST (KR)</p> <p><b>Every Smart Phone is a Backscatter Reader: Modulated Backscatter Compatibility with Bluetooth 4.0 Low Energy (BLE) Devices</b>          Joshua Ensworth, Matthew Reynolds          University of Washington (US)</p> <p><b>Session Chair:</b> Gisele Bennett, Georgia Tech (US)</p>	<p>Session 2B</p> <p style="text-align: right;">31C</p> <p><b>Antennas &amp; Propagation</b></p> <p><b>UHF RFID Impedance Matching: T-Match-Dipole Design on the Highway</b>          Jingtian Xi, Hailong Zhu          Hong Kong R&amp;D Centre for Logistics and Supply Chain Management Enabling Technologies (HK)</p> <p><b>Request Efficient Channel Estimation Method for MIMO Passive RFID Systems</b>          Mohamed Fouad Khelladi, Adel Metref, Belkacem Fergani          Houari Boumediene University of Science and Technology (DZ)</p> <p><b>Novel Pseudo-Noise Coded Chipless RFID System for Clutter Removal and Tag Detection</b>          Abdelfattah Fawky, Maher Khaliel, Ahmed Elawamry, Mohamed El-Hadidy, Thomas Kaiser          Universität Duisburg-Essen (DE)</p> <p><b>Session Chair:</b> Joshua Griffin, Northwest Nazarene University (US)</p>
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14:45 - 15:00

**BREAK**

31A

15:00 - 17:00

**POSTER AND DEMO SESSION**

32AB

See Guidebook 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 Spinout!**

32AB

19:00 - 21:00

**IEEE RFID 2015 Networking Dinner**

Gaslamp BBQ  
 524 Island Avenue, San Diego

# IEEE RFID 2015 Program Brief – Friday, April 17 (Morning)

7:30 - 8:30 MORNING COFFEE 31A

8:00 - 8:30 SPEAKER BRIEFING 31B

8:30 – 10:00 PLENARY 33ABC

<p><b>Welcome</b>  <b>CRFID Update</b>  <b>Best Poster Award</b>  <b>Introduction of Keynote Speaker</b>  <b>Keynote Speaker</b></p>	<p><b>Matt Reynolds</b>, General Chair, IEEE RFID 2015  <b>Emily Sopensky</b>, Chair, IEEE Technical Committee on RFID (CRFID)  <b>Stewart Thomas</b>, Poster Session Chair  <b>Gregory Durgin</b>, General Vice Chair, IEEE RFID 2015  <b>Dina Katabi</b>, MIT</p>
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10:00 - 10:30 BREAK 31A

10:30 – 12:00 TECHNICAL SESSIONS

Session 3A	31B	Session 3B	31C
<p><b>Localization</b></p> <p><b>Amplitude and Phase Difference Estimation Bounds for Multisensor Based Tracking of RFID Tags</b>            Muhammad Bashir Akbar, David Taylor, Gregory Durgin            Georgia Institute of Technology (US)</p> <p><b>Constrained Kalman Filtering for Indoor Localization of Transport Vehicles Using Floor-Installed HF RFID Transponders</b>            Christof Röhrig, Daniel Heß, Frank Künemund            University of Applied Sciences and Arts, Dortmund (DE)</p> <p><b>Applications &amp; Software</b></p> <p><b>EraRFID: Reliable RFID Systems Using Erasure Coding</b>            Nebil Ben Mabrouk<sup>1</sup>, Paul Couderc<sup>2</sup>  <sup>1</sup> Inria Rennes Bretagne-Atlantique (FR)  <sup>2</sup> INRIA (FR)</p> <p><b>Wireless Firmware Execution Control in Computational RFID Systems</b>            Wenyu Yang<sup>1</sup>, Die Wu<sup>1,2</sup>, Muhammad Jawad Hussain<sup>1</sup>, Li Lu<sup>1</sup>  <sup>1</sup> University of Electronic Science and Technology of China (CN)  <sup>2</sup> School of Computer Science and Technology (CN)</p> <p><b>Session Chair:</b> Daniel Arnitz, University of Washington (US)</p>		<p><b>Circuits, Devices, &amp; Interrogators</b></p> <p><b>A 45 <math>\mu</math>W Bias Power, 34 dB Gain Reflection Amplifier Exploiting the Tunneling Effect for RFID Applications</b>            Francesco Amato, Christopher Peterson, Brian Degnan, Gregory Durgin            Georgia Institute of Technology (US)</p> <p><b>Self-Interference Noise Limitations of RFID readers</b>            Gregor Lasser, Christoph F Mecklenbräuker            Vienna University of Technology (AT)</p> <p><b>Quadrature Amplitude Modulated (QAM) Communication Link for Near and Mid-Range RFID Systems</b>            Jordan Besnoff<sup>1</sup>, David Ricketts<sup>2</sup>  <sup>1</sup> Duke University (US)  <sup>2</sup> North Carolina State University (US)</p> <p><b>Sensors (Part I)</b></p> <p><b>Investigating Sensor Data Retrieval Schemes for Multi-Sensor Passive RFID Tags</b>            Yang Su, Asanga Wickramasinghe, Damith C. Ranasinghe            The University of Adelaide (AU)</p> <p><b>Session Chair:</b> Matthew Reynolds, University of Washington (US)</p>	

12:00 - 13:30 LUNCH Exhibit Hall

# IEEE RFID 2015 Program Brief – Friday, April 17 (Afternoon)

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13:30 – 15:00

## TECHNICAL SESSIONS

31B

Session 4

### Sensors (Part II)

#### **WISPCam: A Battery-Free RFID Camera**

Saman Naderiparizi, Aaron N Parks, Zerina Kapetanovic, Benjamin Ransford and Joshua R. Smith  
University of Washington (US)

#### **NFC-WISP: A Sensing and Computationally Enhanced Near-Field RFID Platform**

Yi Zhao<sup>1</sup>, Joshua R. Smith<sup>1</sup>, Alanson Sample<sup>2</sup>

<sup>1</sup> University of Washington (US)

<sup>2</sup> Disney Research Pittsburgh (US)

#### **RFID Epidermal Sensor including Hydrogel Membranes for Wound Monitoring and Healing**

Cecilia Occhiuzzi<sup>1</sup>, Alessia Ajovalasit<sup>2</sup>, Maria Antonietta Sabatino<sup>2</sup>, Clelia Dispenza<sup>2</sup>, Gaetano Marrocco<sup>3</sup>

<sup>1</sup> University of Palermo & RADIO6ENSE srl (IT)

<sup>2</sup> Università degli Studi di Palermo (IT)

<sup>3</sup> University of Rome Tor Vergata (IT)

#### **Towards low-cost, wireless blood anomaly sensing: An RFID-based anemia detection sensor**

Rahul Bhattacharyya<sup>1</sup>, Christina Swanson<sup>2</sup>, Michelle Wong<sup>2</sup>, Benjamin Tien<sup>2</sup>, Emran Amin<sup>1</sup>, Isaac Ehrenberg<sup>1</sup>, Sanjay Sarma<sup>3</sup>

<sup>1</sup> Massachusetts Institute of Technology (US)

<sup>2</sup> Diagnostics for All (US)

<sup>3</sup> MIT Auto-ID Center (US)

**Session Chair:** Alanson Sample, Disney Research (US)

15:00

CONFERENCE ENDS



9TH ANNUAL IEEE INTERNATIONAL CONFERENCE ON RFID  
**IEEE RFID 2015**  
**PROGRAM AT A GLANCE**

**WED  
 APRIL 15**

Registration Hours: 7:00 - 20:00  
**Exhibit Hours: 18:30 - 20:15**

7:30	Morning Coffee	
8:00 - 8:30	Speaker Briefing	
8:30 - 10:00	<b>Tutorial 1:</b> Backscatter Communications, Techniques for Internet of Things	<b>Tutorial 2:</b> Near Field Wireless Technology
	Break	
10:15 - noon	<b>Tutorial 1:</b> Backscatter Communications, Techniques for Internet of Things	<b>Tutorial 2:</b> Near Field Wireless Technology
	Lunch	
13:00 - 14:30	<b>Workshop 1:</b> Bluetooth Low Energy & BLE Beacons for Active RFID Apps	<b>Workshop 2:</b> Energy Harvesting & Transfer - Present & Future
	Break	
14:45 - 16:30	<b>Tutorial 3:</b> Bluetooth Low Energy & BLE Beacons for Active RFID Apps	<b>Tutorial 4:</b> Energy Harvesting & Transfer - Present & Future
16:45 - 18:30	RFID Journal LIVE! Keynote Session	
18:30 - 20:15	RFID Journal LIVE! Opening Reception (Exhibit Hall)	
20:30	IEEE RFID 2015 Reception	

**THURS  
 APRIL 16**

Registration Hours: 7:30 - 17:00  
**Exhibit Hours: 10:45 - 17:30**

7:30	Morning Coffee	
8:00 - 8:30	Speaker Briefing	
8:30 - 10:00	Opening Plenary	
	Break	
10:30 - 12:00	Technical Papers	Technical Papers
	Lunch (Exhibit Hall)	
13:30 - 14:45	Technical Papers	Technical Papers
	Break	
15:00 - 17:00	Poster & Demo Session	
17:00 - 18:30	Student Competition	
19:00 - 21:00	IEEE RFID 2015 Networking Dinner	

**FRI  
 APRIL 17**

Registration Hours: 7:30 - 15:00  
**Exhibit Hours: 10:30 - 15:00**

7:30	Morning Coffee	
8:00 - 8:30	Speaker Briefing	
8:30 - 10:00	Plenary	
	Break	
10:30 - 12:00	Technical Papers	Technical Papers
	Lunch (Exhibit Hall)	
13:30 - 15:00	Technical Papers	

**PROGRAM KEY:**

IEEE RFID 2015 Tutorial/Workshop Day
IEEE RFID 2015 Technical Conference
IEEE RFID 2015 Social Events
RFID Journal LIVE! 2015 Activities Open to IEEE Attendees

All-Access Pass holders are welcome to attend programming content for IEEE RFID 2015 (tickets must be purchased separately for Networking Dinner and Tutorial/Workshop Day).

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Gold Patron



Best Paper Award Patron



Gold Patron



Gold Patron



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