

2013 RFIC Symposium

Seattle, Washington, 2–4 June 2013

Jacques C. Rudell, Lawrence Kushner,
and Bertan Bakkaloglu

Welcome to the 2013 IEEE Radio Frequency Integrated Circuits (RFIC) Symposium, which will take place in Seattle, Washington, on 2–4 June 2013. Our Symposium is held in conjunction with the IEEE Microwave Theory and Technology Society's (MTT-S's) International Microwave Symposium (IMS) and opens Microwave Week 2013, the largest worldwide RF/microwave meeting of the year, with three days focused exclusively on RFIC technology and innovation (See Table 1).

As in past years, the focus of the 2013 RFIC Symposium will be on emerging technologies and applications of RFIC. This year, several forums will feature multiband reconfigurable, software-defined and cognitive radios, and the use of systems-on-chip (SOCs) for realizing high-data-rate, urban environment, and RF solutions for smartphone and notebook applications. The continued exploitation of frequencies above 60 Hz in the realization of silicon milli-

meter wave circuits and systems will be presented throughout the conference. Lastly, the emergence of RF for biomed-

the hottest topics in our community, including high-efficiency supply modulated power amplifiers (PAs) and signal generation at THz frequencies. This year, a special full-day interactive Doherty tutorial workshop will be offered that will include lab exercises where attendees will simulate [using Advanced System Design (ADS)] designs and practice circuit concepts covered in lectures, culminating in a complete high power Doherty amplifier circuit design. One

of the workshops, "Interference Robust Radio Receiver Techniques," focuses on the performance needs of modern integrated radios in an increasingly crowded spectrum. More advanced topics include software-defined radio (SDR) transmitters, the influence of MEMS on RF architectures, RF-assisted medicine, self-healing circuits and compensation, near field communication, and voltage-controlled oscillator (VCO) design in modern silicon processes. Other workshops will focus on the design of inductorless front ends and how to push the RF performance limits in modern CMOS technologies.

The Plenary Session will be held on Sunday evening with keynote addresses given by two renowned industry leaders from the Pacific Northwest. They will share their insight on the direction of and challenges faced by the RFIC design community.



The Seattle skyline.

ical applications and the reintroduction of wireline transceivers for high-speed I/O to our conference reflect some of the exciting developments in the radio IC community. As in previous years, the latest advances in RFIC design, from the device to the system level, will be covered in various forums including workshops, panel sessions, and two exciting days of regular technical paper presentations.

The 2013 RFIC Symposium will open in grand style on Sunday, 2 June, with a full lineup of 13 half and full-day workshops covering a wide array of topics with presentations from experts in their respective fields. The workshops will have a combination of tutorial and advanced presentations on some of

Jacques C. Rudell (jcrudell@u.washington.edu) is the RFIC 2013 general chair. Lawrence Kushner and Bertan Bakkaloglu are the RFIC 2013 Technical Program Committee chairs.

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Radio Wireless Week

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First Call For Papers

**Paper Deadline
22 July, 2013**

The 2014 IEEE Radio and Wireless Symposium (RWS2014) will be held during the week of January 19, 2014 in Newport Beach, CA, USA. We will continue with the demo track that provides an interactive forum for hands-on demonstration of latest wireless experiments and innovations. As with previous years, RWS2014 and SiRF2014 will continue to hold joint sessions. Three topical conferences held in parallel provide more focused sessions in the areas of RF Power Amplifiers (PAWR2014), Biomedical Wireless Technologies and Sensing Systems (BioWireless2014), and Wireless Sensors and Sensor Networks (WiSNet2014). A short call for papers is on the next page for each of these conferences. More information is available through RWW2014 website at <http://www.radiowirelessweek.org/>.

For RWS2014, papers featuring innovative work are solicited in (but not limited to) the following areas:

- 1. High-speed and Broadband Wireless Technologies**
 - Broadband Fixed Wireless Techniques and Last-Mile Access Techniques
 - Ultra-High Data Rate Communications Links
 - Powerline Communication Technologies
 - 3G/4G Wireless Communication Services
 - Ultra-Wideband (UWB) Systems
 - Optical Networks and Systems
- 2. Emerging Wireless Technologies and Applications**
 - M2M Technologies & Applications
 - Resource Management, Security
 - Femtocell and Heterogeneous Networks
 - Multicasting and Broadcasting
 - Satellite Network Systems
 - Green, Sustainable Wireless Tech. & Networks
 - Advances in LANs, PANs, BANs, MANs, RANs
- 3. Wireless System Architecture and Modeling**
 - Ad Hoc Network Techniques for Anytime, Anywhere Internetworking
 - Distributed Network Architectures
 - Cellular Architectures and Systems
 - Wireless Mesh and Broadband Local/Personal/ Body Area Networks
 - Wireless Security and RFID Technologies
- 4. Propagation/Channel Modeling and Utilization**
 - Propagation/Channel Characterization & Modeling
 - Fading Countermeasures
 - Spectrum Sensing Technologies
 - Frequency and Channel Allocation Algorithms
- 5. Digital Signal Processing as Applied to Wireless**
 - Digital/Analog Adaptive/Collaborative Signal Processing
 - Methods for Maintaining Signal Integrity and Signal Conditioning
 - Interference mitigation and Cancellation Techniques
- 6. Software Defined Radio and Cognitive Radio Technologies**
 - Software/Hardware architectures, Algorithms
 - MAC, Networking protocols, Regulatory Policies, Standardization
 - Dynamic Spectrum Sharing, Coexistence, Interoperability
- 7. MIMO and Multi-Antenna Communications**
 - MIMO, MU-MIMO, Space-Time Processing
 - Relaying Technology
 - Cooperative/Collaborative Technology
 - Multi-Beam Smart Antennas
- 8. Antenna Technologies**
 - Passive & Active Antennas from RF to THz Frequencies
 - Miniaturized, Multi-frequency and Broadband Antennas
 - Reconfigurable, Beam-forming and Phased Array antennas
 - Wireless Platform Integrated Antennas
 - Vehicular and Satellite Antennas
- 9. Transceiver & Front-end Technologies, SOC & SiP**
 - Receiver, Transmitter and Transceiver Components
 - Active Circuits and Sub-systems
 - Multi-Standard Circuits and Sub-systems
 - Low-Power/Low Noise RF/Analog IC and System-On-Chip Solutions
 - Highly Integrated Transceivers for Sensing and Imaging
 - Reconfigurable Architectures
- 10. Passive Components & Packaging**
 - Discrete, Embedded and Distributed Passive components
 - Filters, Couplers and Signal Separation Devices
 - Discrete and Highly Integrated Packaging
 - 3D-packaging, Interconnects, TSV Technologies and Applications
 - Packaging of MEMs, Biosensors, Organic ICs, THz Electronics, Optoelectronics
 - Reliability Issues

Paper submission instructions will be found at <http://www.radiowirelessweek.org/>. Submissions should be formatted according to the submission guide within a maximum of three pages (including all figures and references). Only electronic submissions in PDF format will be accepted for review. Authors should indicate their preference for oral or poster presentation.

All submissions must be received by **July 22, 2013**.

All accepted papers will be published in a digest and be included in IEEE Xplore. Submissions will be evaluated based on novelty, significance of the work, technical content, interest to the audience, and presentation.

TABLE 1. 2013 RFIC Symposium at a glance.

Time	Saturday, 1 June	Sunday, 2 June			Monday, 3 June			Tuesday, 4 June		
7 a.m.										
8 a.m.		Breakfast 7–8 a.m.			Breakfast 7–8 a.m.			Breakfast 7–8 a.m.		
9 a.m.										
10 a.m.										
11 a.m.										
Noon			Workshops and Tutorials 8 a.m.– 5 p.m.			RFIC Technical Session 8 a.m.– 5:20 p.m.	Panel Session Noon– 1:15 p.m.		RFIC Technical Session 8 a.m.– Noon	
1 p.m.										Panel Session Noon– 1:15 p.m.
2 p.m.										
3 p.m.										
4 p.m.	Registration 2–6 p.m.									
5 p.m.										
6 p.m.				Plenary 6–7 p.m.						
7 p.m.				RFIC Reception 7:30– 9:30 p.m.						
8 p.m.										
	Registration	Breakfast	Technical	Social	Panel	Interactive Forum				

The first speaker, Neville Ray, CTO of T-Mobile, will discuss some of the exciting system developments from the cellular carrier perspective. The second speaker, Barrie Gilbert, will share his insight on the history of RF and wireless transceivers and present his vision of the future of RFIC design in his talk, "Microwave Technology: The First Century." During the plenary session, students with outstanding contributions to the conference

will be recognized with the three best paper awards. Immediately following

The RFIC technical subcommittees were further reorganized this year to align with the dynamic trends in industry and academia.

the Plenary Session, conference attendees can gather at the RFIC reception, which will provide a relaxing time to mingle with old friends and catch up on the latest news.

The RFIC technical subcommittees were further reorganized this year to align with the dynamic trends in industry and academia. Technical papers will be presented during oral sessions on Monday and Tuesday morning, followed by an interactive

A panel of leading academics and industrialists will explore the shared needs and differences between the university and corporate world, as well as discuss improved interactive models to better serve both industry and academics.

poster forum in the afternoon. This session features papers presented in poster format, giving attendees a chance to speak directly with the authors regarding their work.

On both Monday and Tuesday, the conference will feature lunch-time panel sessions that traditionally draw lively debates among the panelists and stimulating interaction with the attendees. The Monday panel session, "Wi-Fi Versus Cellular, Future Convergence, or Utter Divergence," will debate how much future high speed data will be shared between Wi-Fi and cellular networks and the implication on IC design. The Tuesday panel session, "Universities Are from Venus, Industry Is from Mars," will explore the diverging aspects of university-industry research, resource, and educational needs. A panel of leading academics and industrialists will explore the shared needs and differences between the university and corporate world, as well as discuss improved interactive models to better serve both industry and academics.

Seattle is one of the most beautiful cities in North America, with countless activities both within the city and the immediate surrounding area. The conference will be held at the Washington State Convention Center in downtown Seattle, just a few minutes walk from several local attractions. Conference attendees can enjoy

a cup of coffee at the original Starbucks, watch flying fish at the world-renowned Pike Place Market, or take a ride to the top of the city's iconic Space Needle. For outdoor enthusiasts, several spectacular hiking trails can be found within an hour drive of the downtown area.

On behalf of the RFIC Steering Committee, we would like to extend to all of you a warm welcome to attend this year's 2013 RFIC Symposium. We are looking forward to an exciting program and asking all of you to "come as you are," this June in Seattle!



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