

# **30th Annual Review of Progress in Applied Computational Electromagnetics 2014**

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# ACES 2014 Technical Program

## The 30th Annual Review of Progress in Applied Computational Electromagnetics Jacksonville, Florida

### Sunday, March 23

- 02:00-05:00 Conference Registration
- 02:00-05:00 ACES Board of Directors Meeting
- 07:00-10:00 Reception

### Monday, March 24

- 07:00-08:00 Breakfast
- 08:00-05:00 Conference Registration
- 08:30-05:00 Exhibitors Setup **River Terrace Foyer**
- Room:** **River Terrace 1**
- 08:30-08:45 **ACES Business Meeting**  
**Atef Elsherbeni, ACES President**
- 08:45-09:00 **Welcome Message**  
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**Conference General Chairs**
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Department of Electrical and Computer Engineering  
Clemson University
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**Session Organizers:** **Adalbert Beyer and Ruediger Follmann**

**Session Chairs:** **Adalbert Beyer and Ruediger Follmann**

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**Room: River Terrace 1**

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**08:00-05:00 Exhibits Open**

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**Session Organizers: Vijay Devabhaktuni and Benjamin Braaten**

**Session Chairs: Vijay Devabhaktuni and Benjamin Braaten**

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**Session Organizers:** **Hakan Bagci and Kristof Cools**

**Session Chairs:** **Hakan Bagci and Kristof Cools**

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**Session Organizers:** **Yasushi Kanai and James B. Cole**

**Session Chairs:** **Yasushi Kanai and James B. Cole**

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**Room: River Terrace 1**

**Session 17**

08:00-09:00 **Developments in the UTD Ray Method for Solving EM Wave Problems – Past and Present**

**Prof. Prabhakar Pathak**

Department of Electrical and Computer Engineering  
Ohio State University

**Room: River Terrace 1**

**Session 18**

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**Prof. Andrew F. Peterson**

School of Electrical and Computer Engineering  
Georgia Institute of Technology

**Room: River Terrace 1**

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**Session Organizers: Zheng Peng and Lijun Jiang**

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- 03:20-03:40 “A Stream Function Approach for Computing the Magnetic Polarizability of Thin Conductors” ..... 605  
Jonathan E. Gabbay and Waymond R. Scott, Jr.

**Room:** **River Terrace 2**

**Session 20**

**10:20-03:40 Student Projects in Sonnet**

**Session Organizer: Serhend Arvas**

**Session Chairs: Serhend Arvas and Luke Murphy**

- 10:20-10:40 “Multiple E-Shaped Rectangular Microstrip Patch Antenna” ..... 611  
Taha İmeci, Ayşenur Eser, and Elest Gun
- 10:40-11:00 “A Microstrip Ring Antenna Design Operating at the End-Fire Mode” ..... 617  
Taha İmeci, Ali Aydın, and Talha Temiz
- 11:00-11:20 “Two Microstrip Patch Antenna Designs Exhibiting Tri-Resonance with Enhanced Gain” ..... 623  
Shah M. T. Rahman, Canberk Unlu, Taha İmeci, Fatma Zengin, and Erkul Başaran
- 11:20-11:40 “Design and Implementation of a Microstrip Low Noise Amplifier in the UHF Band” ..... 629  
Taha İmeci, Ismail Şişman, Shah Rahman, and Ertuğrul Karacuha

- 11:40-12:00 “3 dB Branchline Coupler” ..... 635  
Kerem Kaya, Recep Aycı, Osman Selçuk, and Taha İmeci
- 12:00-01:00 Lunch
- 01:00-01:20 “Undergraduate Student Antenna Design Projects Using Sonnet” ..... 641  
Veysel Demir, Edvin Blanco, Amanda Emrich, Joshua Goll, Eric Gong, Ahmad Halawa, Jed Hall, Andrew Moser, and Ji Hyun Seo
- 01:20-01:40 “Low VSWR Amplifier Design” ..... 646  
Omar Eldaiki, Mohammad Abdallah, David McKenney, and Ercument Arvas
- 01:40-02:00 “Design of Low Noise Amplifiers with Low Return Loss” ..... 652  
Kepei Sun, He Yan, Heng Chen, Luke Murphy, and Ercument Arvas
- 02:00-02:20 “A Wide-Band Microstrip Filter” ..... 658  
Muharrem Gülmez, Harun Caliskan, Taha İmeci, and Canberk Unlu
- 02:20-02:40 “Microwave Transistor Amplifier Design Procedure” ..... 664  
Mehmet Onur Kok, Blaine J. Martinez, Vivek Sanandiya, and Ercument Arvas
- 02:40-03:00 “Sonnet™ Design and Verification of a Wideband Schiffman Phase Shifter Using Edge-Coupled Microstrip Lines” ..... 669  
Sravya Ginne and Claudio Montiel
- 03:00-03:20 Break
- 03:20-03:40 “Design of Low Noise Amplifier at 2GHz” ..... 675  
Fatih Kaburcuk, Mehmet Onur Kok, and Ercument Arvas
- Room: River Terrace 3** **Session 21**
- 10:20-11:40 CEM for Optics, Photonics and Bio-Electromagnetics**  
**Session Organizers: Adam P. Mock and Jeyali Laseetha**  
**Session Chairs: Adam P. Mock and Jeyali Laseetha**
- 10:20-10:40 “Simulation-Driven Optimization Approach for Fast Design of Integrated Photonic Components” ..... 679  
Slawomir Koziel and Stanislav Ogurtsov
- 10:40-11:00 “Efficient Modeling of Photonic Crystal Fibers and Surface Plasmon Waveguides Using Cylindrical Coordinates FDTD” ..... 685  
Adam Mock
- 11:00-11:20 “FEM Modeling and Experimental Study of Temperature Increase in Brain Tissue due to RF exposure” ..... 691  
A. Yasin Citkaya, Osman Cerezci, Zerrin S. Citkaya, and S. Selim Seker
- 11:20-11:40 “Determination of the Electromagnetic Pollution in a District and Recommendations to Decrease Exposure Levels” ..... 697  
Osman Cerezci, A. Yasin Citkaya, S. Selim Seker, and Zerrin S. Citkaya

**Room:** **River Terrace 3** **Session 22**  
**01:00-01:40** **Modern Optimization Techniques for Antennas and Microwave Components**  
**Session Organizers:** **Alessandro Fanti and Giorgio Montisci**  
**Session Chairs:** **Alessandro Fanti and Weijiang Zhao**

01:00-01:20 “AMC Synthesis for Wearable Applications Using Evolutionary Programming” ..... 703  
Luisa Deias, Alessandro Fanti, Giorgio Montisci, and Giuseppe Mazzarella

01:20-01:40 “Band Optimization of Ridge Waveguides Using PSO” ..... 708  
Marco Simone, Alessandro Fanti, Giuseppe Mazzarella, and Giorgio Montisci

**Room:** **River Terrace 3** **Session 23**  
**03:00-04:40** **Microphone Arrays, Sonar Arrays, Directional Radio Antenna Arrays, Radar Arrays and Other Sensor Arrays**  
**Session Organizers:** **Sunday Cookey Ekpo, Bamidele Adebisi and Andrew Wells**  
**Session Chairs:** **Sunday Cookey Ekpo and Bamidele Adebisi**

03:20-03:40 “On the equivalent circuits of Biomimetic Antenna Array” ..... 714  
Abdul Maalik, Glauco Fontgalland, and John L. Volakis

03:40-04:00 “Gain Enhancement of Acoustic Beamforming Arrays in Complex Dynamic Systems” ..... 720  
Sunday Cookey Ekpo, Bamidele Adebisi, Angham Sabagh, and Andrew wells

04:00-04:20 “Acoustic Noise Characterisation in Dynamic Systems using an Embedded Measurement Platform” ..... 726  
Bamidele Adebisi, Sunday Cookey Ekpo, Angham Sabagh, and Andrew Wells

04:20-04:40 “Systematic Design of Broadband Conformal Electrically-Small Biomimetic Antenna Array” ..... 732  
Abdul Maalik, Glauco Fontgalland, and John L. Volakis