

# THE BEEET



**IEEE**

**Bulletin of the IEEE Tucson Section**

*February 2009  
Volume 9, Issue 1*

**Joint Chapter Meeting:**

## **Miniaturization of Ultra-wideband Antennas**

Friday March 6, 2009, 6PM

ECE530 ECE Bldg, University of Arizona

**Dr Zhi Ning Chen** - IEEE Fellow and Antennas and Propagation Distinguished Lecturer, Institute for Infocomm Research, Singapore

This talk briefly introduces design challenges of ultra-wideband (UWB) antennas. Special design considerations are presented from a systems point of view, followed by some state-of-the-art solutions. Then, the miniaturization technology of UWB antennas is addressed. The planar designs are highlighted due to their unique merits and wide adoption in applications. First, the ground plane dependence of the antenna performance in small antenna design is addressed. Using a newly developed technique, the dependence of small antenna performance on system ground plane is alleviated. Based on this concept, the antenna is designed to fit the size of wireless USB dongle. Furthermore, an innovative compact diversity UWB antenna shows the advantage of ground-independence small antenna in diversity applications. Last, a UWB antenna integrated with bandpass filter is proposed to reduce the overall size of devices by using the concept of co-design. In the end of the talk, the trend of UWB antenna R&D is offered according to application and market demands.

**Dr. Zhi Ning Chen** received his BEng, MEng, PhD, and DoE (2003) degrees in Electrical Engineering from Institute of Communications Engineering, China and University of Tsukuba, Japan, respectively. From 1988-1995, he worked as Lecturer, Postdoctoral Fellow and later Associate Professor at Institute of Communications Engineering and Southeast University, China. From 1995-1997, he joined in City University of Hong Kong, China as Research Assistant, later Research Fellow. In 1997, he conducted his research at University of Tsukuba, Japan as JSPS Fellow. In 2001 and 2004, he visited University of Tsukuba under JSPS Fellowship Program.

### **INSIDE THIS ISSUE**

Message from the Section Chair .....	2
Student Paper Competition.....	2
IEEE Conferences in Arizona.....	3
Engineers Week and Mall Day.....	3
We Need to Hear from You! .....	4

In 2004, he worked at IBM Watson Research Center, USA as Academic Visitor. Since 1999, he has worked with Institute for Infocomm Research as Member of Technical Staff (MTS) and later Principal MTS and is currently Principal Scientist and Head for RF & Optical Department. He is concurrently holding guest professorships at Southeast University, Nanjing University, Shanghai Jiao Tong University, and National University of Singapore. He has also been Technical Advisor of Complex Systems since 2006.

Dr Chen has organized many international events as general and, technical program committee chairs. He founded IEEE International Workshop on Antenna Technology (IWAT) in 2005. He has delivered invited talks, keynote speeches and short courses at conferences, and serves several international journals as Editor, Associate Editor, Guest Editor, and Reviewer.

Dr Chen has published more than 220 journal and conference papers and authored and edited the books "Broadband Planar Antennas", "UWB Wireless Communication", "Antennas for Portable Devices" and "Antennas for Fixed Base-stations in Wireless Communications" (to be published in 2009). He also contributed to the books of "UWB Antennas and Propagation for Communications, Radar, and Imaging" and "Antenna Engineering Handbook". He is the co-/inventor of more than 20 granted and filed patents. Several of his antenna designs have been licensed to industry for production. His current research interest includes applied electromagnetics, antennas, and bio-electromagnetics.

Dr. Chen is a Fellow of the IEEE.

## Message From the Section Chair

By Joe Wu

I'd like to invite everyone in the Tucson Section to participate in IEEE. In the last year, we've conducted activities for schools, the University of Arizona, the community, and for you, the membership. These activities are a great way to get involved in IEEE and show the impact of engineers in our community.

Before the end of the year, we'll have a few meetings, holding a student paper contest at the U of A, electing new officers, starting our preparations for next year's Engineers Week, and organizing additional meetings. All of this is done on a volunteer basis.

We have a great core of volunteers but we could always use your help. I'm asking people to get involved. With more people, the Tucson Section could do so much more for the membership and this community.

If you're interested in helping out or becoming an officer, contact us through the following website:

<http://www.ieee.org/tucson>

## Student Paper Competition

The IEEE student paper competition offers undergraduate student members the opportunity to exercise and improve both written and verbal communication skills. Engineers will be constantly called upon to communicate ideas to others throughout their careers. Researching, writing, and presenting a paper provides students with invaluable early experience in expressing ideas related to engineering.

IEEE Tucson section is offering first, second, and third place prizes to the best original student papers.

FIRST PRIZE: \$300

SECOND PRIZE: \$150

THIRD PRIZE: \$75

Submissions consist of two parts: a type-written paper on any engineering subject (due March 22<sup>nd</sup>, 2009) and an oral presentation of that paper on March 28<sup>th</sup>, 2009. The written paper must be type-written, double-spaced, 12-point font, and no longer than 15 pages maximum. It must also meet the IEEE student paper guidelines outlined

(at the website below). You can also get a copy of the guidelines by requesting them from Brenda Huettner ([bphuettner@ieee.org](mailto:bphuettner@ieee.org)).

Papers must be submitted in either PDF or Microsoft Word format, and be submitted by email to [bphuettner@ieee.org](mailto:bphuettner@ieee.org) no later than March 22<sup>nd</sup>, 2009.

All oral presentations will be 15 minutes long plus a 5-minute question and answer period, and must be presented in person on March 28<sup>th</sup>, 2009. A computer will be provided for the contestants to use, since PowerPoint slides are the recommended approach.

The paper that wins first place in the local competition will automatically be submitted to the Southwest Area competition, which offers additional cash prizes. The winning entrant must be available to present their paper at that event in San Diego, California, on Saturday, April 25<sup>th</sup>, 2009.

### *Student Paper Competition Deadlines:*

*Papers due 3/22/09; Oral Presentations on 3/28/09*

*Guidelines available at <http://www.ewh.ieee.org/reg/6/MemberStudentActivities>*

## IEEE Events...

### ...In the Phoenix Area

The 2009 ICME International Conference on Complex Medical Engineering - CME 2009 will be held in Tempe, Apr 9 -11, 2009 at the Fiesta Inn Resort. This conference is co-sponsored by the IEEE Engineering in Medicine and Biology Society - EMB. For more information check the website at:  
<http://frontier.eng.kagawa-u.ac.jp/CME2009/>

The 2009 IEEE International Symposium on Technology and Society (ISTAS) will be held in Tempe May 18 - 20, 2009, at the Tempe Mission Palms Hotel. For more information check the website at:

[http://www.ieeessit.org/conferences\\_sub.asp?Level2ItemID=12&Level3ItemID=68](http://www.ieeessit.org/conferences_sub.asp?Level2ItemID=12&Level3ItemID=68)

### Keep Up with the Tucson Section: Join our email list!

The Tucson Section email list delivers the latest IEEE Tucson news right to your email box. To join, simply send an email to

*[listserv@listserv.ieee.org](mailto:listserv@listserv.ieee.org)*

Put the following in the body of the message:

*[subscribe TUCSON-SECTION-ALL yourfirstname yourlastname](#)*

You'll receive an email with instructions for confirming your new subscription.

## Engineers Week and Mall Day

National Engineers Week ([www.eweek.org](http://www.eweek.org)) was held February 15th through 21st this year. A coalition of engineering organizations including IEEE-USA gathers every year to reach out to current and future generations of engineering talent. One way we do this is through Mall Day at the Foothills Mall.

Our IEEE section along with lots of other engineering groups from around town joined together to promote engineering to anyone who walked by. There were activities for the kids, demonstrations, and plenty of informational brochures.

We answered questions about engineering and the IEEE, and showed off our Jacob's Ladder and other cool gadgetry. Sound like fun? Join us next year!



Tucson Section, Institute of  
Electrical and Electronics Engineers  
2626 E Malvern St.  
Tucson, AZ 85716

Section Chair: Joseph Wu (joewu@ieee.org)

Joint AP/MTT/Com/EMC Chapter Chair:  
Hao Xin (hxin@ecu.arizona.edu)  
Newsletter Editor: Brenda Huettner  
(bphuettner@ieee.org)  
Student Chapter Chair: Joey Sankman  
(jsankman@email.arizona.edu)

To report address changes:  
address-changes@ieee.org  
Other record changes (typographical errors)  
record-changes@ieee.org  
Other membership issues including subscriptions  
member-services@ieee.org  
General IEEE Information  
1-800-678-IEEE(4333)

## We need to hear from you!

How can we make IEEE a better organization? We can only do it with your help. As a volunteer organization, IEEE depends on your participation to accomplish all of our goals.

As you can see from this newsletter, there are lots of activities where you can actively contribute. Are you good at organization? Volunteer to head one of our Chapters or to help organize our general meetings. Want to show off or improve your internet skills? Volunteer to help with our Web site. Interested in promoting our field to the next generation of engineers? Help with Engineers Week, or as a judge for any of our student competitions.

Even if you only have a little bit of time, there's sure to be an IEEE opportunity that will interest you. Even if you have no free time at all, but have ideas for meetings or activities that promote engineering and the IEEE, let us know! We'd like to hear from you. Please contact Joseph Wu at joewu@ieee.org or at 325-4781.

*We're on the Web!*

*Visit us at:*

<http://www.ieee.org/tucson>

IEEE Tucson Section  
2626 E Malvern St.  
Tucson, AZ 85716

Joint Chapter Meeting  
Friday March 6, 2009, 6PM  
ECE530 ECE Bldg, University of Arizona

Miniaturization of Ultra-wideband Antennas

Dr Zhi Ning Chen - IEEE Fellow and Antennas  
and Propagation Distinguished Lecturer,  
Institute for Infocomm Research, Singapore

PRESORTED  
STANDARD  
US POSTAGE PAID  
TUCSON AZ  
PERMIT NO 140