Wireless personal Communications

June 5-7, 2002

Virginia Polytechnic Institute & State University
Donaldson Brown Hotel and Conference Center • Blacksburg, Virginia

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Mobile and Portable Radio Research Group

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Symposium Highlights

On June 5-7, MPRG will host our Twelfth Annual Symposium on Wireless Personal Communications. Researchers and business leaders from around the world will gather on the Virginia Tech campus to share their latest research, theories, and techniques in wireless communications.

Technical papers will be presented in the areas of wireless networks, antennas and systems, and signal processing for wireless communications. An expanded poster session including academic and industrial presentations will allow one-on-one technical discussions of recent advances in the field of wireless.

Kluwer and Prentice Hall book publishers will also be on hand with a series of wireless communications books for sale, including Dr. Jeffrey Reed’s latest book *Software Radios: A Modern Approach to Radio Engineering* to be published in May.

Due to popular demand, the schedule will include a full-day and a half-day tutorial on Wednesday, June 5. MPRG’s own Dr. Jeffrey Reed, will lead the full-day tutorial on “Critical Choices for Designing Software Radios.” This session will address the issues involved in the design of software radios that provide integrated global communication for 3G and other future communication networks. The short course will focus on the Software Communications Architecture (SCA) and the significance of a software defined network on the design of software radios. The afternoon half-day session “Radio Resource Management for 3G Systems,” will be led by Dr. Michael Buehrer. This tutorial will review radio resource management strategies for CDMA systems, particularly strategies for emerging 3G systems which must accommodate various quality-of-service requirements. These requirements include heterogeneous error rate and delay requirements due to applications as diverse as voice to web traffic. Included in this tutorial will be both a general introduction into the problem of radio resource management as well as a few relevant case studies. A sampling of the topics covered will include power and rate control, hard and soft hand-off, admission control, bandwidth reservation, and load control. An outline of the tutorials will be posted to the MPRG web site at [www.mprg.org/2002symposium/2002symposium.shtml](http://www.mprg.org/2002symposium/2002symposium.shtml). Both tutorials promise to be interesting and informative and we urge you to register early, as space will be limited. Those registering only for the short courses will not receive the conference record or be allowed to participate in other symposium activities. A morning and afternoon refreshment break will be provided, but short course attendees will be on their own for lunch.

Wednesday evening will be a time of relaxing and socializing with colleagues and friends during the gourmet reception. Thursday morning will kick off the technical presentations and poster sessions which will conclude early on Friday afternoon. As always, we look forward to the symposium party on Thursday evening. After the conclusion of the technical sessions on Friday, MPRG will host an informal laboratory Open House. So make plans to stay and tour the MPRG labs and visit with the faculty, staff, and students. Our students will be looking forward to sharing their research with you and the faculty and staff will be delighted to meet each of you personally.

The full registration fee for the symposium will include the short courses, a reception on Wednesday evening, all technical sessions, a party on Thursday evening, breakfast and lunch on Thursday and Friday, and a bound conference record of all papers and posters presented at the symposium.

Make your reservations early to be a part of this year’s symposium. We look forward to hosting you at Virginia Tech this June!

Location and Lodging

The symposium will be held on the campus of Virginia Tech at the Donaldson Brown Hotel and Conference Center. Blacksburg is southwest of Roanoke, Virginia, on U.S. 460. Route 460 is reached by Interstate 81, Exit 118B (U.S. 460W, VA Tech) at Christiansburg, Virginia. Follow 460 West for approximately 8 miles to the Prices Fork-Downtown Exit. Stay on Prices Fork until it intersects Main Street. Turn right onto Main Street, and then turn right at the second light onto College Avenue. The Center is located in Downtown Blacksburg two blocks off Main Street at the corner of College Avenue and Otey Street. Convenient guest parking is available for conference participants. A shuttle bus will be available to provide transportation between the Donaldson Brown Hotel and Conference Center and local hotels.

A block of discounted lodging rooms is being held at the Donaldson Brown Hotel and Conference Center for your convenience. To make reservations, please call the Donaldson Brown Hotel toll-free at 577-800-3360 or fax to (540) 231-3746. Be sure to mention the name of the symposium when making your reservations. Lodging reservations for the Donaldson Brown Hotel must be made by May 6, 2002. Lodging accommodations may be acquired at other local hotels including: BEST WESTERN RED LION INN, (540) 552-7770; FOUR POINTS SHERATON, (540) 552-7001; and AMERISUITES, (540) 552-5636. However, lodging discounts will only be applicable at the conference center.
Program Schedule

Wednesday, June 5, 2002

7:30 AM - 2:00 PM  Registration

8:30 AM - 4:00 PM  Tutorial - "Critical Choices for Designing Software Radios"
Instructors: Dr. Jeffrey H. Reed and Dr. Kathyayani Srikanteswara, MPRG

1:30 - 4:00 PM  Tutorial - "Radio Resource Management for 3G Systems"
Instructor: Dr. R. Michael Buehrer, MPRG

6:00 - 9:00 PM  Reception

Thursday, June 6, 2002

7:00 - 8:00 AM  Breakfast Buffet in Commonwealth Dining Room

7:00 - 9:00 AM  Registration

8:30 AM  Introduction and Welcome: Donaldson Brown Auditorium
Dr. William H. Tranter, Director, MPRG

SESSION I – WIRELESS NETWORKS
Session Chair: Dr. Michael Buehrer

8:40 - 9:00 AM  Military Applications of Wireless LANs
Davraz Yavuz, NETHERLANDS

9:00 - 9:20 AM  Physical Layer Performance of the IEEE 802.11b WLAN Standard
in Outdoor Applications
Jack L. Burbank, Robert A. Nichols, William T. Kasch, and Julia Andrusenko, USA

9:20 - 9:40 AM  High-Performance IEEE.802.11b WLAN With Quadruple Throughput Via
Carrier Interferometry Chip-Shaping
Zhiquiang Wu, David A. Wiegandt, and Carl R. Nassar, USA

9:40 - 11:00 AM  Refreshment Break/Poster Session/Exhibits

11:00 - 11:20 AM  System Capacity with Transmit Diversity Techniques in 5 GHz Wireless LAN’s
Mikael Gidlund, SWEDEN

11:20 - 11:40 AM  Double Mobility Mitigates Fading in Ad hoc Wireless Networks
Raymond Wang and Donald C. Cox, USA

11:40 AM - 12:00 PM  Performance Analysis of Web Protocols in Mobile Satellite Systems
Jamal Hjeres Alsuwaidi and Samy A. Mahmoud, CANADA

12:00 - 1:30 PM  Lunch in Commonwealth Dining Room
Speaker: TBA

SESSION II – ANTENNAS & SYSTEMS
Session Chair: Dr. Annamalai Annamalai

1:30 - 1:50 PM  Real-Time Implementation of Smart Antenna Techniques
Todd W. Nuteson, Gregory S. Mitchell, Roanld F. Smith, James S. Clark IV,
Dewan S. Haque, and Michael W. Tompkins, USA
1:50-2:10 PM  Channel Capacity for MIMO Systems with Multiple Frequencies and Delay Spread  
C. S. Withers, NEW ZEALAND

2:10-2:30 PM  Use of a Double Bounce Elliptical Scattering Model for Identifying 
Alternative Directions in Smart Antenna Systems  
Antonio Zamora, Alejandro Velazquez, Claudio Lopez, and 
David Covarrubias, MEXICO

2:30-3:30 PM  Refreshment Break/Poster Session/Exhibits

3:30-3:50 PM  Measured Effects of the Human Body on UWB Signal Propagation in an 
Indoor Environment  
T. B. Welch, USA

3:50-4:10 PM  Packet or Circuit Switched Voice Radio Bearers in GERAN – A Capacity Evaluation  
Mats Arvedson, Magnus Edlund, Ola Eriksson, Andreas Nordin and 
Anders Furuskar, SWEDEN

4:10-4:30 PM  Dynamic Multiplexing of IP-Streams onto Shared Cellular Links  
Guenther Liebl, Thomas Stockhammer, and Peter Strasser, GERMANY

6:00 PM  Party Time!!

Friday, June 7, 2002

7:00-8:00 AM  Breakfast Buffet in Commonwealth Dining Room

SESSION III – SIGNAL PROCESSING FOR WIRELESS COMMUNICATIONS
Session Chair: Dr. Brian Woerner

8:30-8:50 AM  GSM/CDMA Multimode Terminals Using Polar Modulated Transmitters  
Earl McCune, USA

8:50-9:10 AM  Asynchronous Interpolation in Digital Modulators  
Afshin Haghighat, CANADA

9:10-9:30 AM  Performance of Multitone and Multicarrier Direct Sequence Spread 
Spectrum in the Presence of Narrowband Interference  
David W. Matolak, Viral Deepak, and Frank Alder, USA

9:30-10:30 AM  Refreshment Break/Poster Session/Exhibits

10:30-10:50 AM  Bridging the Gap Between Parallel and Serial Concatenated Codes  
Naveen Chandran and Matthew C. Valenti, USA

10:50-11:10 AM  Principles of Analog-Domain Turbo Decoding  
Neiyr S. Correal, USA

11:10-11:30 AM  Improving Convolutional Code Performance on the CDMA Forward Link  
Geoffrey G. Messier and Witold A. Krzymien, CANADA

11:30 AM-1:00 PM  Lunch in Commonwealth Dining Room

1:30-4:30 PM  MPRG Open House and Lab Tours

4:30 PM  Conclusion