The 74th IEEE
Vehicular Technology Conference

Final Programme

VTC2011-Fall

SAN FRANCISCO

Smarter Communication for an Intelligent World

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San Francisco, United States

Welcome from the Conference Chairs

Welcome to San Francisco for the IEEE 74th Vehicular Technology Conference. This is sure to be a tremendous conference with many great keynotes, panels, and technical sessions. San Francisco is home to many communication and engineering companies, and of course the world was revolutionized by the dot.com days that were headquartered in the Bay Area.

As far as the technical program is concerned, we had 793 papers submitted to the conference, and every paper received at least three reviews from an international program committee that spanned six continents. I would like to sincerely thank all of you who performed reviews for papers or helped to manage the review process. With over 2400 total reviews, the success of the conference could not exist without the help of the authors, reviewers, associate editors, track chairs, and program co-chairs. The conference is already shaping up to be a tremendous success. All of the 486 accepted papers received an average score of at least 3 out of 5, with the majority of the papers having average scores of 4 or higher.

Outside of the tremendous technical program we will have, we hope that you will take the opportunity to experience some of what San Francisco has to offer. Many world-famous sites are in the San Francisco area, including Fisherman's Wharf, Alcatraz, trolley cars, Lombard Street, Ghirardelli Square, and the Golden Gate Bridge, to name a few. Please enjoy San Francisco, and we hope you have an educational and enjoyable conference!

Jan Uddenfeldt, *General Chair, VTC2011-Fall*
Jeffrey Miller, *TPC Chair, VTC2011-Fall*

Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society, it is my pleasure to welcome you to the IEEE 74th Vehicular Technology Conference in San Francisco, California. The goal of the conference is to bring together researchers from the whole world to discuss and exchange ideas in the field of wireless, mobile, and vehicular technology.

I am sure that San Francisco, a beautiful city serving as a hub of entrepreneurship as well as a financial, cultural, and transportation center of Northen California, is a fitting location for this conference. The Vehicular Technology Conference has been the flag ship conference of the IEEE Vehicular Technology (VT) Society for over sixty years. For last twenty-two years it has been successfully held twice a year: fall conferences in North America and spring conferences in Europe and Asia Pacific.

Under the slogan of "Connecting the Mobile World," the VT Society is committed to all aspects of mobility related to wireless communications, vehicle electronics, motor vehicles, and land transportation. Besides extending its conference activities the VT Society has been very successful recently in publishing the Transactions on Vehicular Technology with its impact factor increased to become comparable to those of major IEEE journals in related areas.

We invite you to get involved within the VTS as a member to help to shape the future of your profession. Also I hope that this conference may inspire some of you to consider hosting a future VTC.

I wish to convey a special thank to the General Chair of the IEEE Vehicular Technology Conference 2011-Fall, Jan Uddenfeldt, and its Technical Program Chair, Jeffrey Miller, and other members of the committees for their skilled and thoughtful implementation of the excellent program.

Finally, I wish to thank all of the delegates attending the conference and wish you a most enjoyable stay.

Jae Hong Lee, *President*
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Weiwei Li
xiangfang Li
Xiaohang Li
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Xu Li
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Wei-Cheng Liu
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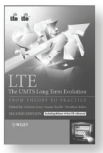


Stefania Sesia, Issam Toufik, Matthew Baker

9780470660256, Cloth, 792pp, $120.00, September 2011, Wiley

This book builds on the success of its predecessor, offering the same comprehensive system-level understanding built on explanations of the underlying theory, now expanded to include complete coverage of Release 9 and the developing specifications for LTE-Advanced. The book is a collaborative effort of more than 40 key experts representing over 20 companies actively participating in the development of LTE, as well as academia.

Femtocells: Technologies and Deployment

Jie Zhang, Dr. Guillaume de la Roche

9780470742983, Cloth, 328pp, $115.00, February 2010, Wiley

Femtocells: Technologies and Deployment is one of the first in-depth guides to femtocell technologies, providing a comprehensive reference on femtocells and related topics and offering the latest research results based on simulation and measurements.

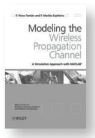
Multi-Mode / Multi-Band RF Transceivers for Wireless Communications: Advanced Techniques, Architectures, and Trends

Gernot Hueber, Robert Bogdan Staszewski

9780470277119, Cloth, 594pp, $130.00, February 2011, Wiley-IEEE Press

This book summarizes cutting-edge physical layer technologies for multi-mode wireless RF transceivers, anticipating the major trends and needs of future wireless system developments. It includes original contributions from distinguished researchers and professionals from both academia and industry, stemming from a workshop to be held at this year's European Microwave Week.

Modelling the Wireless Propagation Channel: A simulation approach with Matlab



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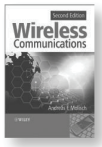
9780470727850, Cloth, 268pp, $130.00, September 2008, Wiley

Coverage includes: Introduction to wireless propagation, Shadowing effects, Coverage and interference, Introduction to multipath, Multipath Narrowband channel, Shadowing and multipath, Multipath Wideband channel, Propagation in micro and pico-cells, Mega-cells, The land mobile satellite (LMS) channel, The directional Multipath channel and MIMO and Propagation effects in fixed radio links (terrestrial and satellite).

Wireless Communications, 2nd Edition



Andreas F. Molisch

9780470741863, Paper, 884pp, $75.00, January 2011, Wiley

Wireless Communications, Second Edition has been fully updated throughout with new material including three new chapters on ad-hoc networks, WiMAX and LTE. It provides a self-contained all-encompassing current treatment of the area, covering topics such as directional channel modelling, multi-user detection, MIMO systems, and 3G standards.

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Opening Plenary Tuesday 6 September 2011

Tuesday 6 September 2011, 08:30–10:00 (Plaza Ballroom)

The Evolution of Smart Phones in the Android World

Jan Uddenfeldt, *Sony Ericsson*

The growth of the smart phone market is explosive with Android leading the way. The power of the smart phone will put it in the center of the consumer industry eco system with large impact of all kind of devices.

Jan Uddenfeldt is one of the inventors of 2G wireless GSM technology, as well as mobile broadband 3G (HSPA) technology.

After more than 30 years at Ericsson, Dr Uddenfeldt assumed the role of global Chief Technology Officer at Sony Ericsson in July 2010 and is Head of the Sony Ericsson Silicon Valley site in Redwood City, California. While at Ericsson, he held various positions such as head of Research in Radio Systems, Vice President of Global R&D and in 1998, he was appointed Chief Technology Officer. In 2004, Uddenfeldt assumed the position as Senior VP and Senior Advisor, Technology, to the CEO. In addition, he was responsible for Technology Strategies and chairing Ericsson Research Board and the Ericsson Standardization Board, and responsible for Technology Alignment with leading operators worldwide.

In August 2008, Jan Uddenfeldt relocated from Sweden to Silicon Valley, while maintaining his position as Senior VP and Senior Advisor, Technology to the Group CEO. At the same time, he focused on establishing research and technology and establishing relationships with leading Internet companies in the US to leading mobile broadband ecosystem and converged internet.

Dr. Uddenfeldt was born in Stockholm and received his Ph.D. from the Royal Institute of Technology in Stockholm in 1978 and received an honorary Doctor's degree from the University of Lund in 1996. Dr. Uddenfeldt is a member of the Board of the Royal Institute of Technology and Vice Chairman of the Board of the Swedish Royal Academy of Engineering Sciences.

Jan Uddenfeldt is a Fellow of IEEE, and a member of the Royal Academy of Engineering Sciences (IVA). He was awarded the German Edward Rhein Foundation Technology Prize for the innovation of GSM in 1997 and the Swedish KTH Prize in 2000 for GSM and 3G. In 2005, he received the Gold Medal from the Swedish Royal Academy of Engineering Sciences for his contribution to the cellular industry.

Dr. Uddenfeldt is on the Board of Trustees at the Computer History Museum in Mountain View, California and recipient of the Telecom Innovator of the Year award at TechAmerica in 2009.

Tuesday 6 September 2011, 08:30–10:00 (Plaza Ballroom)

Connected Vehicles: How Wireless Technology can Transform Transportation Safety

Shelley J. Row*, P.E., PTOE Director, ITS Joint Program Office*

This session will share how wireless technology is connecting vehicles with other vehicles and with infrastructure. This research, implemented in partnership between USDOT and the automotive industry, is entering a real-world test phase. Hear about the work underway and the opportunities presented by this technology.

Shelley J. Row is Director of the U.S. Department of Transportation's Intelligent Transportation Systems (ITS) Joint Program Office (JPO), a position she has held since January 2007. As JPO Director, Ms. Row manages a $110 million annual budget to advance research and deployment of ITS, in support of the Transportation Department's goals of reducing congestion and improving safety and productivity.

Ms. Row's federal career began in 1987 when she joined the Federal Highway Administration (FHWA), working in its division offices in California, Arizona and North Carolina. After a stint in FHWA's Headquarters managing ITS Early Deployment Planning and Outreach, Shelley returned to the field as Engineering Systems Manager in the Georgia Division office, where she was responsible for ITS project implementation in preparation for the 1996 Summer Olympics. Shelley's accomplishments in Georgia won her the Secretary of Transportation's Team Award and the Secretary's Gold Medal.

Returning to Headquarters in late 1996, Shelley joined the ITS Joint Program Office as the ITS Travel Management Coordinator and later was selected to be team leader of the ITS Deployment Task Force. She was also selected to be the Departmental team lead for development of the policy on ITS architecture consistency, an effort for which she received another Secretary of Transportation's Team Award. In 2000, Shelley became Director of FHWA's Office of Transportation Operations. In that position she led programs on highway work zone operations, security and traffic incident management, the Manual on Uniform Traffic Control Devices and road weather management. In 2003 Shelley left FHWA to become Chief Technical Officer for the Institute of Transportation Engineers, the

position she held for three years immediately prior to becoming Director of the ITS Joint Program Office.

Shelley has received numerous awards in government service. Among those, in addition to the Secretary of Transportation's awards, are the FHWA's Administrator's team award and the Administrator's Superior Achievement Award. Shelley holds Bachelor degrees in Civil Engineering and Architecture from Texas Tech University and an MBA in management from Virginia Tech. She is a registered professional engineer and professional transportation operations engineer.

Plenary Wednesday 7 September

Wednesday 7 September 2011, 09:00–10:00 (Plaza Ballroom)

The Wireless Evolution: From Telegraph to Smartphone to Future Wireless Species

Matt Grob, *EVP/CTO, Qualcomm*

In this session, Matt Grob will address the evolution of wireless communications in the face of explosive demand for data access, exchange and delivery. How will the new generation of cellular networks – loaded with mobile data traffic from mediums such as video – meet finite spectrum and bandwidth availability? How will multicast, white space and LTE play into the next era of wireless? Other topics will include the evolution of femto cells to femto networks, a discussion of how wi-fi complements femto, capacity offload possibilities, and LTE considerations. Finally, Matt will offer some thoughts (and video) on future wireless species.

Matt Grob is executive vice president and chief technology officer for Qualcomm Incorporated. In this role, he is responsible for the oversight of Qualcomm's technical path, the coordination of R&D activities across the company and the development of next-generation wireless technologies. Grob also leads Corporate R&D and provides oversight to Qualcomm Corporate Engineering Services.

Matt joined Qualcomm in 1991 as an engineer. His contributions include system design, standardization and project leadership for programs including the early CDMA data services; the Globalstar satellite based mobile voice and data system and later 1x EV-DO high-speed wireless Internet access technology. Matt's focus on cellular data services led to his assignment as co-project engineer for the HDR (High Data Rate) program starting in 1997. This new high-speed Internet access technology become standardized as 1x EV-DO, and commercialized throughout the world. Innovations and techniques from these programs also benefit UMTS evolution including HSPA. In 1998, Matt became the head of Corporate R&D's system engineering department.

In 2006, Matt took the role of leading the Corporate R&D division. The division's mission is to push the boundaries of wireless technology, to innovate and explore new services and technologies - focusing on longer-term and often higher-risk technologies and projects. During the past 5 years, Corporate R&D's efforts have expanded in scale and scope. While maintaining a very strong focus on core cellular WAN technology, Corporate R&D has broadened its mission to include exciting new areas including Augmented Reality, Wireless Charging, processor and applications enhancements, peer-to-peer technologies, position location, and Wireless LAN.

Matt holds a number of patents in the area of wireless data services and technology and holds a BSEE from Bradley University, Peoria, Illinois as well as an MSEE from Stanford University.

Panel Sessions

Tuesday 06 September 2011, 18:00–20:00 (Plaza Ballroom)

Research and Educational Challenges for a Smarter Workforce

Chair:	**Jorge Pereira**	*European Commission*
Panelists:	**Andrea Goldsmith**	*Stanford University*
	Ted S. Rappaport	*University of Texas Austin*
	Lajos Hanzo	*University of Southampton*
	Pravin Varaiya	*University of California at Berkeley*

The engineering discipline and profession has rapidly evolved over the past few decades. This evolution has led to particularly significant advances in the area of mobile and wireless communications, which occupies a pivotal position in the telecommunications sector. However, the increased technological and scientific sophistication requires new multidisciplinary and holistic system design perspectives in order to

successfully address the engineering challenges of the near future. These demanding research requirements cannot be readily met without appropriately preparing the engineers of the near-future to address the forthcoming technological challenges. This panel will discuss some of these research and educational challenges, with a particular focus on the mobile and wireless communications sector, as well as on the diverse fields of its emerging applications.

Dr. Jorge M. Pereira obtained the Engineering and M.Sc. degrees in Electrical and Computer Engineering from Instituto Superior Técnico (IST), Lisbon, Portugal in 1983 and 1987, respectively; he received the Ph.D. in Electrical Engineering-Systems from the University of Southern California, Los Angeles, in 1993.

Since September 1996, he has been with the European Commission, DG Information Society and Media, as Scientific Officer in the areas of Mobile and Personal Communications and Broadband for All. He became Principal Scientific Officer in 2005, moving to the area of ICT for Sustainable Growth, with a focus on Energy Efficiency and Emergency and Disaster Management, and is currently working in the area of Embedded Systems and Control, where he is responsible for the area of Complex Systems Engineering, including Wireless Sensor Networks and Cooperating Objects.

He is a Member of the IEEE and of the ACM. He serves as Associate Editor for Mobile Radio, including Vehicular Communications, for the IEEE Vehicular Technology Magazine. He has recently taken up the position of Associate Editor of the ACM transactions on Sensor networks.

Andrea Goldsmith is a professor of Electrical Engineering at Stanford University, and was previously an assistant professor of Electrical Engineering at Caltech. While on leave from Stanford, she founded Quantenna Communications, Inc. and served as its CTO, and she is currently launching a new company to enable higher capacity and coverage in 4G wireless networks. She has held other industry positions at Maxim Technologies, Memorylink Corporation, and AT&T Bell Laboratories.

Dr. Goldsmith is a Fellow of the IEEE and of Stanford, and she has received several awards for her work, including the IEEE Communications Society and Information Theory Society joint paper award, the National Academy of Engineering Gilbreth Lecture Award, the IEEE Wireless Communications Technical Committee Recognition Award, the Alfred P. Sloan Fellowship, and the Silicon Valley/San Jose Business Journal's Women of Influence Award. She currently serves on the Steering Committee for the Transactions on Wireless Communications, and as Editor for the Journal on Foundations and Trends in Communications and Information Theory and in Networks. She was previously an editor for the IEEE Transactions on Information Theory, the IEEE Transactions on Communications, and for the IEEE Wireless Communications Magazine.

Dr. Goldsmith has served on the Board of Governors and as a Distinguished Lecturer for both the IEEE Information Theory and Communications Societies. She also served as President of the Information Theory Society and founded its Student Committee. At Stanford she received the inaugural University Postdoc Mentoring Award, served as Chair of its Faculty Senate, and currently serves on its Budget Group. Dr. Goldsmith has authored the book 'Wireless Communications' and co-authored the books 'MIMO Wireless Communications', and 'Principles of Cognitive Radio Networks'. Her research includes work on wireless information and communication theory, MIMO systems and multihop networks, cognitive radios, sensor networks, "green" wireless system design, and applications of communications and signal processing to neuroscience.

Ted Rappaport is the William and Bettye Nowlin Chair in Engineering at the University of Texas at Austin, where he founded the Wireless Networking and Communications Group (WNCG) in 2002. Earlier in his career, he founded the Mobile and Portable Radio Research Group (MPRG) at Virginia Tech, one of the world's first university research and teaching centers dedicated to the wireless communications field. Prof. Rappaport has been a pioneer in the fields of radio wave propagation, wireless communication system design, and broadband wireless communications circuits and systems at millimeter wave frequencies. He is one of the most highly cited authors in the wireless field, according to ISI Highly Cited, having published over 200 technical papers.

In 2006, Rappaport was elected to serve on the Board of Governors of the IEEE Communications Society, and to the Board of Governors of the IEEE Vehicular Technology Society in 2008 and 2011. He is a Fellow of the IEEE. He received the Marconi Young Scientist Award in 1990, an NSF Presidential Faculty Fellowship in 1992, the Sarnoff Citation from the Radio Club of America in 2000, the Fredrick E. Terman Outstanding Electrical Engineering Faculty Award from the ASEE in 2002, and the Stuart F. Meyer Award from the IEEE Vehicular Technology Society in 2005. In 2008, he received the Industry Leadership award from the Austin Wireless Alliance and the IEEE Communications Society WTC Recognition Award. Rappaport has over 100 U.S. or international patents issued or pending and has authored, co-authored, and co-edited 18 books. In 1999, he received the IEEE Communications Society Stephen O. Rice Prize Paper Award. In 1989, he founded TSR Technologies, and in 1995 Wireless Valley Communications. He received B.S., M.S., and Ph.D. degrees in electrical engineering from Purdue University, and is an Outstanding Electrical Engineering Alumnus from his alma mater.

Lajos Hanzo (http://www-mobile.ecs.soton.ac.uk) FREng, FIEEE, FIET, Fellow of EURASIP, DSc received his degree in electronics in 1976 and his doctorate in 1983. In 2009 he was awarded the honorary doctorate 'Doctor Honaris Causa' by the Technical University of Budapest. During his 35-year career in telecommunications he has held various research and academic posts in Hungary, Germany and the UK. Since 1986 he has been with the School of Electronics and Computer Science, University of Southampton, UK, where he holds the chair in telecommunications. He has successfully supervised in excess of 70 PhD students, co-authored 20 John Wiley/IEEE Press books on mobile radio communications totalling in excess of 10 000 pages, published 1200+ research entries at IEEE Xplore, acted both as TPC and General Chair of IEEE conferences, presented keynote lectures and has been awarded a number of distinctions. Currently he is directing an academic research team, working on a range of research projects in the field of wireless multimedia communications sponsored by industry, the Engineering and Physical Sciences Research Council (EPSRC) UK, the European IST Programme and the

Mobile Virtual Centre of Excellence (VCE), UK. He is an enthusiastic supporter of industrial and academic liaison and he offers a range of industrial courses. He is also a Governor of the IEEE VTS. Since 2008 he has been the Editor-in-Chief of the IEEE Press, and since 2009 a Chaired Professor also at Tsinghua University, Beijing. For further information on research in progress and associated publications please refer to http://www-mobile.ecs.soton.ac.uk

Pravin Varaiya is Nortel Networks Distinguished Professor in the Department of Electrical Engineering and Computer Sciences at the UC Berkeley. From 1975 to 1992 he was also Professor of Economics at Berkeley. From 1994 to 1997 he was Director of the California PATH program, a multi-university research program dedicated to the solution of California's transportation problems.

Varaiya has held a Guggenheim Fellowship and a Miller Research Professorship. He received Honorary Doctorates from L'Institut National Polytechnique de Toulouse and L'Institut National Polytechnique de Grenoble, and the Field Medal and Bode Lecture Prize of the IEEE Control Systems Society. He is a Fellow of IEEE, a member of the National Academy of Engineering, and a Fellow of the American Academy of Arts and Sciences. He is on the editorial board of "Discrete Event Dynamical Systems" and "Transportation Research-C". He has co-authored three books and 300 technical papers. The second edition of "High-Performance Communication Networks" (with Jean Walrand and Andrea Goldsmith) was published by Morgan-Kaufmann in 2000. "Structure and Interpretation of Signals and Systems" (with Edward Lee) was published by Addison-Wesley in 2003.

Thursday 08 September 2011, 08:30–10:00 (Plaza Ballroom B)

Key Drivers for Future Wireless Access

Chair: **Ali Khayrallah** *Ericsson*
Panelists: **Erik Dahlman** *Ericsson*
Bob Friday *Cisco*
Durga Malladi *Qualcomm*

The panel will describe major opportunities and challenges foreseen as key drivers for the future of wireless access.

Ali Khayrallah is Director of Research at Ericsson in North America. His group works on projects in current and future cellular systems. He has been with Ericsson since 1995, in various research positions. Previously, he was Assistant Professor in the Electrical Engineering Department at the University of Delaware. His interests are in research and technology for wireless communications. He holds a Ph.D. and M.S. from the University of Michigan, Ann Arbor, and a B.Eng. from the American University of Beirut. He holds more than 50 US patents and has published more than 50 technical papers, and received the Ericsson Inventor of the Year award.

Erik Dahlman received the Master of Science degree and Doctor of Technology degree from the Royal Institute of Technology, Stockholm in 1987 and 1992 respectively. He is currently the Senior Expert in Radio Access Technologies within Ericsson Research.

Erik Dahlman was deeply involved in the development and standardization of 3G radio access technologies, first in Japan and later within the global 3GPP standardization body. More recently he has been involved in the standardization/development of the 3GPP Long Term Evolution (LTE) and its further evolution into LTE-Advanced. He is currently part of the Ericsson Research Management team with responsibility for long-term strategies in the area of radio-access technologies.

Erik Dahlman is the co-author of the book 3G Evolution – HSPA and LTE for Mobile Broadband. He has also participated in three other books within the area of radio communication, as well as numerous journal papers and conference contributions. Erik Dahlman holds more than 75 patents in the area of mobile-radio communication.

Bob Friday is CTO for the Wireless Networking Business Unit of Cisco's Network Services Group (NSG). Within this group, Bob Friday drives strategic wireless initiatives for the aggressively growing WiFi (wireless LAN) and Borderless Network businesses. Bob is currently focused on the trends and transitions in the convergence of WiFi and Cellular networks in enterprise and SP networks, the ecosystem of enterprise mobile app developers, contextual services and the evolution of WiFi.

Bob's career has been focused on developing unlicensed wireless networking technology and products. He came to Cisco as the Chief Scientist and co-founder of Airespace, the wireless LAN leader acquired by Cisco in 2005. At Airespace, he leveraged his wireless service provider experience from Metricom to develop and introduce a centralized controller architecture for enterprise 802.11 wireless networks. At Airespace, he was responsible for location technology, mesh, wireless routing technology, radio hardware development, and radio resource management algorithms.

Prior to Airespace, Bob was Chief Scientist at Metricom, a wireless wide area network infrastructure company, and was directly responsible for the performance and capacity of the company's nationwide wireless wide-area Ricochet network. Bob has been awarded 15 patents and holds a BSEE from Georgia Tech, and a MSEE in engineering from San Jose State University.

Durga Malladi is a Senior Director in Qualcomm Corporate R&D and leads the LTE-Advanced design, prototyping and standardization activities. He joined Qualcomm in 1998 and worked on system design, standardization and implementation of Globalstar, HSDPA and HSUPA from 1998-2004. From 2004 onwards, he has led the research and development activities on LTE and LTE Advanced, including system design, standardization, implementation and testing. Dr. Malladi holds a B.Tech (1993) degree from Indian Institute of Technology, Madras, and M.S. (1995) and Ph.D. (1998) degrees from University of California, Los Angeles. His research interests include MIMO, signal processing techniques, communication theory and cognitive radio.

Thursday 08 September 2011, 08:30–10:00 (Plaza Ballroom A)

Vehicles in the Cloud

Chair: **Jorge Pereira** *European Commission*
Panelists: **Alex Bayen** *University of California at Berkeley*
Ram Dantu *University of North Texas*
Raja Sengupta *University of California at Berkeley*
Ardalan Vahidi *Clemson University*

Vehicular communications has been identified as a key technology for increasing road safety and transport efficiency, while also improving the energy efficiency of transportation systems. The integration of communication technologies into the vehicle is given birth to a networked and smarter vehicle with increasing connectivity to the Internet. This further increases the potential of this emerging transportation technology that is also expected to play a key role in the development of the fully electric vehicle. The panel will discuss the challenges and potential of the networked and smarter vehicle.

Dr. Jorge M. Pereira's biography appears above.

Alexandre M. Bayen is an associate professor in the Departments of Electrical Engineering and Computer Science, and of Civil and Environmental Engineering at UC Berkeley. He received the Engineering Degree in applied mathematics from the Ecole Polytechnique, France, in July 1998, the M.S. degree in aeronautics and astronautics from Stanford University in June 1999, and the Ph.D. in aeronautics and astronautics from Stanford University in December 2003. He was a Visiting Researcher at NASA Ames Research Center from 2000 to 2003. Between January 2004 and December 2004, he worked as the Research Director of the Autonomous Navigation Laboratory at the Laboratoire de Recherches Balistiques et Aerodynamiques, (Ministere de la Defense, Vernon, France), where he holds the rank of Major.

Bayen has authored over 100 articles in peer reviewed journals and conferences. He is the recipient of the Ballhaus Award from Stanford University, 2004, of the CAREER award from the National Science Foundation, 2009 and he is a NASA Top 10 Innovators on Water Sustainability, 2010. His projects Mobile Century and Mobile Millennium received the 2008 Best of ITS Award for Best Innovative Practice, at the ITS World Congress and a TRANNY Award from the California Transportation Foundation, 2009. Bayen is the recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE) award from the White House, 2010. Mobile Millennium has been featured already more than 100 times in the media, including TV channels and radio stations (CBS, NBC, ABC, CNET, NPR, KGO, the BBC), and in the popular press (Wall Street Journal, Washington Post, LA Times).

Ram Dantu has 15 years of industrial experience in the networking industry, where he worked for Cisco, Nortel, Alcatel, and Fujitsu and was responsible for advanced technology products from concept to delivery. He is a full professor in the the Department of Computer Science and Engineering, University of North Texas (UNT). He is currently a visiting professor in Massachusetts Institute of Technology (MIT) in school of engineering. He is the founding director of the Network Security Laboratory (NSL) at UNT, the objective of which is to study the problems and issues related to next-generation networks. He is also the director of the Center for Information and Computer Security in UNT. He has received several NSF awards in collaboration with Columbia University, Purdue University, University of California at Davis and Texas A&M University.

His research includes mobile applications in health care and transportation sectors. In addition, he has been researching on the prevention of DoS and spam attacks in the VoIP networks. He has co-chaired three workshops on VoIP security. Prior to UNT, he was a technology director at Netrake (acquired by Audio Codes), where he was the architect of the redundancy mechanism for VoIP firewalls. His additional experience includes being a technical director in IPMobile (acquired by Cisco), where he was instrumental in the wireless/IP product concept, architecture, design, and delivery. In addition to more than 150 research papers, he has authored several Requests For Comments (RFCs) related to MultiProtocol Label Switching (MPLS), SS7 over IP, and routing. Due to his innovative work, Cisco and Alcatel were granted a total of 25 patents, and another 10 are pending.

Dr. Raja Sengupta is Associate Professor in the Systems Engineering program within Civil and Environmental Engineering, University of California at Berkeley. He received his Ph.d from the EECS department, University of Michigan at Ann Arbor. His research interests are in vehicular ad-hoc networks and unmanned air vehicles. He was Associate Editor of the IEEE Control Systems magazine. He was Program Chair of the IEEE Conference on Autonomous Intelligent Networked Systems 2003, Co-General Chair of the first ACM MOBICOM Workshop on Vehicular Ad-hoc Networks 2004 and Co-Program Chair of the second workshop. In 2008 he chaired the First International Symposium on Vehicular Computing Systems. He is also the General Co-Chair for the IEEE International Symposium on Wireless Vehicular Communications (WiVeC) 2011.

Ardalan Vahidi is an Associate Professor of Mechanical Engineering at Clemson University in South Carolina, U.S.A. He received his Ph.D. in Mechanical Engineering from the University of Michigan, Ann Arbor in 2005. He had obtained his B.S. and M.S. in Civil Engineering in 1996 and 1998 from Sharif University of Technology and his second M.S. in Transportation Safety in 2002 from George Washington University, Washington DC. His current research interests are in optimization-based control methods and control of vehicular and energy systems. Use of ambient information, such as road terrain and traffic information, for improving energy efficiency of vehicles with wireless connectivity has been the focus of his work in the past two years.

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Registration

Registration will take place in the Golden Gate Room. Hours are:

- Monday 5 September 0730 – 1730 *
- Tuesday 6 September 0730 – 1730
- Wednesday 7 September 0800 – 1730
- Thursday 8 September 0800 – 1730

* Also outside the reception on Monday evening for ticket pickup only.

Breaks & Social Events

Coffee breaks will take place in the exhibit area in the Golden Gate Foyer. Lunches, which are included in the full registration, will be served in the Plaza Ballroom. You will need the ticket included in your registration packet to gain entry. The panel on Tuesday evening is open to all attendees – no ticket is required. Food and beverages will be served.

The reception on the Monday evening will be held in the Upper Level Restaurant City Scape on the 6th Floor. Entrance to the reception is also by ticket only, so please remember to bring your tickets. The banquet will be served at Fisherman's Wharf. Busses leave the hotel at 5.30pm prompt. Again you will need to remember your ticket to gain entry.

Joint Rail Conference Special Session

A special session with selected papers from IEEE/ASME/AMCE Joint Rail Conference will take place on Wednesday 7 September 2011 from 10:30 to 12:00 in Golden Gate 8. The papers which will be presented are:

1 Study on Materials and Structure of the Tube Wall of Evacuated Tube Transportation
Yaoping Zhang, Jianyue Yu, Xijing University; Daryl Oster, Chen Chen, Et3.com Inc

Evacuated Tube Transportation (ETT) will be the fastest traffic mode on earth in the future, possible over 6000km/h, and low energy consumption, no air pollution, no noise and relatively safe. Different from pipelines for transporting oil, gas and water, the tube of ETT will bear the maglev vehicles running in it.

2 220 MHz Communications System for Interoperable Positive Train Control
T. Kee Himsoon and W. Pam Siriwongpairat, MeteorComm LLC

Positive train control (PTC) provides a critical safety backup for train operations to protect against the consequences of human error. The interoperable PTC system uses radio frequency (RF) in the 220 MHz band for wireless communications. Robust and reliable 220 MHz RF communication is critical to the success of the interoperable PTC system.

Use of Communications Based Train Control Systems in the Presence of Radio Frequency Noise and Interference
Michael Fitzmaurice

A common concern with Communications Based Train Control (CBTC) systems is that the wireless subsystem is susceptible to RF interference in the 2.4 GHz spectrum that is used by the DCS. This concern is investigated in greater detail given the operational histories of two CBTC-equipped public transit lines: NYCT's "L" or Canarsie Line in New York City and the Las Vegas monorail.

Statistical Safe Braking analysis
David F. Thurston P.E., Temple University & Parsons Transportation

The main objective in optimizing train control is to eliminate the waist associated with classical design where train separation is determined through the use of "worst case" assumptions that are invariant to the system. A different concept in train control utilizes statistical analysis and estimation to provide knowledge of the parameters used.

VTC2011-Fall Technical Program

Tuesday 6 September 2011

6 September 2011 10:30-12:10 Franciscan A

1A: Algorithms for Sensor Networks

1 Dynamic Sensor Selection for Target Tracking in Wireless Sensor Networks
Farzaneh Razavi Armaghani, Iqbal Gondal, Joarder Kamruzzaman, Monash University

2 A Cluster-based Continuous Object Tracking Scheme in Wireless Sensor Networks
Wanseop Lee, KOMSCO; Soochang Park, Jeongcheol Lee, Sang-Ha Kim, Chungnam National University

3 A Decentralised Self-Dispatch Algorithm for Square-grid Blanket Coverage in Wireless Sensor Networks
Fendy Santoso, The University of New South Wales

4 A Multi-Tier Clustering Strategy for Wireless Sensor Network Longevity Using Cultural-Based Multiobjective Particle Swarm Optimization
Wanxin Gao, Weixia Zou, Zheng Zhou, Peng Du, Jing Zhang, Beijing University of Posts and Telecommunications

5 Segmentation-based On-demand Scalable Address Assignment for ZigBee Networks
Zhi Ren, Peng-xiang Li, Chongqing University of Posts and Telecommunications; Jun Fang, UESTC,China

6 September 2011 10:30-12:10 Franciscan B

1B: MIMO Channels and LTE

1 A measurement based approach to predict the MIMO throughput of the LTE downlink in RF planning tools
Juergen Beyer, Heinz Droste, Ulrich Isensee, Deutsche Telekom

2 Analysis of Measured and Simulated Delay and Angular Propagation Channel Parameters for MIMO Network Planning
Carsten Jandura, Dresden University of Technology; Jens Voigt, Actix GmbH

3 Aspects of MIMO Channel Estimation for LTE Uplink
Henrik Sahlin, Ericsson; Anders Persson, Ericsson AB

4 Subspace Modeling of Multi-User MIMO Channels
Nicolai Czink, FTW; Bernd Bandemer, Stanford University; Claude Oestges, Université catholique de Louvain (UCL); Thomas Zemen, Forschungszentrum Telekommunikation Wien ftw.; Arogyaswami Paulraj, Stanford University

5 Gaussian Angular Distributed MIMO Channel Model
Xin Li, Torbjörn Ekman, Norwegian University of Science and Technology

6 September 2011 10:30-12:10 Golden Gate 1

1C: Multiple Antenna Systems

1 Digital RoF Aided Cooperative Distributed Antennas with FFR in Multicell Multiuser Networks
Xinyi Xu, Rong Zhang, Lajos Hanzo, University of Southampton

2 Large Scale Field Trial Results on Uplink CoMP with Multi Antenna Base Stations
Michael Grieger, TU Dresden; Patrick Marsch, Nokia Siemens Networks; Gerhard Fettweis, Technische Universität Dresden

3 Joint Transmit-Receive Spectrum Sharing in Cognitive MIMO Wireless Networks
Zhao Li, Xidian University; Linjing Zhao, Xidian Unoversity; Qin Liu, Xidian University

4 Necessity of Phase Ambiguity Quantization for Limited Feedback Coordinated Multi-point Transmission
Di Su, Beihang University; Chenyang Yang, Beihang University, Beijing

5 Design of Control Architecture for Downlink CoMP Joint Transmission with Inter-eNB Coordination in Next Generation Cellular Systems
Takao Okamawari, Liang Zhang, Atsushi Nagate, Hideki Hayashi, Teruya Fujii, Softbank Mobile Corp.;

6 September 2011 10:30-12:10 Golden Gate 2

1D: Cooperative Communications

1 Power minimization of cooperative relay transmission with relays private information
Koichi Adachi, Sumei Sun, Chin Keong Ho, Institute for Infocomm Research

2 Erasure Insertion in Reed-Solomon Coded SFH M-ary FSK with Partial-Band Interference and Rayleigh Fading for Non-Coherent Cooperative Communications
Hoang Anh Ngo, Sohail Ahmed, Prof. Lie-Liang Yang, Lajos Hanzo, University of Southampton

3 Max-Min Beamforming with Cooperative Multipoint Transmission
Guido Dartmann, Xitao Gong, Gerd Ascheid, RWTH Aachen University

4 A Pilot-Data Based Channel Estimation Method for OFDM Relay-Assisted Systems
Darlene Neves, Instituto de Telecomunicações / University of Aveiro; Carlos Ribeiro, Polytechnic Institute of Leiria; Adão Silva, Atilio Gameiro, Instituto de Telecomunicações / University of Aveiro

5 An Alamouti Coding Scheme for Asynchronous Cooperative Communication Systems Over Frequency Selective Fading Channels
Seung Goo Kang, Junhwan Kim, Youngyoon Lee, Dahae Chong, Youngpo Lee, Seokho Yoon, Sungkyunkwan University

6 September 2011 10:30-12:10 Golden Gate 3

1E: Relaying I

1 Energy Efficient Two-way AF Relay System with Multiple-antennas
Hongjoon Kim, Namjeong Lee, Joonhyuk Kang, KAIST

2 Superposition Coding Scheme with Discrete Adaptive Modulation for Wireless Relay Systems
Hirofumi Yamaura, Megumi Kaneko, Kazunori Hayashi, Hideaki Sakai, Kyoto University

3 TTCM-Aided SDMA-Based Two-Way Relaying
Wei Liang, Soon Xin (Michael) Ng, Lajos Hanzo, University of Southampton

4 Two-Layer Coding Rate Optimization in Relay-Aided Systems
Fan Sun, Aalborg University

5 Outage Probability and SER Analysis of Partial Relay Selection in Amplify-and-Forward MIMO Relay Systems
Fangxiang Wang, Hang Long, Beijing University of Posts and Telecommunications; Jianquan Wang, China Unicom Research Institute; Wenbo Wang, Beijing University of Posts and Telecommunications; Bin Wu, Institute of Microelectronics of Chinese Academy of Sciences

6 September 2011 10:30-12:10 Golden Gate 4

1F: HetNets

1 **Decentralized Femtocell Transmission Regulation in Spectrum-Sharing Macro and Femto Networks**
Xiaoli Chu, Yuhua Wu, David Lopez, Kings College London; Haibo Wang, Beijing Jiaotong University

2 **Distributed Interference Management in Femtocell Networks**
Duy T. Ngo, McGill University; Long Bao Le, INRS, Universite du Quebec; Tho Le-Ngoc, McGill University; Ekram Hossain, University of Manitoba; Dong In Kim, Sungkyunkwan University

3 **Enhanced Uplink Carrier Aggregation for LTE-Advanced Femtocells**
Luis Guilherme Uzeda Garcia, Aalborg University (AAU); Fernando Sanchez-Moya, Juan Villalba-Espinosa, University of Granada; Klaus I. Pedersen, Nokia Siemens Networks; Preben E. Mogensen, Nokia Networks

4 **Optimized Fairness Cell Selection for 3GPP LTE-A Macro-Pico HetNets**
Jun Wang, Jianguo Liu, Dongyao Wang, Jiyong Pang, Gang Shen, Alcatel Shanghai Bell

5 **Enhanced Home-eNB Power Setting under Co-channel Deployment of Macro-eNB and Home-eNB**
Lu Zhang, Tao Yang, Lin Yang, Wen Pingping, Alcatel Shanghai Bell;

6 September 2011 10:30-12:10 Golden Gate 6

1G: Cellular Networks

1 **Overload Control Method for Synchronized MTC Traffic in GERAN**
Rafael Cauduro Dias de Paiva, Nokia Technology Institute (INdT); Hartmut Wilhelm, Mikko Säily, Nokia-Siemens Networks; David Navratil, Renesas Mobile; Miikka Taponen, Nokia Siemens Networks

2 **A New Analytical Model for the Evaluation of Transmitted Power in Downlink of Cellular Networks**
Wu Yanling, City College of Dongguan University; Ming Li, Dongguan University

3 **The Number of Disconnect MSs and System Capacity Analysis with Variable RSs Location in Two-hop Cellular Networks**
Haokai Chen, Jian Liang, Hui Yin, Zhongnian Li, Shouyin Liu, Huazhong Normal University

4 **Signaling Enhancement for Machine Type Communications in GERAN using Orthogonal Sub-channels**
Rafael Cauduro Dias de Paiva, Robson. D. Vieira, Nokia Technology Institute (INdT); Mikko Säily, Nokia-Siemens Networks

5 **Transmit Power Analysis of Existing Network and Advanced Testbed Network for 3G/B3G Systems**
Li Chen, Xiaohang Chen, Bin Wang, Xin Zhang, Beijing University of Posts and Telecommunications

6 September 2011 10:30-12:10 Golden Gate 7

1H: MIMO Transmission I

1 **Adaptive Reed-Solomon Coding in Eigen-MIMO with Non-Adaptive Modulation**
S. Alireza Banani, Rodney G. Vaughan, Simon Fraser University

2 **Novel Frequency Planning Scheme Enabling Joint Transmission and Interference Cancellation**
Yejian Chen, Alcatel-Lucent Bell Labs Germany

3 **Codebook Based Interference Mitigation with Base Station Cooperation in Multi-cell Cellular Network**
Prasertsak Charoen, Tomoaki Ohtsuki, Keio University

4 **A Novel Single-/Multi-layer Adaptive Scheme for Eigen Based Beamforming in TD-LTE Downlink**
Sen Wang, Dacheng Yang, Wang Yafeng, Fei Wang, Yongliang Zhang, Beijing University of Posts and Telecommunications

5 **Robust Power Allocation for MIMO Beamforming under Time Varying Channel Conditions**
Vishwesh V. Kulkarni, Indian Institute of Technology Bombay; Jayeta Biswas, University of New South Wales; Ren Ping Liu, Iain B. Collings, CSIRO; Sanjay Jha, University of New South Wales

6 September 2011 13:40-15:20 Franciscan A

2A: Ad-Hoc and Sensor Networks

1 **A novel approach for combining Micro and Macro Mobility in 6LoWPAN enabled Networks**
Volker Köster, Dortmund University of Technology; Dennis Dorn, TU Dortmund University; Andreas Lewandowski, Christian Wietfeld, Dortmund University of Technology

2 **Impact of Relay Selection Overhead in Cooperative Diversity Protocols**
Nikolaj Marchenko, Christian Bettstetter, University of Klagenfurt

3 **Multi-Rate Broadcasting: Analysis and Design of Stateless Algorithms**
Abhik Banerjee, Chuan Heng Foh, Chai Kiat Yeo, Bu Sung Lee, Nanyang Technological University

4 **Optimal Distributed Caching for Mobile Peer-to-Peer Data Dissemination**
Liang Hu, Aalborg University & Technical University of Denmark

5 **Real-time Multicasting Protocol in Wireless Sensor Networks**
Hosung Park, Jeongcheol Lee, Seungmin Oh, Yongbin Yim, Sang-Ha Kim, Chungnam National University

6 September 2011 13:40-15:20 Franciscan B

2B: Terminal Antennas

1 **Adaptive Impedance Control of MIMO Antennas on User Equipment for FDD-LTE**
Issei Kanno, Yoshiaki Amano, Hiroyasu Ishikawa, KDDI R&D Laboratories

2 **Future Vogues in Handset Antenna Systems**
Mauro Pelosi, Gert Frølund Pedersen, Aalborg University

3 **Design of a Varactor-Based Matching Network Using Antenna Input Impedance Variation Knowledge**
Cesar Sanchez-Perez, Jesús de Mingo, Pedro Luis Carro, Paloma Garcia-Ducar, Antonio Valdovinos, University of Zaragoza

4 **Performance Evaluation of Mobile Phone Antennas in Physical MIMO Channels Using Polarized Spherical Harmonic Decomposition**
Leandro Ximenes, André L. F. de Almeida, Wireless Telecom Research Group- Federal University of Ceará

5 **Tuning Range Optimization of a Planar Inverted F Antenna for LTE**
Samantha Caporal Del Barrio, Mauro Pelosi, Ondrej Franek, Gert F. Pedersen, Aalborg University

6 September 2011 13:40-15:20 Golden Gate 1

2C: LTE Networks and Beyond

1 **Deployment of LTE In-Band Relay and Micro Base Stations in a Realistic Metropolitan Scenario**
Claudio Coletti, AAlborg University; P. E. Mogensen, Nokia Siemens Networks, Aalborg; Ralf Irmer, Vodafone Group Research & Development

2 **A New Discontinuous Reception (DRX) Scheme for LTE-Advanced Carrier Aggregation Systems with Multiple Services**
Chongxian Zhong, Tao Yang, Alcatel Shanghai Bell

3 Investigation on Mobility Management for Carrier Aggregation in LTE-Advanced
Kengo Yagyu, Takeshi Nakamori, Hiroyuki Ishii, Mikio Iwamura, Nobuhiko Miki, Takahiro Asai, Junichiro Hagiwara, NTT DOCOMO, INC.

4 Full Uplink Performance Evaluation of FDD/TDD LTE-Advanced Networks with Type-1 Relays
Wei Hong, Jing Han, Haiming Wang, Renesas Telecommunication Technology (Beijing) Co,.Ltd.

5 TD-LTE Network Deployment Evolution in a Metropolitan Scenario
Zhuyan Zhao, Guan Hao, Wang Jian, Nokia Siemens Networks; P. E. Mogensen, Nokia Siemens Networks, Aalborg; Liu Guangyi, Research Institute of China Mobile; Shen XiaoDong, China Mobile Communications Corporation

6 September 2011 13:40-15:20 Golden Gate 2

2D: Channel Estimation

1 Efficient Channel Estimation for Single Frequency Broadcast Systems
Fábio Coelho, Rui Dinis, Universidade Nova de Lisboa; Paulo Montezuma, FCT-Universidade Nova de Lisboa

2 Joint Carrier Frequency Offset and Channel Estimation for OFDM based Gigabit Wireless Communication System with Low Precision ADC
Lin Zhiwei, Xiaoming Peng, Francois Chin, Institute for Infocomm Research

3 Modified Symbol Timing Offset Estimation for OFDM over Frequency Selective Channels
Qi Wang, Michal Simko, Markus Rupp, Vienna University of Technology

4 Turbo Channel estimation using the 'Iterative Soft Interference Cancelation and Correlation' (I-SICC)
Andre F. dos Santos, Bell Labs, Alcatel-Lucent; Wolfgang Rave, Gerhard Fettweis, Technische Universität Dresden

5 Uplink Channel Estimation for Bandlimited MC-DS-CDMA Systems Relying on Long Spreading Codes
Shuai Wang, School of ECS, University of Southampton; Jing-yi Lu, Jianping An, Beijing Institute of Technology; Lajos Hanzo, University of Southampton

6 September 2011 13:40-15:20 Golden Gate 3

2E: Relaying II

1 Channel Tracking in Relay Systems via Particle MCMC
Ido Nevat, CSIRO; Gareth W. Peters, Jinhong Yuan, University of New South Wales

2 Minimax Robust Power Split in AF Relays based on Uncertain Long-term CSI
M Danish Nisar, Munich University of Technology; Mohamed-Slim Alouini, KAUST

3 Single-carrier Incremental Relaying with Joint Tx/Rx FDE
Kazuki Takeda, Tohoku University; Koichi Adachi, Sumei Sun, Institute for Infocomm Research; Fumiyuki Adachi, Tohoku University

4 Outage Probability Analysis of Coded Cooperation with Multiple Relays
Li Chang, Wang Yafeng, Beijing University of Posts and Telecommunications; Dr Wei Xiang, University of Southern Queensland; Dacheng Yang, Beijing University of Posts and Telecommunications

5 Performance of Selection Combining Amplify-and-Forward Relaying with Adaptive Modulation over Nakagami-m Fading Channels
Yongliang Zhang, Yongyu Chang, Sen Wang, Dacheng Yang, Beijing University of Posts and Telecommunications

6 September 2011 13:40-15:20 Golden Gate 4

2F: Relaying and Multihop

1 Flexible Backhaul Resource Sharing and Uplink Power Control Optimization in LTE-Advanced Relay Networks
Ömer Bulakci, Aalto University School of Electrical Eng.; Nokia Siemens Networks; Abdallah Bou Saleh, Simone Redana, Bernhard Raaf, Nokia Siemens Networks GmbH & Co. KG; Jyri Hämäläinen, Aalto University, Comnet

2 On Buffering at the Relay Node in LTE-Advanced
Federica Vitiello, Aalto University & Nokia Siemens Networks; Taneli Riihonen, Jyri Hämäläinen, Aalto University; Simone Redana, Nokia Siemens Networks GmbH & Co. KG

3 System Architecture for a Cellular Network with Cooperative Mobile Relay
Balaji Raghothaman, Gregory Sternberg, Samian Kaur, Ravikumar Pragada, Tao Deng, Kiran Vanganuru, InterDigital

4 The Two-Way Interference Channel: Towards a Redesign of Mobile Communication Systems
Peter Rost, NEC Europe Labs

5 On the Energy-Efficient Power Allocation for Amplify-and-Forward Two-Way Relay Networks
Mingyue Xu, Ying Wang, Gen Li, Wenxuan Lin, Beijing University of Posts and Telecommunications

6 September 2011 13:40-15:20 Golden Gate 6

2G: Resource Allocation

1 Distributed channel allocation and power control in cognitive radio networks using game theory
María Canales, José Ramón Gállego, Rafael Ciria, University of Zaragoza

2 Performance Study of Multimedia Services Using Virtual Token Mechanism for Resource Allocation in LTE Networks
Mauricio Iturralde, Université de Toulouse; Tara Yahiya, Paris Sud 11 University; Anne Wei, CNAM, Laboratoire Cédric; André-Luc Beylot, IRIT/ENSEEIHT

3 Resource Allocation with Sum Throughput Improvement for LTE Uplink Transmission
Hsi-Lu Chao, National Chiao Tung University

4 A Non-cooperative Game Approach for Bandwidth Allocation in Heterogeneous Wireless Networks
Ke Zhang, Ying Wang, Cong Shi, Tan Wang, Feng Zhiyong, Beijing University of Posts and Telecommunications

5 Dynamic traffic allocation scheme for optimum distribution in heterogeneous networks
Canru Wang, Tian Hui, Jie Miao, Beijing University of Posts and Telecommunications

6 September 2011 13:40-15:20 Golden Gate 7

2H: MIMO Transmission II

1 Linear Precoders for Parallell Gaussian Channels with Low Decoding Complexity
Dzevdan Kapetanovic, Fredrik Rusek, Lund University

2 Performance Evaluation of Distributed Precoding Schemes for Multicell OFDM Systems
Reza Holakouei, Aveiro University; Adão Silva, Instituto de Telecomunicações / University of Aveiro; Atílio Gameiro, Instituto de Telecomunicações

3 Spectrally Efficient Switched Transmit Diversity for Spectrum Sharing Systems
Zied Bouida, Mohamed Abdallah, Khalid Qaraqe, Texas A&M University at Qatar; Mohamed-Slim Alouini, KAUST

4 QRD-based Antenna Grouping for MIMO Transmission
Chun-Tao Lin, Wen-Rong Wu, National Chiao-Tung University

5 Adaptive Distributed Precoding Scheme Based on Gradient Iteration for CoMP Systems
Tiankui Zhang, Xiaochen Shen, Beijing University of Posts and Telecommunications; Zhongfeng Li, Huawei Technologies Co., Ltd.

6 September 2011 13:40-15:20 Golden Gate Foyer

2P: Wireless Access Posters I

1 A Novel Dynamic Full Frequency Reuse Scheme in OFDMA Cellular Relay Networks
Jian Liang, Hui Yin, Haokai Chen, Zhongnian Li, Shouyin Liu, Huazhong Normal University

2 A QoS-Aware Power Optimization Scheme in OFDMA Systems with Integrated Device-to-Device(D2D) Communications
Xiao Xiao, Xiaoming TAO, Jianhua Lu, Tsinghua University

3 Antenna Gain Mismatch Calibration for Cooperative Base Stations
Jian Geng, Beijing University of Posts and Telecommunications; Chengkang Pan, China Mobile Research Institute; Fan Huang, Beijing University of Posts and Telecommunications; Wei Xiang, University of Southern Queensland; Qixing Wang, CMCC; Liu Guangyi, Research Institute of China Mobile; Shen XiaoDong, China Mobile Communications Corporation; Dacheng Yang, Beijing University of Posts and Telecommunications

4 Beamforming Transmit Diversity using power control commands for High Speed Uplink Packet Access
Frans Laakso, Kari Aho, Ilmari Repo, Petri Eskelinen, Magister Solutions Ltd.; Marko Lampinen, Renesas Mobile

5 BS-initiated Mode Transition in WiMAX Networks
Ming-Hung Tao, Ying-Chuan Hsiao, Industrial Technology Research Institute

6 Capacity-Fairness Trade-off Using Coordinated Multi-Cell Processing
Virgile Garcia, INRIA; Nikolai Lebedev, CPE Lyon / CITI INSA Lyon; Jean-Marie Gorce, INSA de Lyon

7 Codebook Design for LTE-A Downlink System
Lu Wu, Jinhui Chen, Hongwei Yang, Di Lu, Alcatel-Lucent Shanghai Bell

8 Distributed Capacity Based Channel Allocation for Dense Local Area Deployments
Athul Prasad, Aalto University; Klaus Doppler, Martti Moisio, Valkealahti Kimmo, Nokia; Olav Tirkkonen, Aalto University

9 Efficient Multi-Point Transmission Scheme for HSDPA Networks
Wei Yang, Yongyu Chang, Shuhui Liu, Dacheng Yang, Beijing University of Posts and Telecommunications

10 Energy-Efficient 2-D Resource Allocation with Fairness Constraints for OFDMA Networks
Chieh Yuan Ho, ChingYao Huang, National Chiao Tung University

11 Enhanced User Fairness Using Non-orthogonal Access with SIC in Cellular Uplink
Tomohiro Takeda, Kenichi Higuchi, Tokyo University of Science

12 Finger Allocation for Advanced WCDMA Uplink
Paavo Hahtola, Ilkka Moilanen, VTT Technical Research Centre of Finland

13 Hybrid Smoothing Method (HSM) in Cyclostationary ?Signal Detection for Cognitive Radio
Mandana Norouzi, Illinios Inistitute of Technology; Brent Guenther, Wright University, OH, USA; Zhiqiang Wu, Wright State University; Chi Zhou, Illinois Institute of Technology

14 Interference Analysis on UMTS-2100 Co-existence with GSM-1900
Alexandre Loureiro, David Gallegos, George Caldwell, Nokia Institute of Technology – INdT

15 Issues in Femtocell deployments in broadband OFDMA networks : 3GPP-LTE a case study
Suvra Sekhar Das, Prabhu Chandhar, Soumen Mitra, Priyangshu Ghosh, Indian Institute of Technology Kharagpur

16 Maximization of the Minimum Rate by Geometric Programming for Multiple Users in Partial Frequency Reuse Cellular Networks
Bujar Krasniqi, Vienna University of Technology; Christoph F. Mecklenbräuker, Technische Universität Wien

17 Multipath-based User Selection Scheme for Multiuser Beamforming in MIMO Distributed Antenna Systems
Yang Lan, DOCOMO Beijing Communications Laboratories Co., Ltd

18 Non-linear Effects of Receiver Amplifier for 60GHz Radio Communication
Meng-Lin Ku, National Central University; Ssu-Han Lu, Li-Chun Wang, National Chiao Tung University; Sheng-Hong Yan, National Taiwan University

19 On Implementing Spatial Covariance Matrix Aided Limited Feedback in Practical MIMO Systems
Jinhui Chen, Dong Li, Hongwei Yang, Hao Liu, Di Lu, Lu Wu, Alcatel-Lucent Shanghai Bell

20 On uncoordinated multi user multi RAT combining
Alessandro Bazzi, WiLab, IEIIT-BO/CNR, University of Bologna

6 September 2011 15:50-17:10 Franciscan A

3A: Vehicular Networks

1 Evaluation of the Universal Geocast Scheme For VANETs
Ben Bovee, Mohammad Nekoui, Hossein Pishro-Nik, Russell Tessier, University of Massachusetts

2 Why VANET Beaconing is More than Simple Broadcast
Razvan Stanica, University of Toulouse; Emmanuel Chaput, University of Toulouse, ENSEEIHT - IRIT /CNRS - TéSA; André-Luc Beylot, IRIT/ENSEEIHT

3 Scalable Hybrid Location-based Routing in Vehicular Ad Hoc Networks
Mohammad Al-Rabayah, Robert Malaney, University of New South Wales

4 Vehicular Communications Framework for Efficient Multihop Connectivity in AHVN
Saied M. Abd El-atty Soliman, Menoufia University, Menouf, Egypt

6 September 2011 15:50-17:10 Franciscan B

3B: Channels for Vehicular and Automotive Applications

1 Estimation of Velocities in Mobile-to-Mobile Wireless Fading Channels
A. G. Zajic, Georgia Institute of Technology

2 Evaluation of an Outdoor-to-In-Car Radio Channel with a Four-Antenna Handset and a User Phantom
Fredrik Harrysson, Ericsson Research; Tommy Hult, Fredrik Tufvesson, Lund University

3 A Non-Stationary MIMO Vehicle-to-Vehicle Channel Model Derived from the Geometrical Street Model
Ali Chelli, Matthias Pätzold, University of Agder

4 Propagation Mechanism Analysis before the Break Point inside Tunnels
Ke Guan, Zhangdui Zhong, Bo Ai, Beijing Jiaotong University; C. Briso-Rodríguez, Universidad Politécnica de Madrid

6 September 2011 15:50-17:10 Golden Gate 1

3C: Selected Topics in Communications I

1 KLD-based anomaly detection and monotonic sequence analysis
Alan Anderson, Harald Haas, University of Edinburgh

2 On the Detection of Unknown Signals Using Welch Overlapped Segmented Averaging Method
Ebtihal Gismalla, Emad Alsusa, University of Manchester

3 Robust Spatial Reuse Scheduling in Underwater Acoustic Communication Networks
Roee Diamant, Lutz Lampe, University of British Columbia

4 Threshold Evaluation in Link Adaptation Schemes for Progressive Images Transmission
Laura Toni, Italian Institute of Technology (IIT); Barbara Masini, WiLab, IEIIT/CNR, University of Bologna

6 September 2011 15:50-17:10 Golden Gate 2

3D: Navigation and Sensors

1 Low Complexity High Resolution Maximum Likelihood Channel Estimation in Spread Spectrum Navigation Systems
Ingmar Groh, Emanuel Staudinger, Stephan Sand, German Aerospace Center (DLR)

2 Impact of Emitter-Sensor Geometry on Accuracy of Received Signal Strength Based Geolocation
Sichun Wang, Communications Research Centre (CRC); Brad R. Jackson, Defence R&D Canada-Ottawa; R. Inkol, Defence R&D Canada - Ottawa

3 Proximity Sensing using Magnetoquasistatic Fields
Darmindra Arumugam, Carnegie Mellon University; Daniel Stancil, North Carolina State University; David S. Ricketts, Carnegie Mellon University

4 Time-Variant Maximum Likelihood Channel Estimation in Mobile Radio Navigation Systems
Ingmar Groh, Emanuel Staudinger, Stephan Sand, German Aerospace Center (DLR)

6 September 2011 15:50-17:10 Golden Gate 3

3E: Network Coding

1 Iterative Network and Channel Decoding for the Relay Channel with Multiple Sources
Onurcan Iscan, Christoph Hausl, Munich University of Technology

2 Near-Capacity Network Coding for Cooperative Multi-User Communications
Hung Viet Nguyen, Soon Xin (Michael) Ng, University of Southampton; João Luiz Rebelatto, Federal University of Santa Catarina; Yonghui Li, University of Sydney; Lajos Hanzo, University of Southampton

3 Performance Analysis of a Two-way Network-coded Free Space Optical Relay Scheme over Strong Turbulence Channels
Yao Tang, Xiaolin Zhou, Ziyi Zhang, Qiyuan Tian, Fudan University

4 Reducing Computational Overhead of Network Coding with Intrinsic Information Conveying
Janus Heide, Aalborg University; Qi Zhang, Danske Telecom A/S; Morten V. Pedersen, Frank H.P. Fitzek, Aalborg University

6 September 2011 15:50-17:10 Golden Gate 4

3F: 802.11 Technologies

1 An Overhear-based Cooperative Mechanism to Improve Performance in IEEE 802.11 WLANs
Hayoung Oh, Chong-kwon Kim, Seoul National University

2 Efficient QoS Scheduling for Multimedia Services in IEEE 802.11e WLAN
Kang Yong Lee, Kee Seong Cho, ETRI

3 Enhancement of TCP in 802.11e Wireless Local Area Networks
Mjumo Mzyece, Dorothy A. Rambim, Karim Djouani, Tshwane University of Technology

4 Performance Analysis and QoE-aware Enhancement for IEEE 802.11e EDCA under Unsaturations
Yueying Zhang, Wei Li, Junlong Zhang, Hang Long, Wenbo Wang, Beijing University of Posts and Telecommunications

6 September 2011 15:50-17:10 Golden Gate 6

3G: Ad hoc Networks

1 Capacity Regions of Wireless Multi-Channel Ad Hoc Networks
Jens Elsner, Christian Mohr, Karlsruhe Institute of Technology; Friedrich K. Jondral, Universität Karlsruhe (TH)

2 CCH: Cognitive Channel Hopping in Vehicular Ad Hoc Networks
Brian Choi, University of California, Los Angeles; Hyungjune Im, NHN Corporation; Kevin C. Lee, Cisco Systems; Mario Gerla, UCLA

3 Coordination in Wireless Ad-Hoc Networks
Brage Ellingsater, Forsvarets Forskningsintitutt; Torleiv Maseng, Forsvarets Forskningsinstitutt

4 Optimal Opportunistic Rate Allocation in Cognitive Radio Ad Hoc Neworks
Jae-Young Seol, Seong-Lyun Kim, Yonsei University

6 September 2011 15:50-17:10 Golden Gate 7

3H: Mobile Application Technologies

1 A Formal Methodology Applied to Secure Over-the-Air Automotive Applications
Gabriel Pedroza, Telecom ParisTech; Sabir Idrees, EURECOM; Ludovic Apvrille, Telecom ParisTech; Yves Roudier, EURECOM

2 An experimental framework to investigate context-aware schemes for content delivery
Pietro Lungaro, Royal Institute of Technology (KTH); Pavan Kumar K, Vikrant Nandakumar, University of Maryland; Zary Segall, KTH Mobile Service Lab, Kista, Stockholm

3 Topology-aware integration of cellular users into the P2P system
Mohammad Zulhasnine, Dr. Changcheng Huang, Carleton University; Anand Srinivasan, EION Inc.

4 Seamless and Secure Service Framework in Heterogeneous Mobile Network Environment
Sunghyun Yoon, ETRI

6 September 2011 15:50-17:10 Golden Gate Foyer

3Pa: Wireless Access Posters II

1 Payload Length Adaptation for Wireless Video Transmission in Multicarrier Systems
Hsuan-Li Lin, Tung-Yu Wu, Ching-Yao Huang, National Chiao Tung University

2 Power Allocation for Multiband Coded OFDM Systems with Limited Feedback
Duc To, University of Wales Swansea; Huan X. Nguyen, Middlesex University; Jinho Choi, University of Wales Swansea; Seungwon Choi, Hanyang University

3 Relay Aided Lifetime Prolongation for User Equipments in Hotspots
Saifeng Ni, University of Science and Technology of China; Sihai Zhang, University of Science and Technology in China; Wuyang Zhou, University of Science and Technology of China

4 Simultaneous Reception and Scanning using Complex IF Radio Architectures
Leif R. Wilhelmsson, Ericsson Research, Lund, Sweden; Fenghao Mu, Ericsson Research; Lars Sundström, Ericsson AB

5 The Potential of Restricted PHY Cooperation for the Downlink of LTE-Advanced
Marc Kuhn, Raphael Rolny, Armin Wittneben, ETH Zurich; Michael Kuhn, University of Applied Sciences; Thomas Zasowski, Swisscom

6 **Throughput Gain of Fractional Frequency Reuse with Frequency Selective Scheduling in SC-FDMA Uplink Cellular System**
Masashi Fushiki, Takeo Ohseki, Satoshi KONISHI, KDDI R&D Laboratories Inc.

7 **User Fairness-Empowered Power Coordination in OFDMA Downlink**
Zhenning Shi, Orange Labs Beijing; Yajuan Luo, France Telecom R&D Beijing, China; Lin Huang, Orange Labs, France Telecom R&D, Beijing, China; Daqing Gu, France Telecom R&D Beijing, China

6 September 2011 15:50-17:10 Golden Gate Foyer

3Pb: Wireless Networks Posters

1 **A Novel Control Channel Management In CogMesh Networks**
Tao Chen, VTT Technical Research Centre of Finland; Marja Matinmikko, VTT - Technical Research Centre of Finland; Honggang Zhang, Zhejiang University

2 **Bi-directional Cognitive Radio MAC Protocol for Supporting TCP Flows**
Lee-Chin Lau, Chih-Che Lin, Shie-Yuan Wang, National Chiao-Tung University

3 **Brute Force Vulnerability Testing Technology based on Data Mutation**
Shijia Gu, Weihai Li, Xin Zhao, Beijing University of Posts and Telecommunications

4 **Characterizing WLAN medium utilization for Radio Environment Maps**
Marc Portoles, Christian Ibars, José Núñez Martínez, Josep Mangues Bafalluy, Centre Tecnologic de Telecomunicacions de Catalunya (CTTC)

5 **Cooperative Spectrum Sensing for Cognitive Radio Networks Based on Spectrum Estimates**
Ebtihal Gismalla, Emad Alsusa, University of Manchester

6 **CSMA/CA Performance under Fading Environment with Two-dimensional Distribution of Hidden Terminal**
Jingze Dai, Yasushi Yamao, University of Electro-Communications (UEC Tokyo), Japan

7 **Efficient Available Spectrum Resource Evaluation in Cognitive Radio**
Qun Pan, Xin Zhang, Jingdi Liu, Yongyu Chang, Dacheng Yang, Beijing University of Posts and Telecommunications

8 **Joint Power and Rate Adaptation in a Cognitive Radio Network: the Rate-distance Approach**
David Shiung, Chun-Shen Tsai, National Changhua University of Education

9 **On the Performance of Joint Relay Selection and Beamforming with Limited Feedback for AF Cooperative Networks**
Ang Yang, Chengwen Xing, Zesong Fei, Jingming Kuang, Beijing Institute of Technology

10 **Performance Improvements of mSCTP-CMT in Ubiquitous Network Scenarios**
Jie Chang, Beijing University of Posts and Telecommunications

11 **Qos-Aware Resource Allocation for Mixed Multicast and Unicast Traffic in OFDMA Networks**
Hui Deng, Xiaoming Tao, Jianhua Lu, Tsinghua University

12 **Time and Power Domain Interference Management for LTE Networks with Macro-cells and HeNBs**
Yuanye Wang, Aalborg University; Klaus I. Pedersen, Nokia Siemens Networks

Wednesday 7 September 2011

7 September 2011 10:30-12:10 Franciscan A

4A: Routing

1 **Energy-Efficient Routing in Ad Hoc Networks Relying on Channel State Information and Limited MAC Retransmissions**
Jing Zuo, Chen Dong, Soon Xin (Michael) Ng, Lie-Liang Yang, Lajos Hanzo, University of Southampton

2 **Practical Link Reliability for Ad hoc Routing Protocol**
Amadou Baba Bagayoko, University of Toulouse, ENSEEIHT/IRIT; Beatrice Paillassa, Centre National de la Recherche Scientifique; Riadh DHAOU, University of Toulouse, ENSEEIHT/IRIT

3 **A Distributed Hybrid Channel Selection and Routing Technique for Wireless Sensor Networks**
David Fotue, Foued Melakessou, University of Luxembourg; Houda Labiod, Telecom ParisTech; Thomas Engel, University of Luxembourg

4 **Real-time Routing Protocol based on Expect Grids for Mobile Sinks in Wireless Sensor Networks**
Euisin Lee, Soochang Park, Jeongcheol Lee, Seungmin Oh, Sang-Ha Kim, Chungnam National University

5 **Energy-efficient Cooperative Geographic Routing in Wireless Sensor Networks Utilizing Transmit Diversity and Multi-sensor Diversity**
Bin li, Wenjie Wang, Qinye Yin, Rong Yang, Li Sun, Xian Jiaotong University

7 September 2011 10:30-12:10 Franciscan B

4B: Video Transmission and Coding

1 **Real-Time Optimization of Video Transmission in a Network of AAVs**
Ahmed Abdel hadi, Austin; Jonas Michel, Andreas Gerstlauer, Sriram Vishwanath, University of Texas, Austin

2 **Tree-Structured Multiple Description Coding for Multiview Mobile TV and Camera-Phone Networks**
Yongkai Huo, Lajos Hanzo, University of Southampton

3 **A Cooperative Video Streaming System over the Integrated Cellular and DSRC Networks**
Chao-Hsien Lee, Kaohsiung Medical University; Chung-Ming Huang, Chia-Ching Yang, Tai-Hsiang Wang, National Cheng Kung University

4 **An Imporved Distributed Video Coding Scheme For Wireless Sensor Network**
Jinhong Di, Aidong Men, Feng Ye, Xinming Zhang, Beijing University of Posts and Telecommunications

7 September 2011 10:30-12:10 Golden Gate 1

4C: Cognitive Radio Networks I

1 **Achievable Capacity of Open-Access Cognitive Radio Systems Coexisting with a Macro Cellular System**
Hiromasa Fujii, Hiroki Harada, Shunji Miura, Hidetoshi Kayama, NTT DOCOMO, Inc.

2 **An Efficient Implementation of the Multiband Joint Detection Framework for Wideband Spectrum Sensing in Cognitive Radio Networks**
Pedram Paysarvi-Hoseini, Norman C. Beaulieu, University of Alberta

3 **Low Complexity Multiple Relay Selection Scheme for Cognitive Relay Networks**
Moonchang Choi, Junggyun Park, Sooyong Choi, Yonsei University

4 **Cognitive Relaying with Time Incentive: Multiple Primary Users**
Vinay Thumar, Taskeen Nadkar, Indian Institute of Technology, Bombay

5 Low-complexity GSVD-based Beamforming Schemes for Cognitive Radio Network
Jaehyun Park, Electronics and Telecommunications Research Institute; Yunju Park, KSA of Korea Advanced Institute of Science and Technology; Sunghyun Hwang, Byung Jang Jeong, ETRI

7 September 2011 10:30-12:10 Golden Gate 2

4D: Mobile Communications

1 A Sub-spectrum Suppressed Transmission Scheme for Highly Efficient Satellite Communications
Jun Mashino, Takatoshi Sugiyama, NTT Access Network Service Systems Laboratories

2 Duality-Based Robust Transceiver Design for Cognitive Downlink Systems
Xitao Gong, Aamir Ishaque, Guido Dartmann, Gerd Ascheid, RWTH Aachen University

3 Receiver Design for Single-Frequency Networks with Fast-Varying Channels
Fábio Coelho, Rui Dinis, Universidade Nova de Lisboa; Paulo Montezuma, FCT-Universidade Nova de Lisboa

4 On the Use of Multiple Grossly Nonlinear Amplifiers for an Efficient Amplification of OQAM Signals with FDE Receivers
Miguel Luzio, IT - Instituto de Telecomunicações; Rui Dinis, Universidade Nova de Lisboa; Paulo Carvalho, FCT- Universidade Nova de Lisboa

5 Improving Link Budget Analysis of Adaptive Wireless Systems with Probabilistic Inequalities
Adrian Kotelba, Aarne Mämmelä, VTT Technical Research Centre of Finland

7 September 2011 10:30-12:10 Golden Gate 3

4E: Coding

1 Design of Fixed-Point Processing Based LDPC Codes Using EXIT Charts
Xin Zuo, Rob Maunder, Lajos Hanzo, University of Southampton

2 A Generalization of Residual Belief Propagation for Flexible Reduced Complexity LDPC Decoding
Moritz Beermann, Peter Vary, RWTH-Aachen

3 Simplied Circular Viterbi Algorithm for Tailbiting Convolutional Codes
Jorge Ortín, Paloma Garcia-Ducar, Fernando Gutiérrez, Antonio Valdovinos, University of Zaragoza

4 Enhanced Log-Likelihood Ratio Calculation for LDPC Coded SC-FDE Systems in 60-GHz MillimeterWave WLANWPAN
Dalin Zhu, NEC Labs China; Ming Lei, NEC Laboratories

5 Near-Capacity Turbo Coded Soft-decision Aided DAPSK/Star-QAM
Dandan Liang, Soon Xin (Michael) Ng, Lajos Hanzo, University of Southampton

7 September 2011 10:30-12:10 Golden Gate 4

4F: Scheduling

1 A Fast and Fair Algorithm for Distributed Subcarrier Allocation Using Coalitions and the Nash Bargaining Solution
Stefanos Vatsikas, Simon Armour, University of Bristol; Marina De Vos, University of Bath; Tim Lewis, Toshiba Research Europe Ltd.

2 Efficient Distributed Dynamic Resource Allocation for LTE Systems
Shuhui Liu, Beijng University of Posts & Telecommunications; Yongyu Chang, Dacheng Yang, Beijing University of Posts and Telecommunications

3 Reducing LTE Uplink Transmission Energy by Allocating Resources
Mads Lauridsen, Anders Riis Jensen, Preben Mogensen, Aalborg University

4 Treemap-based Burst Mapping Algorithm for Downlink Mobile WiMAX Systems
Joël Vanderpypen, FUNDP; Prof. Laurent Schumacher, Universite catholique de Louvian

5 Multi-user Multi-service Rate Allocation Scheme using Nash Bargaining Solution
Zelang Wang, Huifang Chen, Lei Xie, Zhejiang University

7 September 2011 10:30-12:10 Golden Gate 6

4G: Advanced Techniques for Next-Generation Wireless Networks I

1 A Distant Multipath Routing Method for Reliable Wireless Multi-Hop Data Transmission
Kento Terai, Daisuke Anzai, Osaka City University; Kentaro Yanagihara, Oki Electric Industry Co., Ltd.; Shinsuke Hara, Osaka City University

2 Comparison of Different Network Densification Alternatives from the LTE Downlink Performance Point of View
Kimmo Hiltunen, Ericsson Research, Oy L M Ericsson Ab

3 Accumulative Interference Modeling of Cellular CR Network to DTV system
Lu Ye, Zaixue Wei, Hong Du, Haodong Xie, Lin Sang, Dacheng Yang, Beijing University of Posts and Telecommunications

4 Mobile Broadband Traffic Forecast Modeling for Network Evolution Studies
Istvan Z. Kovacs, Nokia Siemens Networks; Preben E. Mogensen, Nokia Networks, Aalborg, Denmark; Birger Christensen, Rauli Jarvela, Nokia Siemens Networks

5 Optimal Rate Assignment Strategy to Minimize Average Waiting Time in Wireless Networks
Hongfei Zeng, The University of Hong Kong; Ronghui Hou, Xidian University; King-Shan Lui, University of Hong Kong

7 September 2011 10:30-12:10 Golden Gate 7

4H: MIMO Detection

1 Low-Complexity Receiver for Large-MIMO Space-Time Coded Systems
Christopher Knievel, Meelis Noemm, Peter Adam Hoeher, University of Kiel

2 Improved MIMO SIC Detection Exploiting ML Criterion
Ji-Woong Choi, DGIST; Jungwon Lee, Samsung US R&D Center; Hui-Ling Lou, Marvell Semiconductor, Inc.; Jongsun Park, Korea University

3 Performance of Advanced Receiver Employing Interference Rejection Combining to Suppress Inter-cell Interference in LTE-Advanced Downlink
Yusuke Ohwatari, Nobuhiko Miki, Takahiro Asai, Tetsushi Abe, NTT DOCOMO; Hidekazu Taoka, DOCOMO Communications Labs Europe

4 SLIC - a Low Complexity Demodulator for MIMO
Ali Khayrallah, Ericsson Research

5 A List Detection and Decoding Algorithm for Linear Block Coded MIMO System
Haiyang Xin, Yuexing Peng, Qingyi Quan, Wenbo Wang, Beijing University of Posts and Telecommunications; Bin Wu, Institute of Microelectronics of Chinese Academy of Sciences

7 September 2011 10:30-12:10 Golden Gate Foyer

4P: Transmission Technologies Posters I

1 A GLRT-based Two-Stage Coexistence Detection Scheme for OFDM-based 60-GHz Millimeter-Wave WLAN/WPAN
Dalin Zhu, NEC Labs China; Ming Lei, NEC Laboratories

2 A Novel Timing Synchronization Method for CDD-OFDM Systems
Wei-Chieh Huang, Chia-Lung Tsai, Pangan Ting, Industrial Technology Research Institute

3 **A Pre-Equalized Transmission based on Basefield Hartley Transform over Multi-Path Fading Channels**
Heng Liu, Southwest Jiaotong University; Lin Luo, University of South Australia; Pingzhi Fan, Southwest Jiaotong University

4 **A Simplified Estimate-and-Forward Scheme for Relay Networks**
Chaowei Wang, Lihua Li, Weidong Wang, Yinghai Zhang, Lei Song, Beijing University of Posts and Telecommunications; Jorma Lilleberg, Renesas Mobile

5 **A Tone Reservation Method Combining Linear Clipping and PRT-aided Detection Algorithm**
Zhanya Li, WeiDong Wang, Wenyi Zhang, University of Science and Technology of China

6 **Adaptive HARQ with Memoryless Relays**
Petra Weitkemper, Hidekazu Taoka, DOCOMO Euro-Labs;

7 **Average BER of BFSK with Postdetection Switch-and-Stay Combining in TWDP Fading**
Sasan Haghani, University of the District of Columbia

8 **Bi-directional Signal Detection and Decoding for Hybrid ARQ Using Superposition Coding**
Yasuyuki Hasegawa, Kenichi Higuchi, Tokyo University of Science

9 **Capacity Analysis of Adaptive Transmission with MRC in Arbitrarily Correlated Rayleigh Fading**
Juan Manuel Romero, Juan P. Peña-Martín, University of Malaga

10 **Capacity-Approaching Design for Half-Duplex NAF Relay Channels**
Leonardo J. Rodriguez, Nghi Tran, Tho Le-Ngoc, McGill University

11 **Channel Prediction on the Downlink of Precoded Multiuser MIMO OFDM Systems Using the Set-Membership Affine Projection Filtering**
João Paulo, Universidade de Brasília; Robson. D. Vieira, Nokia Technology Institute (INdT); Paulo H. P. Carvalho, University of Brasilia

12 **Detection of Unknown Multitone Interference Using the AR Method in Slow FH/BFSK Systems over Rayleigh Fading Channels**
Aye Aung, Kah Chan Teh, Kwok Hung Li, Nanyang Technological University

13 **Downlink Throughput Performance of Distributed Antenna Network Using Transmit/Receive Diversity**
Ryusuke Matsukawa, Tatsunori Obara, Kazuki Takeda, Fumiyuki Adachi, Tohoku University

14 **Energy-Efficient A/D Conversion in Wideband Communications Receivers**
Stefan Krone, TU Dresden; Gerhard Fettweis, Technische Universität Dresden

15 **Experimental Study of UWB Impulse Response and Time Reversal Communication Technique up to 12 GHz**
Amir Dezfooliyan, Andrew M. Weiner, Purdue University

16 **Exploiting Multiuser Diversity in Wireless Cooperative Networks**
Li Sun, Taiyi Zhang, Hao Niu, Bin Li, Xian Jiaotong University

17 **Frequency-Domain Multiuser Detection for Highly Overloaded DS-CDMA Systems**
Paulo Silva, Universidade do Algarve; Rui Dinis, Universidade Nova de Lisboa

18 **Interference Cancellation Techniques using A 2nd-Order FIR Notch Filter in Narrowband Wireless Systems**
Shusuke Narieda, Akashi National College of Technology

19 **Interference cancellation using relay station in heterogeneous networks**
Kentaro Nishimori, Niigata University; Koshiro Kitao, Tetsuro Imai, NTT DoCoMo Inc.

20 **IQ Offset and Imbalance Estimation for LTE Basestation Receivers and Measurement Devices**
Christian Kuhn, Rohde & Schwarz

21 **Joint resource allocation for multiuser two-way OFDMA relay networks with proportional fairness**
Hanmok Shin, J. H. Lee, Seoul National University

22 **Low Complexity Sequential Estimation Scheme for Pseudo Noise Code Acquisition**
Junhwan Kim, Youngyoon Lee, Dahae Chong, Youngpo Lee, Seung Goo Kang, Seokho Yoon, Sungkyunkwan University

7 September 2011 13:40-15:20 Franciscan A

5A: Cooperative Networking

1 **A Cooperative ARQ strategy with adaptive back-off for Mobile Multimedia Communication Using Cognitive Relays**
Mi-Eun An, Seo-Yun Bae, Ewha Womans University; Nak-Myeong Kim, Ewha University

2 **An Experimental Setup for Performance Analysis of an Online Adaptive Cooperative Spectrum Sensing Scheme for Both In-Phase and Quadrature Branches**
Serhan Yarkan, Khalid Qaraqe, Behcet Toreyin, Texas A&M University at Qatar; A. Enis Cetin, Bilkent University

3 **Auction-Style Cooperative Medium Access Control**
Jiao Feng, Rong Zhang, Lajos Hanzo, University of Southampton

4 **On-Demand Decode and Forward Cooperative MAC for VoIP in Wireless Mesh Networks**
Kent Cheung, Li Li, Lajos Hanzo, University of Southampton

5 **Rate Optimization for Relay Precoding Design with Imperfect CSI in Two-hop MIMO Relay Networks**
Youhua Fu, Nanjing University of Posts and Telecommunications; Wei-Ping Zhu, Concordia University; Chen Liu, Nanjing University of Posts and Telecommunications

7 September 2011 13:40-15:20 Franciscan B

5B: Channel Models

1 **Fast Fading Characterization for Indoor to Indoor and Outdoor to Indoor Channels**
Fernando Sanchez, Nicolai Czink, FTW; Claude Oestges, Université catholique de Louvain (UCL); Andreas Stephanides, Vienna University of Technology

2 **On Polarization and Frequency Dependence of Diffuse Indoor Propagation**
Jesper Ødum Nielsen, Jørgen Bach Andersen, Gert F. Pedersen, Mauro Pelosi, Aalborg University

3 **Polarization Dispersion Characteristics of Propagation Paths in Urban Mobile Communication Environment**
Tetsuro Imai, NTT DoCoMo Inc.; Koshiro Kitao, NTT DOCOMO

4 **The Doppler-Delay Characteristic of the Aeronautical Scatter Channel**
Michael Walter, German Aerospace Center (DLR); Michael Schnell, German Aerospace Center

5 **Experimental Characterization and Modeling of Shadow Fading Correlation for Relaying Systems**
Quang-Hien Chu, Jean-Marc Conrat, Orange Labs; Jean-Christophe Cousin, TELECOM ParisTech, France

7 September 2011 13:40-15:20 Golden Gate 1

5C: Cognitive Radio Networks II

1 Source and Relay Power Selection Using Biogeography-Based Optimization for Cognitive Radio Systems
Saeed Ashrafinia, Udit Pareek, Muhammad Naeem, Daniel Lee, Simon Fraser University

2 Dynamic Spectrum Allocation with Efficient SINR-Based Interference Management
Sooyeol Im, Yunseok Kang, Korea Advanced Institute of Science and Technology (KAIST); Seunghee Kim, Jin-Up Kim, Electronics and Telecommunications Research Institute; Hyuckjae Lee, Korea Advanced Institute of Science and Technology (KAIST)

3 Autocorrelation-Based Traffic Pattern Classification for Cognitive Radios
Marko Höyhtyä, Heli Sarvanko, Marja Matinmikko, Aarne Mämmelä, VTT Technical Research Centre of Finland

4 A Two-Level Control Channel Scheme in Cognitive Radio Networks Based on Cascaded Space-Time Interference Suppression
Fang-Jian Han, Li Yu, Fang-Jing Han, National University of Defense Technology

5 Cross-Layer Design for Energy Efficiency of TCP Traffic in Cognitive Radio Networks
Gengyu Li, Hu Zheng, Guoyi Zhang, Zhao Lili, Wenpeng Li, Tian Hui, Beijing University of Posts and Telecommunications

7 September 2011 13:40-15:20 Golden Gate 2

5D: Precoding Techniques

1 Game-Based Zero-Forcing Precoding for Multicell Multiuser Transmissions
Hung Nguyen-Le, Duy Nguyen, Tho Le-Ngoc, McGill University

2 Null-Space Precoding for Downlink Network MIMO Systems With no CSI
Mehdi Sadeghzadeh, Sajjad Beygi, Hamid Reza Bahrami, The University of Akron

3 An Improved Spectral Precoding Technique for Constant-Envelope OFDM
Hao Ming Chen, Wei-Chang Chen, Char-Dir Chung, National Taiwan University

4 Partial Soft Decode and Forward
Pir S. Ahmed, Comsats Institute of Information Technology, Abbottabad; Rob Maunder, Lajos Hanzo, University of Southampton

5 Scrambled Coded Multiple Access
Mustafa Eroz, Lin-Nan Lee, Hughes Network Systems, LLC

7 September 2011 13:40-15:20 Golden Gate 3

5E: Vehicular Communications

1 A Multi Channel Beaconing Service for Collision Avoidance in Vehicular Ad-Hoc Networks
Rober .Lasowski, University of Munich; Markus Strassberger, BMW Group Forschung und Technik

2 Cognitive Radio-Enabled Optimal Channel-Hopping Sequence for Multi-Channel Vehicular Communications
Jui-Hung Chu, Kai-Ten Feng, Jia-Shi Lin, National Chiao Tung University; Chung-Hsien Hsu, Industrial Technology Research Institute

3 MAC Channel Congestion Control Mechanism in IEEE 802.11p/WAVE Vehicle Networks
Chih-Wei Hsu, Chung-Hsien Hsu, Huei-Ru Tseng, Industrial Technology Research Institute

4 On Data-centric Misbehavior Detection in VANETs
Sushmita Ruj, University Of Ottawa; Marcos A. Cavenaghi, Unesp, Sao Paulo State University, Brazil; Zhen Huang, Amiya Nayak, Ivan Stojmenovic, University of Ottawa

5 On the Performance of Vehicular Group Communications in IEEE 1609/802.11(p) Networks
Chih-Che Lin, Lo-Chuan Hu, Kuo-Huang Hsu, Hsia-hsin Li, Industrial Technology Research Institute

7 September 2011 13:40-15:20 Golden Gate 4

5F: LTE-Advanced Technology

1 Enhanced Frequency Diversity Exploitation in Carrier Aggregation for LTE-Advanced Systems
Wenxun Qiu, Hlaing Minn, University of Texas at Dallas; Chia-Chin Chong, Orange San Francisco

2 Feedback Compression Schemes for Downlink Carrier Aggregation in LTE-Advanced
Hung Tuan Nguyen, Aalborg; Istvan Z. Kovacs, Nokia Siemens Networks; Yuanye Wang, Aalborg University; Klaus I. Pedersen, Nokia Siemens Networks

3 Improved Component Carrier Selection Method for Non-Continuous Carrier Aggregation in LTE-Advanced Systems
Songtao Gao, Tian Hui, Zhangjun, Peng Tian, Beijing University of Posts and Telecommunications; Lan Chen, Jianchi Zhu, DOCOMO Beijing Communications Laboratories Co., Ltd.

4 Performance Analysis of Downlink Inter-band Carrier Aggregation in LTE-Advanced
Hua Wang, Aalborg University; Claudio Rosa, Klaus I. Pedersen, Nokia Siemens Networks

5 Codebook Design for Cross-polarized Linear Antenna Array in LTE-A Downlink System
Lu Wu, Jinhui Chen, Hongwei Yang, Di Lu, Alcatel-Lucent Shanghai Bell

7 September 2011 13:40-15:20 Golden Gate 6

5G: Advanced Techniques for Next-Generation Wireless Networks II

1 Network Scaling for Achieving Energy Efficient Wireless Networks - A Quantitative Analysis
Bongyong Song, Soumya Das, Fabio Akashi, Christophe Chevallier, Samir Soliman, Qualcomm

2 Network-Scale Emulation of General Wireless Channels
Xiaohui Wang, Kevin Borries, Eric Anderson, Peter Steenkiste, Carnegie Mellon University

3 Optimal New Site Deployment Algorithm for Heterogeneous Cellular Networks
Liang Hu, Aalborg University & Technical University of Denmark; Istvan Z. Kovacs, Nokia Siemens Networks

4 Reversing the Energy Trend in Mobile Networks - Equipment Replacement for Increased Capacity at a Fraction of the Energy
Gilbert Micallef, Aalborg University; P. E. Mogensen, Hans-Otto Scheck, Jyrki Louhi, Nokia Siemens Networks

5 Site-specific study of in-building wireless solutions with Poisson traffic
Zhen Liu, Troels B. Sørensen, Preben Mogensen, Aalborg University

7 September 2011 13:40-15:20 Golden Gate 7

5H: Multi-User MIMO

1 Multi-user Downlink Transmit Beamforming for the Broadband Single-Carrier Distributed Antenna Network
Wei Peng, Fumiyuki Adachi, Tohoku University

2 Multi-User MIMO Precoder Design Via Genetic Search
Mouncef Benmimoune, Daniel Massicotte, Université du Québec à Trois-Rivières

3 On Training Signal Design for Multi-User MIMO-OFDM: Performance Analysis and Tradeoffs
Ahmad Gomaa, University of Texas at Dallas; Yuejie Chi, Princeton University; Naofal Al-Dhahir, University of Texas at Dallas; A. Robert Calderbank, Princeton University

4 A Random Beamforming Technique for Broadcast Channels in Multiple Antenna Systems
Xuezhi Yang, Huawei Tech. Co; Wei Jiang, HUAWEI Technologies; Branka Vucetic, University Of Sydney

5 Joint Combiner and Precoding in MU-MIMO Downlink Systems with Limited Feedback
Guanghui Li, Xin Zhang, Dacheng Yang, Beijing University of Posts and Telecommunications

7 September 2011 13:40-15:20 Golden Gate Foyer

5Pa: Transmission Technologies Posters II

1 Low-complexity Channel Estimation for Mobile Communication Systems
Ming Jiang, Wenkun Wen, New Postcom Equipment Co., Ltd.

2 Low-Complexity ML Doppler Spread Estimation for OFDM Systems
Yuh-Ren Tsai, Kai-Jie Yang, Chia-Hong Tsai, Chin-Liang Wang, National Tsing Hua University

3 max-dmin and P-OSM Precoders performance for robust and high data rate MIMO transmissions in underground tunnels
Ghadir Madi, University of Poitiers; Crépin Nsiala Nzéza, INRETS LEOST; Baptiste Vrigneau, University of Poitiers; Yann Cocheril, INRETS - LEOST; DR M. Berbineau, LEOST laboratory, France; Rodolphe Vauzelle, University of Poitiers

4 Misbehavior Detection Without Channel Information in Cooperative Networks
Li-Chung Lo, Wan-Jen Huang, National Sun Yat-Sen University

5 Multi-Cell Collaborative Transmission Combining Closed-Loop and Open-Loop Techniques
Ji Wang, Li LiHua, Lei Song, Qi Sun, Wanlu Sun, Beijing University of Posts and Telecom.(BUPT)

6 Multiuser Pairing in Uplink CoMP MU-MIMO Systems Using Particle Swarm Optimization
Chao Wang, Cui Qimei, Beijing University of Posts and Telecommunications

7 Near-Capacity Non-Coherent Network-Coding aided scheme for Cooperative Multi-user Communications
Hung Viet Nguyen, Chao Xu, Soon Xin (Michael) Ng, University of Southampton; João Luiz Rebelatto, Federal University of Santa Catarina; Yonghui Li, University of Sydney; Lajos Hanzo, University of Southampton

8 Novel Analysis for Performance Evaluation of Energy Detection of Unknown Deterministic Signals Using Dual Diversity
Kasun T. Hemachandra, Norman C. Beaulieu, University of Alberta

9 On Practical Inter-Carrier Interference Cancellation Techniques
Liang Zhang, Zhihong Hong, Louis Thibault, Richard Boudreau, Communications Research Centre Canada

10 On the Modeling of Low Pass Characteristics of Super-regenerative Receiver for High Speed Simulation
Tuhin Subhra Chakraborty, Satya Sudhakar Yedlapalli, Samsung Electronics; Arun Naniyat, Samsung India Software Operations; Young-Jun Hong, Samsung Electronics Co., Ltd.; James S. Kim, Samsung Advanced Institute of Technology

11 Optimization of Cooperative Spectrum Sensing with an Improved Energy Detector over Imperfect Reporting Channels
Ajay Singh, Manav R Bhatnagar, Ranjan Mallik, Indian Institute of Technology - Delhi

12 Performance Evaluation of Four Orthogonal Single Sideband Elements Modulation Scheme in Multi-Carrier Transmission Systems
Yi Jiang, Zhenyu Zhou, Waseda University; Masahiko Nanri, Panasonic Mobile Communications Co., Ltd.; Genichiro Ohta, Takuro Sato, Waseda University

13 Robust Rate Adaptation for Time Variant MIMO Channels
Eckhard Ohlmer, Gerhard Fettweis, Technische Universität Dresden

14 Self-Concatenated Coding and Multi-Functional MIMO Aided H.264 Video Telephony
Nasruminallah, Soon Xin (Michael) Ng, University of Southampton; Muhammad Fasih Uddin Butt, COMSATS Institute of Information Technology Islamabad; Lajos Hanzo, M. El-Hajjar, University of Southampton

15 SER of Amplify-and-Forward Cooperative Networks with OSTBC Transmission in Nakagami-m Fading
Hoc Phan, Trung Q. Duong, Hans-Jürgen Zepernick, Blekinge Institute of Technology

16 Soft-Decision 2-step QRM-ML Block Signal Detection for Single-Carrier Transmission
Katsuhiro Temma, Tetsuya Yamamoto, Fumiyuki Adachi, Tohoku University

17 Statistical-based Density Evolution Algorithm for Nonbinary Low-Density Parity-Check Codes
Jie Wu, Minjian Zhao, Jie Zhong, Wenyan Zhang, Xuanxuan Lv, ZheJiang University

18 Superior Coherent Receivers for AF Relaying with Distributed Alamouti Code
Fahd Ahmed Khan, King Abdullah University of Science and Technology (KAUST); Yunfei Chen, University of Warwick; Mohamed-Slim Alouini, KAUST

19 The Karhunen-Loeve Expansion of OFDM Channel Responses
Ming-Xian Chang, Ren-Shian Chen, National Cheng-Kung University

20 Wireless Multiuser Relay Networks in Nakagami-m Fading Channels
Nan Yang, Maged Elkashlan, CSIRO ICT Centre; Jinhong Yuan, University of New South Wales

7 September 2011 13:40-15:20 Golden Gate Foyer

5Pb: Transportation Posters

1 Design of a Lane Marker Lighting System based on Piezoelectric Power Generation
Takeshi Kasuga, Fukushima National College of Technology

2 EMI Limits for LA Metro Light Rail Lines
David Turner, Turner Engineering Corporation; F. Ross Holmstrom, University of Massachusetts-Lowell; Eli Fernald, Turner Engineering Corporation; Filipe Aveiro, Michael Harris-Gifford, Los Angeles County Metropolitan Transportation Authority; L.S. Brian Ng, Brian Ng Engineering, Inc.

7 September 2011 15:50-17:10 Franciscan A

6A: Efficient Communication in Sensor Networks

1 An Energy-Efficient Communication Scheme for Mobile Sink Groups in Wireless Sensor Networks
Yongbin Yim, Hosung Park, Jeongcheol Lee, Seungmin Oh, Sang-Ha Kim, Chungnam National University

2 DCW-MAC: An energy efficient medium access scheme using duty-cycled low-power wake-up receivers
Nafiseh Seyed Mazloum, Ove Edfors, Lund University

3 Grid-based Group Communication Protocol for Mobile Sink Groups in WSNs
Jeongcheol Lee, Hosung Park, Seungmin Oh, Yongbin Yim, Sang-Ha Kim, Chungnam National University

4 An Active Congestion Help Mechanism in Wireless Sensor Network
Peng Du, Weixia Zou, Wanxin Gao, Beijing University of Posts and Telecommunications

7 September 2011 15:50-17:10 Franciscan B

6B: RF Propagation Measurements and Applications

1 Antenna and Propagation Parameters Modeling Live Networks
Arne Simonsson, Magnus Lundevall, Martin Johansson, Ericsson Research

2 Concepts and Implementation of a Semantic Web Archiving and Simulation System for RF Propagation Measurements
Vinodh Kumar Rajendran, James Murdock, Adrian Duran, Theodore S. Rappaport, The University of Texas at Austin

3 Fine resolution simulation of TV white space availability and model validation
Nathan Dumont, Robert J Watson, Steve Pennock, University of Bath

4 Long-distance propagation measurements of mobile radio channel over sea at 2 GHz
Kun Yang, Terje Røste, Norwegian University of Science and Technology; Fritz Bekkadal, Norwegian Marine Technology; Karsten Husby, Odd Trandem, SINTEF, ICT

7 September 2011 15:50-17:10 Golden Gate 1

6C: Transmission Technologies

1 Group-Wise Distributed Space-Time-Frequency Coded OFDM over Asymmetric Frequency-Selective AF Relay Channels
Seokwon Lee, Seungyoup Han, Hyungsik Ju, Yonsei University; Jemin Lee, Massachusetts Institute of Technology; Daesik Hong, Yonsei University

2 Multihop Diversity for Fading Mitigation in Multihop Wireless Networks
Chen Dong, Lie-Liang Yang, Lajos Hanzo, University of Southampton

3 Spectral Efficiency Analysis of Distributed Antenna System for In-Building Wireless Communication
Temitope Alade, H. Zhu, Hassan Osman, University of Kent

4 TCP Performance-aware HARQ with AMC Scheme
Kwang-Chun Go, Jae-Hyun Kim, Ajou University; Sang-Min Choo, LG Electronics

7 September 2011 15:50-17:10 Golden Gate 2

6D: Synchronization

1 A Compact Preamble Design for Synchronization in Distributed MIMO OFDM Systems
Hung-Chin Wang, Chin-Liang Wang, National Tsing Hua University

2 An Efficient Reduced-Complexity Two-Stage Differential Sliding Correlation Approach for OFDM Synchronization in the AWGN Channel
Leila Nasraoui, Leila Najjar, Mohamed Siala, SUPCOM, Tunis, Tunisia

3 Performance Evaluation of Timing Synchronization in OFDM-based Cognitive Radio Systems
Milan Zivkovic, Rudolf Mathar, RWTH Aachen University

4 Preamble Based Joint CFO, Frequency-Selective I/Q-Imbalance and Channel Estimation and Compensation in MIMO OFDM Systems
Jian Luo, Andreas Kortke, Wilhelm Keusgen, Fraunhofer Heinrich-Hertz-Institut

7 September 2011 15:50-17:10 Golden Gate 3

6E: HSPA Technologies

1 Dual Cell HSDPA System Benefits and User Experience Gains
Siddharth Mohan, Rohit Kapoor, Bibhu Mohanty, Qualcomm Inc.

2 Frequency Domain Approach to Channel Estimation and Signal Detection in HSUPA
Ilkka Moilanen, Paavo Hahtola, VTT Technical Research Centre of Finland; Jukka Törmälehto, Nokia Siemens Networks

3 Impact of Practical Codebook Limitations on HSUPA Closed Loop Transmit Diversity
Petri Eskelinen, Frans Laakso, Kari Aho, Tuomas Hiltunen, Ilmari Repo, Magister Solutions Ltd.; Arto Lehti, Renesas Mobile Corporation

4 Introducing Dual Pilot Closed Loop Transmit Diversity for High Speed Uplink Packet Access
Tuomas Hiltunen, Frans Laakso, Petri Eskelinen, Kari Aho, Ilmari Repo, Magister Solutions Ltd.; Arto Lehti, Renesas Mobile Corporation

7 September 2011 15:50-17:10 Golden Gate 4

6F: Performance Evaluation

1 Capacity Analysis for DPC-based Multi-layer Broadcast and Unicast Hybrid System
Siqian Liu, Hongxiang Li, Guanying Ru, North Dakota State University; Weiyao Lin, Shanghai Jiao Tong University

2 Mobile Broadband Performance Measured from High-Speed Regional Trains
Jun Yao, Salil Kanhere, Mahbub Hassan, University of New South Wales

3 Performance for MAC Level Channel Capacity in Cognitive Radio with Carrier Sense Multiple Access and Transmitting Power Control
Osamu Takyu, Takahiro Saiwai, Tokyo University of Science; Takeo Fujii, University of Electro-Communications; Yohtaro Umeda, Tokyo University of Science

4 Performance Evaluation with Range Expansion for Heterogeneous Networks
Dun Luo, Bo Li, Dacheng Yang, Beijing University of Posts and Telecommunications

7 September 2011 15:50-17:10 Golden Gate 6

6G: Handoff and Access Selection

1 A Handoff Decision Algorithm in Heterogeneous Wireless Networks with Parallel Transmission Capability
Yaxin Chen, Huifang Chen, Lei Xie, Kuang Wang, Zhejiang University

2 A Prediction-Based Handover Trigger Time Selection Strategy in Varying Network Overlapping Environment
Jilei Yan, University of Xidian

3 An Efficient Scheme for Access Selection over a Novel Green Heterogenous Network Architecture
Li Wang, Mei Song, Yue Ma, Dai Chao, Tenghui Ke, Beijing University of Posts and Telecommunications; Xiaojun Wang, Dublin City University

4 RLS for Link Trigger in Handover across Heterogeneous Wireless Networks
Nguyen Hoai Nam, Zhenyu Zhou, Takuro Sato, Waseda University

7 September 2011 15:50-17:10 Golden Gate 7

6H: MIMO I

1 Exploring the Use of Two Antennas for Crosscorrelation Spectrum Sensing
Mark Oude Alink, Arnout Smeenge, André Kokkeler, Eric Klumperink, Gerard J.M. Smit, Bram Nauta, University of Twente

2 Single RF MIMO Systems: Exploiting the Capabilities of Parasitic Antennas
Vlasis Barousis, Athanasios Kanatas, University of Piraeus; Antonis Kalis, Athens Information Technology

3 sMILE: The first MIMO Envelope Detection Testbed
Georgios Psaltopoulos, Christoph Sulser, Armin Wittneben, ETH Zurich

4 Spatial Sweeping Coding
Hu Yang, Jung-Fu (Thomas) Cheng, Ericsson Research

7 September 2011 15:50-17:10 Golden Gate Foyer

6Pa: Mobile Applications and Services Posters

1 **A No-Reference Video Quality Estimation Model over Wireless Networks**
Yan Yang, Zhaoming Lu, Xiangming Wen, Wei Zheng, Beijing University of Posts and Telecommunications

2 **A Rule-based Pretreatment Mechanism for Online Mobile Map Data**
Xiaolin Wang, Yingwei Luo, Xiao Pang, Peking University

3 **Assuring Accuracy on Low Penetration Rate Mobile Phone-Based Traffic State Estimation System**
Tran Minh Quang, Eiji Kamioka, Shibaura Institute of Technology

7 September 2011 15:50-17:10 Golden Gate Foyer

6Pb: Multiple Antenna Systems and Space-Time Processing Posters

1 **A reduced complexity K-best SD algorithm based on chi-square distribution for MIMO detection**
Xinyu Mao, Shubo Ren, Luxi Lu, Haige Xiang, Peking University

2 **A Transmit Precoding Scheme for Downlink Multiuser MIMO Systems**
Hualei Wang, Beijing University of Posts and Telecom

3 **A Virtual Layered Space-Frequency Receiver for Multiuser MIMO-OFDM systems**
Akihito Taya, Satoshi Denno, Daisuke Umehara, Masahiro Morikura, Hidekazu Murata, Koji Yamamoto, Susumu Yoshida, Kyoto University

4 **An Application of Time Division Multiplexing on Multi-User MIMO THP Systems in the Presence of High Mobility Terminals**
Yunhan Wang, Manato Shimizu, Fumiaki Maehara, Waseda University

5 **Blind Receiver for Orthogonal Space-Frequency Block Coded MIMO-OFDM Using Temporally Extended Linear Constellation Precoding**
André L. F. de Almeida, Wireless Telecom Research Group- Federal University of Ceará

6 **Closed-loop MIMO-OFDM Wireless System using Long-term Pre-weighting Scheme**
John An, National Taiwan Ocean University

7 **Comparison of SVD-MIMO with Antenna-Selection-BLAST using linear receviers under Channel Estimation Errors for ITU Channels**
Suvra Sekhar Das, Subhendu Batabyal, Priyangshu Ghosh, Indian Institute of Technology, Kharagpur

8 **Downlink Performance of Indoor Distributed Antenna Systems Based on Wideband MIMO Measurement at 5.25 GHz**
Nan Sheng, Zhang Jianhua, Fenghua Zhang, Lei Tian, Beijing University of Posts and Telecommunications

9 **Efficient User Selection for Downlink Zero-Forcing based Multiuser MIMO Systems**
Yalin Zhang, Bijan Golkar, Elvino S. Sousa, University of Toronto; Zhang Qinyu, Harbin Institute of Tech.

10 **Enhanced SIC and Initial guess ML receivers for collaborative MIMO of the LTE Uplink**
Karim A. Banawan, Essam Sourour, Alexandria University

11 **Linear pre-coding performance in measured very-large MIMO channels**
Xiang Gao, Ove Edfors, Fredrik Rusek, Fredrik Tufvesson, Lund University

12 **Pilot Signals for Multiuser Tomlinson-Harashima Precoding in MIMO-OFDM systems**
Tsuguhide Aoki, Hiroki Mori, Yuji Tohzaka, Yasuhiko Tanabe, Toshiba Corp

13 **RF Impairments Compensation and Channel Estimation in MIMO-OFDM Systems**
Shashwat Jnawali, Sajjad Beygi, Hamid Reza Bahrami, The University of Akron

7 September 2011 15:50-17:10 Golden Gate Foyer

6Pc: Vehicular Electronics and Telematics Posters

1 **A novel relative speed estimation technique in WAVE using pilot subcarriers**
Sarangi Dissanayake, Kusha Panta, Ahmet Sekercioglu, Jean Armstrong, Monash University

2 **Downlink Resource Allocation Scheme for Smart Antenna based V2V2I Communication System**
SungYeop Pyun, Dong-Ho Cho, KAIST; Jong-wuk Son, DGIST

3 **ISSA: An Integrated Sensing System for Automobiles, with Devices and Applications**
Ken Yeo-Moriuchi, Sandra Siby, Zhengqing Hu, Mehul Motani, National University of Singapore

4 **PersianGulf: An Autonomous Combined Traffic Signal Controller and Route Guidance System**
Mohammad Khanjary, Islamic Azad University; Karim Faez, Mohammad Reza Meybodi, Masoud Sabaei, Amirkabir University of Technology

5 **Real Time Traffic Updates via UMTS: Unicast versus Multicast Transmissions**
Alessandro Bazzi, WiLab, IEIIT-BO/CNR, University of Bologna; Barbara Masini, WiLab, IEIIT/CNR, University of Bologna

6 **Seat Occupancy and Belt Detection in Removable Seats via Inductive Coupling**
Joan Albesa, Manel Gasulla, Universitat Politècnica de Catalunya

Thursday 8 September 2011

8 September 2011 10:30-12:10 Franciscan A

7A: Spectrum Sensing in Cognitive Radio Networks

1 **Cooperative Spectrum Sensing for Cognitive Radios using Distributed Q-Learning**
Olivier van den Biggelaar, Jean-Michel Dricot, Philippe De Doncker, Francois Horlin, Université Libre de Bruxelles

2 **A Fast Two Stage Detector for Spectrum Sensing in Cognitive Radios**
Prashob R Nair, Vinod A.P., Nanyang Technological University; Anoop Kumar Krishna, EADS IW, Singapore

3 **A Multistep Detection Scheme Based on Iteration for Cooperative Spectrum Sensing in Cognitive Radio**
Xuefei Zhang, Cui Qimei, Beijing University of Posts and Telecommunications

4 **An Approach to Reduce Overhead under the VLQ Transmission Scheme for Cooperative Spectrum Sensing in Cognitive Radio**
Yingxiang Yang, Tsinghua University; Qun Pan, Yuehong Gao, Xin Zhang, Beijing University of Posts and Telecommunications

5 **Capacity-Maximization Threshold Design for Wideband Sensing with Guaranteed Minimum Primary-User Rate**
Peng Jia, Tho Le-Ngoc, McGill University

8 September 2011 10:30-12:10 Franciscan B

7B: Transportation

1 **Intelligent Traffic Control Based on IEEE 802.11 DCF/PCF Mechanisms at Intersections**
Chanwoo Park, Jungwoo Lee, Seoul National University

2 **Kernel-Based Optimization for Road Density Estimation in ITS**
Arash Tabibiazar, Otman Basir, University of Waterloo

3 **Evaluation of Dynamic Transfer Nodes for Distributed Cooperative On-Demand Transportation**
Markus Duchon, David Sommer, Michael Dürr, Ludwig Maximilian University of Munich

4 **Reliable Information Aggregation and Exchange for Autonomous Vehicles**
Tobias Nothdurft, Peter Hecker, Technische Universität Braunschweig; Tobias Frankiewicz, Jan Gacnik, Frank Köster, German Aerospace Center (DLR)

8 September 2011 10:30-12:10 Golden Gate 1

7C: OFDMA Networks

1 **Exploiting Multiuser Diversity in OFDMA Systems with Limited Feedback**
Mohammed Eltayeb, Hamid Reza Bahrami, The University of Akron; Yahya Al-Harthi, King Fahd University of Petroleum and Minerals; Sajjad Beygi, University of Akron

2 **Joint use of hierarchical modulation and relays in OFDMA networks**
Anis Jdidi, Telecom sudparis; Tijani Chahed, Telecom SudParis

3 **Spectrum Optimization for OFDMA Based Wireless Networks with Guaranteed QoS Provision**
Guanying Ru, Hongxiang Li, Siqian Liu, North Dakota State University; Weiyao Lin, Shanghai Jiao Tong University

4 **Low Overhead Cyclostationary Signatures Based on Hopping Subcarrier in OFDM-based Dynamic Spectrum Access Networks**
Jingchao Sun, Daiming Qu, Tao Jiang, Guohui Zhong, Jiaming Guo, Huazhong University of Science and Technology

5 **Energy-Efficient MIMO-OFDMA Systems based on Switching Off RF Chains**
Zhikun Xu, Chenyang Yang, Beihang University; Geoffrey Y. Li, Georgia Tech; Shunqing Zhang, Yan Chen, Shugong Xu, Huawei Technologies

8 September 2011 10:30-12:10 Golden Gate 2

7D: Modulation

1 **Evaluating Word Error Rate via Radius of Decision Region**
Liyun Dai, Hongwen yang, Beijing University of Posts and Telecommunications

2 **Utilizing Side Information in Modulation Classification for Wireless OFDM Systems with Adaptive Modulation**
Lars Haering, Yun Chen, Andreas Czylwik, University of Duisburg-Essen

3 **EXIT Chart Optimized Rate Matching for Wireless Communication Systems**
Tobias Breddermann, Peter Vary, RWTH-Aachen

4 **Finite Dimension Modulation Design with Polarization Diversity in Three-Dimensional Euclidean Space**
Tze Wong, Hyuck M. Kwon, Wichita State University

5 **Muting-Based Partially Non-Orthogonal Block Diagonalization in Multiuser MIMO with Limited Channel State Information Feedback**
Yuki Tajika, Tokyo University of Science; Hidekazu Taoka, DOCOMO Communications Labs Europe GmbH, Munich, Germany; Kenichi Higuchi, Tokyo University of Science

8 September 2011 10:30-12:10 Golden Gate 3

7E: LTE Technology I

1 **Optimal Pilot Symbol Power Allocation in LTE**
Michal Simko, Stefan Pendl, Stefan Schwarz, Qi Wang, Josep Colom Ikuno, Markus Rupp, Vienna University of Technology

2 **MIMO Performance at 700MHz: Field Trials of LTE with Handheld UE**
Bo Hagerman, Karl Werner, Ericsson Research; Jin Yang, Verizon Communications Inc.

3 **Performance Bounds and Improvements to HARQ in LTE under Unknown and Highly Variable Interference due to MIMO**
Sayandev Mukherjee, DOCOMO USA Labs; Sean Ramprashad, DoCoMo USA Labs; Yueqian Li, Northeastern University

4 **System Performance of Uplink Multi-User MIMO in LTE**
Rapeepat Ratasuk, Motorola Solutions; Amitava Ghosh, Motorola, Inc.

5 **A More Power-Efficient Adaptive Discontinuous Reception Mechanism in LTE**
Songtao Gao, Tian Hui, Bo Huang, Beijing University of Posts and Telecommunications; Lan Chen, DoCoMo Beijing Communications; Jianchi Zhu, DOCOMO Beijing Communications Laboratories Co., Ltd.

8 September 2011 10:30-12:10 Golden Gate 4

7F: Transmission Techniques

1 **Downlink Transmit Power Calibration for Enterprise Femtocells**
Sumeeth Nagaraja, Varun Khaitan, Yi Jiang, Chirag Patel, Farhad Meshkati, Yeliz Tokgoz, San Diego; Mehmet Yavuz, Qualcomm Incorporated

2 **Achieving Minimal Base Station Power Consumption**
Hauke Holtkamp, Gunther Auer, DOCOMO Euro-Labs; Harald Haas, University of Edinburgh

3 **Network Lifetime Extension using Probabilistic Transmission Control for Distributed Estimation in Wireless Sensor Networks**
Shusuke Narieda, Akashi National College of Technology

4 **Effect of Intra-subframe Frequency Hopping on Precoding Based Transmit Diversity for Uplink DFT-Precoded OFDMA**
Lianjun Deng, Tokyo City University; Teruo Kawamura, NTT DOCOMO, INC.; Hidekazu Taoka, DOCOMO Communications Labs Europe GmbH, Munich, Germany; Mamoru Sawahashi, Tokyo City University

5 **Study of Low Complexity Implementation of Block Diagonalization Precoding**
Fan Huang, Wang Yafeng, Jian Geng, Jian Zheng, Dacheng Yang, Beijing University of Posts and Telecommunications

8 September 2011 10:30-12:10 Golden Gate 6

7G: Heterogeneous and Femtocell Networks

1 **Range Expansion and Inter-Cell Interference Coordination (ICIC) for Picocell Networks**
Ismail Guvenc, Moo Ryong Jeong, DoCoMo USA Labs; Ibrahim Demirdogen, University of South Florida; Balkan Kecicioglu, University of Texas at Dallas; Fujio Watanabe, DoCoMo USA Labs

2 **A Smart Handover Decision Algorithm Using Location Prediction for Hierarchical Macro/Femto-Cell Networks**
Byungjin Jeong, Seungjae Shin, Ingook Jang, Korea Advanced Institute of Science and Technology; Nak Woon Sung, ETRI; Hyunsoo Yoon, KAIST

3 **Dynamic Spectrum Sharing in Femtocells: a Comparison of Selfish versus Altruistic Strategies**
Gustavo W.O. da Costa, Aalborg Universitet; Luis Guilherme Uzeda Garcia, Andrea Fabio Cattoni, Aalborg Universitet; Klaus I. Pedersen, Nokia Siemens Networks; Preben E. Mogensen, Aalborg University

4 Femto-to-Macro Control Channel Interference Mitigation via Cell ID Manipulation in LTE
Zubin Bharucha, Gunther Auer, DOCOMO Euro-Labs; Tetsushi Abe, Nobuhiko Miki, NTT DOCOMO

5 Interference Mitigation Methods for LTE Networks with Macro and HeNB Deployments
Agnieszka Szufarska, Krystian Safjan, Klaus I. Pedersen, Frank Frederiksen, Stanislaw Strzyz, Nokia Siemens Networks

8 September 2011 10:30-12:10 Golden Gate 7

7H: MIMO Relay Systems

1 Network Coded Modulation with HDF Strategy and Optimized Beam-Forming in 2-Source 2-Relay Network
Jan Sykora, Czech Technical University in Prague; Eduard Jorswieck, Dresden University of Technology

2 On Precoder Design for Amplify-and-Forward MIMO Relay Systems
Yang Zhang, Jiandong Li, Lihua Pang, Xidian University; Zhi Ding, UC Davis

3 Precoder and Decoder Design for SNR Maximization in Amplify-and-Forward (AF) MIMO Relay Systems
Ahmad Danaee, Hamid Reza Bahrami, The University of Akron

4 Linear Detection and Precoding for Physical Network Coding in Two-way MIMO relay channels
Chengkang Pan, China Mobile Research Institute; Jian Geng, Beijing University of Posts and Telecommunications; Liu Guangyi, Jianjun Liu, China Mobile Research Institute; Qixing Wang, Shen XiaoDong, China Mobile Communications Corporation

5 Sum MSE Uplink-Downlink Duality of Multiuser Amplify-and-Forward MIMO Relay Systems
Jun Liu, Zhengding Qiu, Beijing Jiaotong University

8 September 2011 10:30-12:10 Golden Gate Foyer

7P: Antennas and Propagation Posters

1 2 x 2 MIMO Measurements of the Wideband Car-to-Car Channel at 5.7 GHz on Urban Street Intersections
Panagiotis Paschalidis, Kim Mahler, Andreas Kortke, Mike Wisotzki, Michael Peter, Wilhelm Keusgen, Fraunhofer-Insitut für Nachrichtentechnik, Heinrich-Hertz-Institut;

2 A model of the probability distribution of the signal-to-noise ratio estimated from BER measurements
Emilio Matricciani, Politecnico di Milano

3 A Novel Sparse Channel Estimation Method for Multipath MIMO-OFDM Systems
Nina Wang, Beijing University of Posts and Telecommunications; Guan Gui, University of Electrical Science and Technology of China; Zhi Zhang, Tian Tang, Beijing University of Posts and Telecommunications

4 A Study on Frequency Diversity for Intra-Vehicular Wireless Sensor Networks (WSNs)
Ruoshui Liu, Steven Herbert, University of Cambridge; Tian H. Loh, National Physical Laboratory; Ian J. Wassell, University of Cambridge

5 Arrival Angular Profile Modeling at Mobile Station for Outdoor NLOS and LOS Environments
Hideki Omote, Softbank Telecom; Teruya Fujii, Softbank Tekecom Corp; Yoshichika Ohta, Yosuke Sugita, Softbank Telecom Corp.

6 Bayesian Channel Estimation Techniques for AF MIMO Relaying Systems
Panagiota Lioliou, Mats Viberg, Michail Matthaiou, Chalmers University of Technology

7 Closed-loop Antenna Selection for Wireless LANs with Directional & Omni-Directional Elements
Di Kong, Evangelos Mellios, David Halls, Andrew Nix, Geoffrey Hilton, University of Bristol

8 Comparison of Assisted and Unassisted Cooperative Collision Avoidance Distances at Intersections
Alexander Corbett, Ahad Shafiq, David Michelson, The University of British Columbia

9 Cross Correlation Characteristics of Large Scale Parameters in Urban Macro Cell
Annika Böttcher, RWTH Aachen University; Christian Schneider, Technische Universität Ilmenau; Peter Vary, RWTH-Aachen; Reiner Thomä, Technische Universität Ilmenau

10 DVB Coverage prediction using Game Engine based Ray-Tracing Techniques
Andres Navarro, Universidad Icesi; Dinael Guevara, Universidad Pontificia Bolivariana; Narcis Cardona, Technical University of Valencia; Jordi J. Gimenez, Valencia Technical University

11 Equivalent Circuit of a High Q Tunable PIFA
Samantha Caporal Del Barrio, Mauro Pelosi, Ondrej Franek, Gert F. Pedersen, Aalborg University

12 Experimental Parameter Evaluation for Indoor Polarized MIMO Channel
Atsushi Kunikata, Tetsuro Imai, Koshiro Kitao, NTT DoCoMo

13 Hybrid-based Propagation Parameter Estimation Method using EM/SAGE and Extended MODE algorithm
Kentaro Saito, Tetsuro Imai, Koshiro Kitao, Yoshiki Okano, Shunji Miura, NTT DoCoMo, Inc.

14 Indoor Channel Measurement and Prediction for 802.11n System
Y.A.S. Dama, Raed Abd-alhameed, F.Salazar-Quifionez, Steve Jones, John G Gardiner, University of Bradford

15 Passive Component Network for Antenna Isolation in MIMO Systems for Handheld Terminals
Alexandru Tatomirescu, Mauro Pelosi, Aalborg University; Mikael B. Knudsen, Intel Mobile Communications, Ondrej Franek, Gert F. Pedersen, Aalborg University

16 Port Isolation Method for MIMO Antenna in Small Terminals for Next Generation Mobile Networks
Alexandru Tatomirescu, Mauro Pelosi, Aalborg University; Mikael B. Knudsen, Intel Mobile Communications; Ondrej Franek,Gert F. Pedersen, Aalborg University

17 Simulation of Wide Band Multipath Fast Fading Based on Finite Difference Method
Meiling Luo, CITI Laboratory, Universit´e de Lyon, INRIA, INSA-Lyon, CITI; Guillaume de la Roche, Centre for Wireless Network Design; Guillaume Villemaud, Jean-Marie Gorce, INSA de Lyon; Dmitry Umansky, CITI; Jie Zhang, University of Bedfordshire

18 Two Novel Interpolation Algorithms for MIMO-OFDM Systems with Limited Feedback
He Chunlong, Pengcheng Zhu, Sheng Bin, Xiaohu You, Southeast University

8 September 2011 13:40-15:20 Franciscan A

8A: Network Coding and Relaying

1 A Joint Network and Channel Coding Scheme for Cooperative Relay Networks
Zongyan Li, Mugen Peng, Wenbo Wang, Beijing University of Posts & Telecommunications

2 A Novel Inter-Cell Interference Coordination Scheme for Relay Enhanced Cellular Networks
Pengfei Ren, Xiaogang Li, Beijing University of Posts and Telecommunications; Shen XiaoDong, China Mobile Communications Corporation; Jianming Zhang, Lin Sang, Dacheng Yang, Beijing University of Posts and Telecommunications

3 Increasing Robustness of Network Coding Using Non-orthogonal Decode-and-Forward Protocol
Jinyoung Oh, Jin-Yup Hwang, Youngnam Han, Korea Advanced Institute of Science and Technology

4 An Advanced Relaying Scheme for Distributed LT Code Systems
Young-Kil Suh, Jun Heo, Korea University

5 Asymmetric Physical Layer Network Coding for Two-
Xiaoguang Zhang, Jiaru Lin, Yonghua Li, Beijing University of Posts and Telecommunications

8 September 2011 13:40-15:20 Franciscan B

8B: Advanced Air Interfaces - Mobile SatCom

1 A Satellite-LTE Network with Delay-Tolerant Capabilities: Design and Performance Evaluation
Marica Amadeo, Giuseppe Araniti, Antonio Iera, Antonella Molinaro, University Mediterranea of Reggio Calabria

2 Multi-Cell Interference Cancellation for TD-SCDMA Compatible Mobile Satellite System
Ran Zhu, Shubo Ren, Jianjun Wu, Peking University

3 Convergence of Order p Compensation in DVB-S2 satellite Communication Systems
Thibault Deleu, Université Libre de Bruxelles; Mathieu Dervin, Thales Alenia Space; Jean-Michel Dricot, Philippe De Doncker, Université Libre de Bruxelles; Francois Horlin, ULB

4 Modeling and Simulation of 3-D Wideband HAP-MIMO Channels
Emmanouel Michailidis, Athanasios Kanatas, University of Piraeus

5 Deployment, Capacity and Economics of Mobile WiMAX from High Altitude Platforms
Zhe Yang, Abbas Mohammed, Blekinge Institute of Technology

8 September 2011 13:40-15:20 Golden Gate 1

8C: Cooperative Transmission

1 A Prototype System for Evaluating Multi-cell Cooperative Transmission in Asynchronous Mobile Radio Networks
Haruya Miyajima, Manabu Mikami, Hideki Hayashi, Softbank Mobile Corp.; Teruya Fujii, Vodafone K.K.

2 A Quantize-and-Forward Scheme for Future Wireless Relay Networks
Matthieu Sciora, Georg Zeitler, TU Munich; Guido Dietl, DoCoMo Euro-Labs; Gerhard Bauch, Universität der Bundeswehr Munich; Joerg Widmer, Institute IMDEA Networks

3 Rate and Outage Performance of Non-Regenerative Two-way Relaying Protocols with Direct Link
Jae Cheol Park, Electronics and Telecommunications Research Institute; Jin Soo Wang, Yun Hee Kim, Kyung Hee University

4 Relay Assignment Schemes for Multiuser DF-AF Cooperative Wireless Networks
Juhyun Lee, J. H. Lee, Seoul National University

5 Semi-Dynamic Mode Selection in Base Station Cooperative Transmission System
Qian Zhang, Chenyang Yang, Beihang University

8 September 2011 13:40-15:20 Golden Gate 2

8D: OFDM

1 Iterative ICI Cancellation for OFDM Receiver with Residual Carrier Frequency Offset
Zhihong Hong, Liang Zhang, Louis Thibault, Communications Research Centre Canada

2 Performance Evaluation of A Blind Single Antenna Interference Cancellation Algorithm for OFDM Systems with Insufficient Training Sequence
Zhenyu Zhou, Muhammad Tariq, Yi Jiang, Nguyen Hoai Nam, Takuro Sato, Waseda University

3 Adjacent Channel Interference Cancelation in Fractional Sampling OFDM Receiver
Hiroyuki Osada, Haruki Nishimura, Mamiko Inamori, Yukitoshi Sanada, Keio University

4 A Novel Frequency Offset Tracking Algorithm for Space-Time Block Coded OFDM Systems
Lei Ming, Minjian Zhao, Jie Zhong, Yunlong Cai, Zhejiang University

5 A Novel Joint Channel and Frequency Offset Estimator for Downlink of Coordinated MIMO-OFDM Systems
Yao-Jen Liang, Gordon Stüber, Georgia Tech; Jin-Fu Chang, National Chi Nan University; De-Nian Yang, Academia Sinica

8 September 2011 13:40-15:20 Golden Gate 3

8E: LTE Technology II

1 Evolution of downlink multi-antenna techniques throughout E-UTRAN LTE Releases
Mihai Enescu, Renesas Mobile; Timo Roman, Nokia Research Center; Tommi Koivisto, Renesas Mobile; Markku Kuusela, Nokia Research Center; Marko Lampinen, Renesas Mobile; Kari Pietikäinen, Nokia; Kari Hämäläinen, Magister Solutions; Juha Venäläinen, Tampere University of Technology

2 Improving Data Throughput for Cell-Edge Users in a LTE Network Using Up-link HARQ Relays
Richard Neil Braithwaite, Powerwave Technologies

3 Transmit Diversity for LTE PUCCH With Channel Selection
Masoud Ebrahimi, Mark Harrison, Research In Motion Limited; Yongkang Jia, Research In Motion

4 Using LTE Power Headroom Report for Coverage Optimization
Jussi Turkka, Tampere University of Technology; Jani Puttonen, Magister Solutions Ltd

5 QoS-Aware Scheduling and Resource Allocation for Video Streams in e-MBMS towards LTE-A System
Chong Lou, Ling Qiu, University of Science and Technology of China

8 September 2011 13:40-15:20 Golden Gate 4

8F: Coordinated Multipoint

1 Joint Scheduling and Power Control in Coordinated Multi-Point Clusters
Jingya Li, Tommy Svensson, Chalmers University of Technology; Carmen Botella, University of Valencia; Thomas Eriksson, Chalmers University of Technology; Xiaodong Xu, Xin Chen, Beijing University of Posts and Telecommunications

2 An Effective Inter-cell Interference Coordination Scheme for Downlink CoMP in LTE-A Systems
Qimei Cui, Yang Shan, Xu Yueqiao, Beijing University of Posts and Telecommunications

3 Reference signal design for coordinated multi-point transmission in LTE-Advanced
Tommi Koivisto, Marko Lampinen, Mihai Enescu, Renesas Mobile; Timo Roman, Nokia Research Center

4 Wireless Distributed Antenna Systems in High Buildings
Hassan Osman, H. Zhu, Temitope Alade, University of Kent

5 SINR Balancing Combined with SDMA Grouping in CoMP Systems
Rodrigo Batista, Tarcisio F. Maciel, Yuri C. B. Silva, F. Rodrigo P. Cavalcanti, Wireless Telecom Research Group, Federal University of Ceará

8 September 2011 13:40-15:20 Golden Gate 6

8G: Selected Topics in Communications II

1 Best Sensor Selection for an Iterative REM Construction
Grimoud, France Telecom; Sana Ben Jemaa, Orange Labs; Berna Sayrac, Orange Labs R&D; Eric Moulines, Telecom ParisTech

2 Dynamic Subscription-based QoS Service for Traffic Optimization
Esa Piri, Mikko Uitto, Jarmo Prokkola, Jukka-Pekka Laulajainen, VTT Technical Research Centre of Finland

3 Integration of Communication Security into Advanced Simulation Environments for ITS
Stefan Lobach, Technische Universität Berlin; Ilja Radusch, Fraunhofer FOKUS / TU Berlin - DCAITI

4 Wireless Mesh Network Planning Using Quantum Inspired Evolutionary Algorithm
Hafiz Munsub Ali, Saeed Ashrafinia, J.C.Liu, Daniel Lee, Simon Fraser University

5 Energy-Efficient Algorithms and Evaluations for Massive Access Management in Cellular Based Machine-to-Machine Communications
Chih-Yuan Tu, Chieh Yuan Ho, ChingYao Huang, National Chiao Tung University

8 September 2011 13:40-15:20 Golden Gate 7

8H: MIMO Cellular

1 Centralized Scheduling for Joint Decoding Cooperative Networks Subject to Signalling Delays
Fabian Diehm, Gerhard Fettweis, Technische Universität Dresden

2 Comparing Downlink Coordinated Multi-Point Schemes with Imperfect Channel Knowledge
Thorsten Wild, Bell Labs, Alcatel-Lucent

3 CSI Distribution for Joint Processing in Cooperative Cellular Networks
Richard Fritzsche, Gerhard Fettweis, Technische Universität Dresden

4 Differential Precoding Scheme of LTE Systems over Temporally Correlated Channels
YoungJu Kim, Xun Li, Chungbuk National University

5 Impact of Channel Asymmetry on Base Station Cooperative Transmission with Limited Feedback
Xueying Hou, Chenyang Yang, Beihang University; Mats Bengtsson, Royal Institute of Technology

8 September 2011 13:40-15:20 Golden Gate Foyer

8Pa: Ad-Hoc and Sensor Networks Posters

1 Distributed Detection in UWB Sensor Networks under Non-Orthogonal Nakagami-m
Abolfazl Mehbodniya, University of Quebec INRS-EMT; Daniel Bielefeld, RWTH Aachen University; Sonia Aissa, INRS-EMT; Rudolf Mathar, RWTH Aachen University; Fumiyuki Adachi, Tohoku University

2 Cross-Layer Strategy for Maximizing Equilibrium Lifetime in Wireless Sensor Networks
Rong li, Feng Zhiyong, Peng Yin, Ying Wang, Beijing University of Posts and Telecommunications

3 DTN Serial Convergence Layer with Multiple Access Control and Neighbour Discovery
Zoebir Bong, Chai Kiat Yeo, Nanyang Technological University

4 FLIMS: A Fuzzy-logic based Mobility Management Scheme in Mobile Ad Hoc Network
Hailun Tan, University of New South Wales

5 Multipath Fading Effect on Spatial Packet Loss Correlation in Wireless Networks
Hamid Reza Tafvizi, Zhe Wang, Mahbub Hassan, Salil Kanhere, University of New South Wales

6 Non-Geographical Shortest Path Data Dissemination for Mobile Sinks in Wireless Sensor Networks
Seungmin Oh, Yongbin Yim, Jeongcheol Lee, Hosung Park, Sang-Ha Kim, Chungnam National University

7 Probabilistic Routing based on History of Messages in Delay Tolerant Networks
Feng Cheng Lee, Chai Kiat Yeo, Nanyang Technological University

8 Robust Disjoint Multipath Scheme with Hole Detouring Strategy in Wireless Sensor Networks
Kim SungHwi, Hosung Park, Jeongcheol Lee, Sang-Ha Kim, Chungnam National University

8 September 2011 13:40-15:20 Golden Gate Foyer

8Pb: Mobile Satellite & Positioning Systems Posters

1 A New FFT-Based Algorithm for Secondary Code Acquisition for Galileo Signals
Youssef Tawk, Aleksandar Jovanovic, Cyril Botteron, Pierre-André Farine, Ecole Polytechnique Fédérale de Lausanne (EPFL)

2 A Shoe to Shoe RF Ranging Sensor for Aiding Inertial Navigation
Chenming Zhou, Disney Research Pittsburgh; James Downey, Tamal Mukherjee, Carnegie Mellon University; Daniel Stancil, North Carolina State University

3 Dual Channel Optimization of Tracking Schemes For E1 CBOC Signal
Aleksandar Jovanovic, Youssef Tawk, Cyril Botteron, Pierre-André Farine, Ecole Polytechnique Fédérale de Lausanne (EPFL)

4 Geolocation Bounds for Received Signal Strength (RSS) in Correlated Shadow Fading
Laurence Mailaender, Alcatel-Lucent, LGS

5 Improving Localization Accuracy Using Selective 3-Anchor DV-hop Algorithm
Linqing Gui, University of Toulouse; Thierry Val, University of Toulouse II - CNRS IRIT; Anne Wei, CNAM, Laboratoire Cédric

6 Leaky LMS Algorithm and Fractional Brownian Motion Model for GNSS Receiver Position Estimation
Jean-Philippe Montillet, The Australian National University; Kegen Yu, University of New South Wales

7 Low Complexity High Resolution Joint Timing and Doppler Acquisition for DS-CDMA Systems
Ingmar Groh, Stephan Sand, German Aerospace Center (DLR)

8 Movement Compensation for Uplink Synchronization in SCDMA Mobile Satellite Communication System
Ming Ma, Shubo Ren, Ying Si, Xi Luan, Jianjun Wu, Peking University

9 Ranging Implementation using Finite-resolution Digital Receiver for IEEE 802.15.4a systems
Fei Sun, Huarui Yin, WeiDong Wang, University of Science and Technology of China

10 Real-Time Communication and Localization for a Swarm of Mobile Robots Using IEEE 802.15.4a CSS
Christof Roehrig, Dortmund University of Applied Sciences and Arts; Lars Telle, Fachhochschule Dortmund

11 Tracking-based Wireless Intrusion Detection for Vehicular Networks
Fendy Santoso, Robert Malaney, University of New South Wales

12 Use of Soft-Decision TOA for Location Estimation
Shinsuke Hara, Daisuke Anzai, Osaka City University; Thomas Derham, Radim Zemeki, Orange Labs Tokyo

13 Visible Light Positioning based on LED Traffic Light and Photodiodes
Bo Bai, Northwestern Polytechnical University; Gang Chen, Daniel Xu, University of California at Riverside; Yangyu Fan, Northwestern Polytechnical University

8 September 2011 15:50-17:10 Franciscan A

9A: Ad-Hoc and Sensor Networks Applications

1 North Atlantic Inflight Internet Connectivity via Airborne Mesh Networking
Daniel Medina, Felix Hoffmann, Francesco Rossetto, German Aerospace Center (DLR); Carl-Herbert Rokitansky, University of Salzburg, Austria

2 A Hybrid Mesh, Ad Hoc, and Sensor Network for Forest Fire Management
Ali El Masri, Troyes University of Technology; Ahmad Sardouk, Lyes Khoukhi, Leila Merghem-Boulahia, Dominique Gaiti, UTT; Rana Rahim-Amoud, LaSTRe, Azm research center, Lebanese University

3 Feasibility of Safety Applications based on Intra-Car Wireless Sensor Networks: A Case Study
Jiun-Ren Lin, Carnegie Mellon University; Timothy Talty, General Motors Corporation; Ozan Tonguz, Carnegie Mellon University

4 Performance evaluation of the suitability of Opportunistic Networks in the Wireless World
Marios Logothetis, Kostas Tsagkaris, Panagiotis Demestichas, University of Piraeus

8 September 2011 15:50-17:10 Golden Gate 2

9D: Indoor and NLOS Positioning

1 Indoor Positioning Using Femtocells
Varun Khaitan, Peerapol Tinnakornsrisuphap, Mehmet Yavuz, Qualcomm

2 Advantage of non-periodic Leaky Coaxial Cable Structures for Indoor Positioning
Julia-Maria Engelbrecht, Ralf Collmann, University of Applied Sciences, HTW Dresden; Ulrich Birkel, University of Applied Sciences Giessen; Mark Weber, University of Applied Sciences Gießen-Friedberg

3 Toward the Deployment of an Ultra-Wideband Localization Test Bed
Alexander Feldman, Haute Ecole dIngenierie et de Gestion du Canton de Vaud; Alexander Bahr, EPFL; James Colli-Vignarelli, EPFL-STI; Stephan Robert, HEIG-VD; Catherine Dehollain, EPFL-STI; Alcherio Martinoli, Ecole Polytechnique Federale de Lausanne

4 An Improved Reference Selection Method in Linear Least Squares Localization for LOS and NLOS
ShiXun Wu, Jiping Li, Shouyin Liu, Huazhong Normal University

8 September 2011 15:50-17:10 Golden Gate 3

9E: Equalization and Detection

1 Analytical Evaluation of Iterative Packet Combining and Multipacket Detection Schemes for SC-FDE
Francisco Ganhão, Rui Dinis, Luis Bernardo, Universidade Nova de Lisboa

2 Sparse FIR Equalization: A New Design Framework
Ahmad Gomaa, Naofal Al-Dhahir, University of Texas at Dallas

3 Turbo Equalization for Receivers with Unreliable Buffer Memory
Jan Geldmacher, Klaus Hueske, Jürgen Götze, TU Dortmund University;

4 A Simplified Hard Decision Feedback Equalizer for Single Carrier Modulation with Cyclic Prefix
Chao Dong, Jiaru Lin, Kai Niu, Zhiqiang He, Zhisong Bie, Beijing University of Posts and Telecommunications

8 September 2011 15:50-17:10 Golden Gate 4

9F: Vehicular Electronics and Telematics

1 Automatic Vehicle Parallel Parking Design using Fifth Degree Polynomial Path Planning
Mehrdad Simkani, University of Michigan-Flint; Mehrdad Zadeh, Kettering University; Shuwen Zhang, University of Michigan-Flint

2 Implementaion and Evaluation of Data Management Methods for Vehicle Control Systems
Masahiro Yamada, Nagoya University; Kenya Sato, Doshisha University; Hiroaki Takada, Nagoya University

3 Real-Time Video-Based Lane Tracing System with the Sliding Focus Window
Wally Chen, National Taiwan University; Leon Jian, Maction Technologies, Inc; Sy-Yen Kuo, National Taiwan University

4 Wireless Power Transmission for Autonomous Sensors in Removable Vehicle Seats
Joan Albesa, Universitat Politècnica de Catalunya; Thomas Jäger, Albert-Ludwigs-Universität Freiburg; Leonhard Reindl, University of Freiburg; Manel Gasulla, Universitat Politècnica de Catalunya

8 September 2011 15:50-17:10 Golden Gate 7

9H: MIMO II

1 Analysis of an Iterative Layered Space Time Receiver with Imperfect Feedback
Li Li, Andre Neubauer, Muenster University of Applied Sciences; Andreas Czylwik, University of Duisburg-Essen

2 Capacity Balancing for Multiuser MIMO Cognitive Radio Network
Zhilan Xiong, Chaohua Gong, Alcatel-Lucent Shanghai Bell; Kanapathippillai Cumanan, Sangarapillai Lambotharan, Loughborough University

3 Multiple-Symbol Differential Sphere Decoding Aided Amplify-and-Forward Differential Space-Time Modulation
Chao Xu, Cong Liu, Soon Xin (Michael) Ng, Lajos Hanzo, University of Southampton

4 A Simple Approach of Gaussian Approximation for Channel Capacity in Multiple-antenna Systems
Qian Rongrong, Yuan Qi, Tao Peng, Wenbo Wang, Beijing University of Posts and Telecommunications

Tutorials

A range of tutorials will be held throughout the conference given by experts from industry and academia.

Monday, 5 September 2011,9:00–12:30 Golden Gate 1

T1: Cooperative Wireless Communications

Lajos Hanzo, University of Southampton

In the early days of wireless communications the research community used to view multipath-induced dispersion as an undesirable propagation phenomenon, which could only be combated with the aid of complex channel equalizers. The longer the Channel Impulse Response (CIR) was, the more complex the channel equalizer became. However, provided that the complexity of a sufficiently high-memory channel equalizer was affordable, the receiver could benefit from the fact that the individual propagation paths faded independently. To elaborate a little further, even if one of the paths was experiencing a high attenuation, there was a good chance that some of the other paths were not, which led to a potential diversity gain.

However, if the channel does not exhibit several independently fading paths, techniques of artificially

inducing diversity may have to be sought. A simple option is to employ a higher direct-sequence spreading factor, which results in a higher number of resolvable multipath components and hence in an increased diversity gain. Naturally, this is only possible if either the available bandwidth may be extended according to the spreading factor or the achievable bitrate is reduced by the same factor. A whole host of classic diversity combining techniques may be invoked then for recovering the original signal.

An alternative technique of providing multiple independently faded replicas of the transmitted signal is to employ relaying, distributed space-time coding and other cooperation-aided procedures. One could also view the benefits of decode-and-forward based relaying as receiving and then flawlessly re-transmitting the original signal from a strategically positioned relay.

Lajos Hanzo received his first-class Master degree in electronics in 1976, his PhD in 1983 and his Doctor of Sciences (DSc) degree in 2004. He is a Fellow of the Royal Academy of Engineering (FREng). He co-authored 20 IEEE Press - John Wiley books totalling in excess of 10 000 pages on mobile radio communications, published in excess of 1 000 research entires at IEEE Xplore, organised and chaired major IEEE conferences, and has been awarded a number of distinctions. Lajos is also an IEEE Distinguished Lecturer and a Fellow of both the IEE and IEEE. He is the Editor-in-Chief of the IEEE Press. For further information on research in progress and associated publications please refer to http://www-mobile.ecs.soton.ac.uk.

Monday, 5 September 2011,13:30–17:00 Golden Gate 1

T2: Interference Alignment

Syed A. Jafar, University of California at Irvine

Interference is the primary bottleneck on the data rate capacity of most wireless and many wired networks. The recent emergence of the idea of interference alignment has shown that the throughput limits of interference networks may be orders of magnitude higher than previously imagined. In a relatively short period of three years since its emergence, the idea has gained tremendous momentum in research pursued by industry as well as the academia within the network information theory, communication theory, signal processing, and network coding communities. This tutorial introduces the audience to the idea of interference alignment, traces its origins, reviews a variety of interference alignment schemes, summarizes the diverse settings where the idea of interference alignment is applicable and highlights the common principles that cut across these diverse applications.

Syed Ali Jafar received the B. Tech. degree in Electrical Engineering from the Indian Institute of Technology (IIT), Delhi, India in 1997, the M.S. degree in Electrical Engineering from California Institute of Technology (Caltech), Pasadena USA in 1999, and the Ph.D. degree in Electrical Engineering from Stanford University, Stanford, CA USA in 2003. His industry experience includes positions at Lucent Bell Labs , Qualcomm Inc. and Hughes Software Systems. He is currently an Associate Professor in the Department of Electrical Engineering and Computer Science at the University of California Irvine, Irvine, CA USA. His research interests include multiuser information theory and wireless communications.

Monday, 5 September 2011,9:00–12:30 Golden Gate 2

T3: QoS Provisionings in Wireless Cognitive Radio Networks

Xi Zhang, Texas A&M University

Recently, the cognitive radio technology has emerged as an intelligent, flexible, and efficient spectrum accessing way to increase the spectrum efficiency by enabling the secondary users (unlicensed users) to opportunistically utilize the vacant spectrum which is not used by the primary users (licensed users). The QoS provisioning in wireless cognitive radio networks, which is critical to many time-, reliability-, and/or throughput-sensitive wireless communications networks, encounters new and challenging problems in that the QoS performance of the secondary users is not only affected by the time-varying wireless channels, but also constrained by the uncertain incumbency of the primary users. In this tutorial, we will address the key issues and challenges, as well as the state-of-the-art theories and techniques for QoS-assurance wireless cognitive radio networks. This tutorial will also cover a number of our newly developed results on the design of QoS-driven wireless cognitive radio networks with emphasis on PHY and MAC layers. We will provide attendees with an essential understanding of the current research of QoS-provisionings in wireless cognitive radio networks.

Xi Zhang received the Ph.D. degree in electrical engineering and computer science (Electrical Engineering-Systems) from The University of Michigan, Ann Arbor. Prof. Zhang is currently an Associate Professor and the Founding Director of the Networking and Information Systems Laboratory, Department of Electrical and Computer Engineering, Texas A&M University. He was with the Networks and Distributed Systems Research Department, AT&T Bell Laboratories, Murray Hills, NJ, and with AT&T Laboratories Research, Florham Park, NJ, in 1997. He has published more than 190 research papers. Prof. Zhang received the U.S. National Science Foundation CAREER Award in 2004 for his research in the areas of mobile wireless and multicast networking and systems. He is an IEEE Distinguished Lecturer in IEEE Communications Society. He is currently serving as an Editor for IEEE Transactions on Communications, an Editor for IEEE Transactions on Wireless Communications, an Associate Editor for IEEE Transactions on Vehicular Technology, and as a Guest Editor for the IEEE Journal on Selected Areas in Communications and IEEE Communications Magazine.

Monday, 5 September 2011,13:30–17:00 Golden Gate 2

T4: Millimeter-wave Mobile Broadband - Unleashing the 3 - 300 GHz spectrum for mobile communication

Zhouyue Pi, Farooq Khan, Samsung Telecommunications America

Almost all cellular mobile communications including first generation analog systems, second generation digital systems, third generation WCDMA systems, and fourth generation OFDMA systems use Ultra High Frequency (UHF) band of radio spectrum with frequencies in the

range of 300MHz-3GHz. This band of spectrum is becoming increasingly crowded due to spectacular growth in mobile data services. The portion of the RF spectrum above 3GHz has been largely unexploited for commercial mobile applications. In this tutorial, we discuss propagation and device technology challenges associated with this band as well as its unique advantages such as spectrum availability and small component sizes for mobile applications. We also present a practical millimeter-wave mobile broadband (MMB) system that can achieve multi-Gbps data communications in urban environment.

Zhouyue (Jerry) Pi is Director with Samsung R&D center in Dallas, Texas, where he leads 4G standardization and development efforts. Before joining Samsung, he worked in Nokia Research Center in Dallas and San Diego on 3G standardization and modem development. He has published more than 15 research papers and more than 80 patents and patent applications. He received his B.E. degree in Automation from Tsinghua University (with honor), M.S. degree in Electrical Engineering from Ohio State University, and his MBA degree from Cornell University (with distinction).

Farooq Khan is Senior Director with Samsung R&D center in Dallas, Texas, where he manages research in the areas of wireless communications, multimedia, computing and smart energy. Previously, he held research positions with Bell Laboratories in New Jersey and Ericsson Research in Sweden. He has authored more than 35 research papers and holds over 50 US patents. He also authored a book 'LTE for 4G Mobile Broadband - Air Interface Technologies and Performance'. He holds an M.S. degree in electrical engineering from Ecole Supérieure d'Électricité, Paris., France and a Ph.D. degree in computer science from Université de Versailles, France.

Monday, 5 September 2011,9:00–12:30 Golden Gate 3

T5: Order Statistics in Wireless Communi-cations: Diversity, Adaptation and Scheduling

Hong-Chuan Yang, University of Victoria, Canada, and Mohamed-Slim Alouini, KAUST, Saudi Arabia

In this tutorial, we systematically present some new order statistics results and illustrate their application in wireless system analysis. We first summarize the basics of digital wireless communications over fading channels, which provides the necessary background. Then, the statistical results, more specifically the conventional and new results on the distribution functions of random variables involving order statistics, are presented. After that, we discuss the applications of these results in the analysis and design of several classes of wireless technologies that is essential to future generation wireless systems, including advanced diversity combining techniques, joint adaptive modulation and diversity combining, and multiuser parallel scheduling in wide-band code division multiple access (WCDMA) and multiuser MIMO systems. We strive to achieve an ideal balance between theory and practice. Special emphasis will be placed on the accurate quantification of the performance versus complexity tradeoff throughout the presentation.

Dr. Hong-Chuan Yang received the Ph.D. degree in electrical engineering from the University of Minnesota in 2003. He is an associate professor of the Department of Electrical and Computer Engineering at the University of Victoria, Canada. His research focuses on different aspects of wireless communications, with special emphasis on diversity techniques, cross-layer design, energy-efficient communications, and system performance evaluation.

Dr. Mohamed-Slim Alouini received the Ph.D. degree in electrical engineering from the California Institute of Technology (Caltech) in 1998. He also received the Habilitation degree from the University Pierre et Marie Curie in 2003. Dr. Alouini started his academic career at the University of Minnesota in 1998. In 2005, he joined Texas A&M University at Qatar, Doha, and in 2009, he was appointed as Professor of Electrical Engineering at KAUST, Thuwal, Mekkah Province, Saudi Arabia, where he is responsible for research and teaching in the areas of Communication Theory and Applied Probability. More specifically, his research interests include design and performance analysis of diversity combining techniques, MIMO techniques, multi-hop/cooperative communications systems, cognitive radio systems, and multi-resolution, hierarchical and adaptive modulation schemes. Dr. Alouini has published several papers on the above subjects, and he is co-author of the textbook Digital Communication over Fading Channels published by Wiley Interscience. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a member of the Thomson ISI Web of Knowledge list of Highly Cited Researchers, and a co-recipient of best paper awards in eight IEEE conferences (including ICC, GLOBECOM, VTC, and PIMRC).

Monday, 5 September 2011,13:30–17:00 Golden Gate 3

T6: Internet Access under High-Speed Mobility

Mahbub Hassan and Salil Kanhere, University of New South Wales

The proliferation of smart mobile devices has given birth to a new Internet access scenario. More users are now accessing the Internet while travelling in cars, buses and trains. These users cover significant distances within an active Internet session opening up new opportunities as well as challenges for the Internet access. For example, a fast moving user visits many different locations within a short time, creating the opportunity to optimize session uploads and downloads by exploiting the networking diversity available in those locations. In contrast, due to the location-sensitiveness of wireless performance, a fast moving user faces escalating bandwidth uncertainly, making real-time multimedia a challenging problem. How to optimize the Internet access for fast moving users has become a topic of intense research in the recent years. This tutorial provides a comprehensive overview of the latest research in this area. The tutorial will conclude with open issues and future directions of research.

Mahbub Hassan is a Full Professor in the University of New South Wales, Australia, and a Program Leader at the recently launched Research Centre for Integrated Transport Innovation. He was the Keynote Speaker at the 2009 IEEE International Workshop on Vehicular Networking, Singapore. He served on the Technical Program Committees of many international workshops on vehicular communication and was an invited participant of the German Schloss Dagstuhl seminar on Inter-Vehicle Communication held in October 2010. He authored 3 books, which are used in 70 universities across America, Europe and Asia. Professor Hassan served as guest-editor for IEEE Network, IEEE Communications Magazine, Journal of Supercomputing, and Real Time Imaging. As an Invited Professor of the French Government,

he contributed to research at the University of Nantes. Professor Hassan has a PhD from Monash University, Australia, and an MSc from University of Victoria, Canada. He holds a US patent on dynamic control of Internet Protocol traffic. He is a Senior Member of the IEEE.

Salil Kanhere received his M.S. and Ph.D. degrees, both in Electrical Engineering from Drexel University, Philadelphia in 2001 and 2003, respectively. He is currently a Senior Lecturer at the School of Computer Science and Engineering at The University of New South Wales in Sydney, Australia. His research interests include mobile networks, vehicular communication, participatory sensing and sensor networks. He has published over 75 peer-reviewed articles on these research topics. He currently serves as the Area Editor for the ICST Journal on Ubiquitous Environments and the European Transactions on Telecommunications. He has also served on the organizing committee and program committee of a number of IEEE and ACM international conferences. He is a member of the IEEE and ACM.

Monday, 5 September 2011,9:00–12:30 Golden Gate 4

T7: LTE-Advanced Relay Tutorial

Bernhard Raaf and Simone Redana, Nokia Siemens Networks - Radio Research

The 3rd Generation Partnership Project (3GPP) is currently finalizing the standardization of the next evolution of LTE, known as LTE-Advanced (also referred to as LTE release 10). In order to fulfill the demanding requirements of LTE-Advanced (which include features such as peak data rates of 1 Gbps in the downlink and 500Mbps in the uplink, low latency, support for mobility up to 350km/h, and good throughput guarantee even to indoor and cell edge users), several technological enhancements are proposed. Relaying is one of these key technological enhancements, along with carrier aggregation, improved multiple input multiple output (MIMO) antenna schemes, and coordinated transmission and reception between different base stations. Relaying eases the network deployment process and is expected to help mainly in coverage extension during initial deployment stages, but will be used in future LTE releases for capacity enhancement purposes as well.

The tutorial starts with a general introduction on LTE-Advanced and relaying. The different types of relaying, the possible deployment scenarios and performance results illustrating the coverage/capacity as well as cost benefits of relaying are then discussed. After that, the main focus will be put on the architectural and protocol aspects for realizing relaying in LTE-Advanced networks, as well as on the physical layer enhancements required to provide backward compatibility with LTE Rel.8/9 UEs. The tutorial focuses also on the enhancements that are expected to be addressed in the next LTE releases (Rel.11 and beyond) and presents the performance for some of these enhancements

Bernhard Raaf is Principal Engineer in the Radio Research unit of Nokia Siemens Networks, heading customer and research projects on relaying for LTE-Advanced. After receiving his diploma degree on Physics from the Technical University Munich, working on radar measurements on auroral arcs at the Max Planck Institute for Extraterrestrial Physics, he joined Siemens in 1991 working on ASIC and software design and was responsible for conformance testing and type approval of GSM phones. Then he became ETSI and 3GPP delegate in 1997 leading a 3G research & standardization team for radio system concept enhancements of UMTS, HSDPA, HSUPA and finally LTE and LTE advanced. Bernhard published some 30 papers in journals and conferences, including Best Paper Award on IEEE VTC and filed numerous patent applications of which some hundred have already been granted.

Dr. Simone Redana is Senior Research Engineer in the Radio Research unit of Nokia Siemens Networks, leading research and standardization projects on relaying beyond LTE Rel.10. He received his PhD degree in Telecommunication Engineering from Politecnico di Milano, Italy in 2005. In 2005 and 2006 he was with Azcom Technology as consultant for Siemens Communication working on WIMAX demonstrator. In 2006, he joined Siemens Communication in Milan, Italy, which merged in 2007 with Nokia Networks to become Nokia Siemens Networks. Since 2008 he is with Nokia Siemens Networks in Munich, Germany. He contributed to the EU WINNER II project (relaying concept), to the Eureka Celtic project WINNER+ (system concept design) and to EU ARTIST4G project leading the work package on advanced relay concept design. He is currently contributing to the 3GPP RAN standardization of Relaying in Rel.10 and beyond as well as involved in the business case analysis for relays.

T8: Resource Allocation in Future Wireless Networks: A Selection-Based Design Perspective by Iain B. Collings, Zhuo Chen, and Maged Elkashlan, CSIRO ICT Centre, Australia has been cancelled

Monday, 5 September 2011,9:00–12:30 Golden Gate 6

T9: VANET MACs: from Requirements to Current and Future Solutions

Riccardo M. Scopigno, Istituto Superiore Mario Boella

The tutorial covers VANETs requirements and available MAC solutions (standard and alternative ones). The tutorial includes three main parts: Vanets applications and requirements; Standard PHY-MAC approaches in EU and USA; and Emerging MAC solutions (in particular synchronous ones).

The analysis gives the opportunity to respectively introduce VANET scenarios (from which requirements are deduced), the weaknesses of incumbent MAC solutions and some new synchronous solutions which are being discussed, especially in Europe (www.ms-aloha.eu).

Riccardo Scopigno (M.Sc. 1995, Ph.D. 2005) has matured a 15-year working experience in the TLC field, obtaining, in the meantime his Ph.D. His skills cover very different aspects of the telecommunication architectures, from theory to practice, as matured from his variegate working experience. In fact he was first a hardware designer for TLC systems in Italtel-Siemens (1997-1999); afterwards, in Marconi (2000-2003), he achieved a good expertise in IP network design, especially for multimedia contents (he got also a certification as network engineer at Marconi Pittsburgh PA). He is currently active in advanced research on wireless networks. He has been Director of Networking Lab of ISMB for nearly 8 years (since April 2003). He leads a team of 20 people.

4th IEEE International Symposium on
Wireless Vehicular Communications

Final Program

5 – 6 September 2011

San Francisco, United States

Welcome from the General Co-Chairs

It is our pleasure to welcome attendees to the Fourth IEEE International Symposium on Wireless Vehicular Communications (IEEE WiVeC2011).

After the successful first, second, and third WiVeC workshops in 2007 (Baltimore), 2008 (Calgary), and 2010 (Taipei), the fourth IEEE WiVeC symposium will be co-located with the 72nd IEEE Vehicular Technology Conference 2011 Fall conference and will take place in San Francisco on the 5th and 6th of September 2011. VTC Fall editions are traditionally located in North America, while VTC Spring editions are located in other areas of the world. Since WiVeC was originally launched co-located with VTC Fall editions, the IEEE Vehicular Technology Society decided that WiVeC would take place every year and a half in order to ensure that the conference is alternatively co-located with VTC Fall and Spring editions. This resulted in there being no WiVeC in 2009.

The papers to be presented at IEEE WiVeC2010 cover the full range of wireless vehicular communications: physical layer; protocol design; security and applications and systems. As has been a tradition since the first WiVeC edition, IEEE WiVeC2010 will also host a series of wireless vehicular communications demos and invited speakers.

We would like to thank all authors who submitted their work to WiVec, the members of our Technical Program Committee and the external reviewers for providing timely and high quality reviews. We are also grateful to Vinuth Rai our Demo Chair, Tao Zhang our speakers chair and Eric Mai our Local Arrangements and Publicity Chair. We congratulate Frank Kargl and Yaser Fallah for their effective leadership of the TPC. Finally, we express our special appreciation to Javier Gozalvez for his guidance and contribution to WIVEC since its inception. We are grateful for the support of the IEEE Vehicular Technology Society.

Daniel Jiang and Raja Sengupta,
General Co-chairs, WiVeC2011

Welcome from the TPC Chairs

Welcome to WiVeC 2011 in San Francisco! We hope you will enjoy the exciting technical program that the Technical Program Committee has prepared for you. We have selected 23 high quality papers from all submissions for oral and poster presentation. In addition, we also have four demonstrations. Together, papers and demos represent the full range of vehicular wireless communications from physical layer and radio to applications and experiments.

We want to use this opportunity to thank all the authors who submitted papers to IEEE WiVeC 2011. Their contributions, presentations, and attendance are essential for a successful conference. All submissions were carefully reviewed in a blind review by at least three reviewers and this led to the selection of the papers at hand.

So our sincere thanks also go to the 46 members of the Technical Program Committee. We highly appreciate your effort for providing thorough reviews and feedback to the authors. The same is of course also true for the additional reviewers supporting the TPC. Beyond, we also want to thank the general co-chairs Daniel Jiang and Raja Sengupta for the smooth and enjoyable cooperation. We also thank the speakers chair Tao Zhang, the demos chair Vinuth Rai, and last but not least the publicity and arrangements chair Eric Mai. Finally, our thank would not be complete without thanking our finance chair James Irvine for his invaluable advice and help.

We hope that you will enjoy attending IEEE WiVeC 2011 or reading the proceedings as much as we have enjoyed compiling the program. We look forward to meeting you in San Francisco for thought-provoking presentations and discussions. And of course, we wish you a pleasant and exciting stay in San Francisco, one of the most vibrant cities of the world.

Frank Kargl and Yaser P. Fallah
TPC Chairs, WiVeC2011

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Opening Plenary

Monday 5 September 2011, 08:30–10:00 (Golden Gate 7&8)

Security and Privacy in V2X: Current Approaches for Deployment

Andre Weimerskirch, President and CEO of encrypt Inc., USA

Vehicle-to-vehicle (V2V) safety applications are actively pushed by the American Department of Transportation for deployment in the mid-term. In a large scaled model deployment, a few thousand vehicles will be equipped with DSRC technology soon. Security and privacy is a major obstacle for successful deployment though. While the IEEE 1609.2 security standard describes details of security in V2V communication, many additional details are currently designed or remain open. In particular, privacy and renewal of security credentials pose a significant challenge.

In this presentation, an overview of the current approaches appropriate for deployment will be given. Privacy will be considered, open issues will be identified, and differences between the American and European approach will be analyzed.

Dr. Andre Weimerskirch is Chief Executive Officer (CEO) and President of American-based ESCRYPT Inc. and is in charge of the international activities of ESCRYPT.

From 2004 to 2007 Dr. Weimerskirch held the position of Chief Technology Officer (CTO) of ESCRYPT GmbH. As CTO he significantly shaped the technological strategy of

ESCRYPT. Previously, Dr. Weimerskirch was with several renowned companies in the areas of research, development, and consulting including Accenture, Deutsche Post, Philips Research, and Sun Labs.

He studied business information technology as well as mathematics at Darmstadt Technical University before receiving his Master of Science in computer science at Worcester Polytechnic Institute, USA. He then received a Ph.D. of Ruhr-University of Bochum in the area of applied data security. He has led several national and international projects in the area of data security and published numerous articles.

Closing Plenary

Tuesday 6 September 2011, 15:50–16:50 (Golden Gate 8)

Information Assurance for Sensor-based Vehicular Networks

Zygmunt Haas, Cornell University

Information Assurance grew out of the field of computer network security. However, Information Assurance is a much broader term than network security – it relates to the managing of the risks associated with the use, processing, storage, and transmission of information. A basic model of Information Assurance relies on three properties: confidentiality, integrity, and availability, thus it is often referred to as the CIA model.

The wide consensus is that the commonly assumed attributes of sensor nodes, such as limited available energy, relatively small computational power, unattended operation, and wireless connectivity are considered challenges in implementing Information Assurance in sensor networks. Similarly, the broad range of applications, which results in broad range of possibly heterogeneous information modalities and with different quality-of-service requirements, makes the problem even more complex. This is in particular so for sensor-based vehicular networks which require very high degree of reliability. However, one can leverage some of these attributes to our advantage; e.g., a massive deployment of nodes can be exploited in the design of protocols for Information Assurance.

In this talk, I will describe some of the challenges in design and implementation of, as well as a number of approaches to support, Information Assurance for sensor-based vehicular networks.

Part of this work was done during the author's rotational position with the National Science Foundation. The opinions described in this talk are of the author and are not, necessarily, those of the National Science Foundation.

Zygmunt J. Haas received his B.Sc. in 1979, his M.Sc. in 1985, and his Ph.D. in 1988 from Stanford University, all in Electrical and Computer Engineering. In 1988, he joined the AT&T Bell Laboratories in the Network Research Area. There he pursued research in wireless communications, mobility management, fast protocols, optical networks, and optical switching. In August 1995, he joined the faculty of the School of Electrical and Computer Engineering at Cornell University, where he is now a Professor. He heads the Wireless Network Laboratory (wnl.ece.cornell.edu), a research group with extensive contributions in the area of Ad Hoc Networks and Sensor Networks. Dr. Haas is an IEEE Fellow and an author of over 200 technical conference and journal papers and holds eighteen patents in the areas of wireless networks and wireless communications, optical switching and optical networks, and high-speed networking protocols. Dr. Haas chaired and co-chaired several key conferences in the communications and networking areas, organized many workshops, delivered numerous tutorials at major IEEE and ACM conferences, and has served as editor of many journals and magazines, including the IEEE Transactions on Networking, the IEEE Transactions on Wireless Communications, the IEEE Communications Magazine, and the Springer Wireless Networks journal (WINET). Dr. Haas served as a Chair of the IEEE Technical Committee on Personal Communications and as the Chair of the Steering Committee of the IEEE Pervasive Computing magazine. His interests comprise: mobile and wireless communication and networks, modeling and performance evaluation of large and complex systems, and biologically-inspired networks.

Panel Session

Sunday, 21 September, 17.30 – 16.45 MacLeod A1

Validating VANET Research: Simulation, Emulation and Testbed

Chair:	**Raja Sengupta**	*UC Berkeley*		
Panelists:	**Onur Altintas**	*Toyota InfoTechnology Center*		
	Jérôme Härri	*EURECOM*	**Sateesh Addepalli**	*Cisco Systems*
	Ravi Puvvala	*Savari Networks*	**Christoph Kirsch**	*University of Salzburg*

A team of experts spanning academia, government, and industry will convene to seed a discussion including our audience on what could or should be exciting about vehicular wireless networks. We will

explore what killer applications might drive the next generation, revolutionary developments in hardware, algorithms, or the impact of new paradigms like cloud computing.

Dr. Raja Sengupta is Associate Professor in the Systems Engineering program within Civil and Environmental Engineering, University of California at Berkeley. He received his Ph.d from the EECS department, University of Michigan at Ann Arbor. His research interests are in vehicular ad-hoc networks and unmanned air vehicles. He was Associate Editor of the IEEE Control Systems magazine. He was Program Chair of the IEEE Conference on Autonomous Intelligent Networked Systems 2003, Co-General Chair of the first ACM MOBICOM Workshop on Vehicular Ad-hoc Networks 2004 and Co-Program Chair of the second workshop. In 2008 he chaired the First International Symposium on Vehicular Computing Systems.

Dr. Onur Altintas is a senior researcher at the R&D Group of Toyota InfoTechnology Center, Co. Ltd, in Tokyo. From 1999 to 2001 he was with Toyota Motor Corporation and from 2001 to 2004 he was with Toyota InfoTechnology Center USA, and was also a visiting researcher at Telcordia Technologies between 1999 and 2004. Before joining Toyota Motor Corporation in 1999, he was a research scientist at Ultra High Speed Network and Computer Technology Labs (UNCL), Tokyo. He received his B.S. (1987) and M.S. (1990) degrees from Orta Dogu Teknik Universitesi, Ankara, Turkey, and his Ph.D. (1995) degree from the University of Tokyo, Japan; all in electrical engineering. He served as the Co-Chair for Vehicle-to-Vehicle Communications Workshops (V2VCOM 2005 and V2VCOM 2006) co-located with ACM MobiQuitous, and V2VCOM 2007 and V2VCOM 2008 co-located with IEEE Intelligent Vehicles Symposium. He also served as the Co-Chair for the IEEE Workshop on Automotive Networking and Applications (AutoNet 2006, AutoNet 2007 and AutoNet 2008) co-located with IEEE Globecom. He is the co-founder and general co-chair of the IEEE Vehicular Networking Conference (IEEE VNC) held in Tokyo in 2009; in New Jersey in 2010, and in Amsterdam in 2011. He is an IEEE VTS Distinguished Lecturer.

Jérôme Härri is an Assistant Professor at the Mobile Communication Group at EURECOM, France, and conducting research in wireless vehicular networks. He received a M.Sc. degree and a Dr. ès sc. Degree in telecommunication from the Swiss Institute Technology (EPFL), Lausanne, Switzerland. Previously, he led a Traffic Telematics Junior Research Group at the Institute of Telematics of the Karlsruhe Institute of Technology (KIT), Germany. His research interests are related to the characterization of the mutual relationship between vehicular mobility and inter-vehicular communication on ITS applications.

Jérôme has been Co-Chair of the special session on traffic telematics at IEEE PIMRC'09 and has served as Demo Chair and TPC Co-chair of the IEEE Conference on Wireless Vehicular Communications (WiVeC) 2008 and 2010 respectively. He was also involved in the EU FP7 project iTETRIS with aspects related to mobility and connectivity-based ITS infrastructure deployment. He is now involved in the French FOT project SCOREF and the smart grid project VELCRI with aspects related to the identification and management of vehicular mobility contexts. He is actively participating to standardization activities of the ETSI TC ITS in a specialist task force on ITS multi-channel operations, and of the CAR 2 CAR Communication Consortium. Jérôme is the author of the chapter on "Vehicular Mobility Modeling for VANET" in the book "VANET: Vehicular Applications and Inter-Networking Technologies", (Eds. H. Hartenstein and K. Laberteaux) published by Wiley in 2010.

Ravi Puvvala is the CEO of Savari. He is responsible for sales,marketing and providing overall strategic direction for the organization. Savari is an emerging company focused on providing wireless infrastructure to the Intelligent Transportation Systems market and are the chosen supplier for the US DOT's OBE, Here-I-Am, RSE devices.

Previously he served as the founder and CEO of Zazu Networks, which was a design center focused on helping customers build products based on WiFi. A persistent entrepreneur, who is captivated by the power of WiFi and it's proliferation in to various markets. Prior to his entrepreneurial quest, he has worked with several multinational corporations gaining rich experience in engineering, management and global understanding of networking products. He received his B.S. in Computer Science at Bangalore University, 1990 and M.S. in Computer Science at Arizona State University, 1992.

Christoph Kirsch is full professor and holds a chair at the Department of Computer Sciences of the University of Salzburg, Austria. Since 2008 he is also a visiting scholar at the Department of Civil and Environmental Engineering of the University of California, Berkeley. He received his Dr.Ing. degree from Saarland University, Saarbruecken, Germany, in 1999 while at the Max Planck Institute for Computer Science. From 1999 to 2004 he worked as Postdoctoral Researcher at the Department of Electrical Engineering and Computer Sciences of the University of California, Berkeley. His research interests are in concurrent programming and systems, virtual execution environments, and embedded software. Dr. Kirsch co-invented the Giotto and HTL languages, and leads the JAviator UAV project for which he received an IBM faculty award in 2007. He co-founded the International Conference on Embedded Software (EMSOFT) in 2001 and is currently vice-chair of ACM SIGBED and associate editor of TODAES. He has been PC co-chair of EMSOFT 2007, general co-chair of ESWEEK 2008, general chair of LCTES 2009 and EuroSys 2011, topic co-chair at DATE 2010 and 2011, track chair at RTSS 2010, and subcommittee chair at DAC 2011. He has been invited to serve on program committees of CASE, Coordination, DATE, EMSOFT, EUC, EuroSys, HSCC, ICCAD, JTRES, LCTES, MEMOCODE, OOPSLA, RTAS, RTSS, and VEE.

Sateesh Addepalli is Director of Innovation & Research, New Ventures and Business Initiatives, Cisco Systems.

VTC Opening Plenary

WiVeC attendees are invited to the VTC2011-Fall opening plenary on Tuesday, 6 September, from 8.30 – 10.00 in the Plaza Ballroom. Full details can be found on Page 11.

WiVeC Technical Sessions

5 September 2011 8:45-10:00 Golden Gate 7 & 8

WiVeC 2011 Opening Keynote

Welcome and Introduction
Daniel Jiang and Raja Sengupta

2. Security and Privacy in V2X: Current Approaches for Deployment
Andre Weimerskirch, encrypt Inc

5 September 2011 10:30-12:10 Golden Gate 7 & 8

WiVec Radio

Chair: Mahbub Hassan

1 Performance Evaluation of Wiener Filter Designs for Channel Estimation in Vehicular Environments
Jörg Nuckelt, Moritz Schack, Thomas Kürner, Technische Universitaet Braunschweig

2 Radio Resource Allocation for a High Capacity Vehicular Access Network
Christian Ibars, Centre Tecnologic de Telecomunicacions de Catalunya - CTTC; Rodolfo Milito, Pere Monclus, Cisco Systems Inc.

3 Raptor Codes for Infrastructure-to-Vehicular Broadcast Services
Nor Fadzilah Abdullah, Angela Doufexi, Robert J. Piechocki, University of Bristol

4 Performance of LTE in Vehicle-to-Vehicle Channels
David W. Matolak, Qiong Wu, Ohio University; Juan Jesús Sánchez-Sánchez, David Morales Jiménez, M. Carmen Aguayo-Torres, Universidad de Málaga

5 September 2011 13:40-15:20 Golden Gate Foyer

WiVec Posters

1 An Analytical Packet Error Rate Model for WAVE Receivers
Fabrizio Abrate, Andrea Vesco, Riccardo Scopigno, Istituto Superiore Mario Boella

2 Analysis of Utility-Based Data Dissemination Approaches in VANETs
Ramon S. Schwartz, Anthony E. Ohazulike, Hylke W. van Dijk, Hans Scholten, University of Twente

3 Analytical Design of Inter-vehicular Communications for Collision Avoidance
Mohammad Nekoui, Hossein Pishro-Nik, University of Massachusetts

4 Cooperative Vehicle Positioning via V2V Communications and Onboard Sensors
Sae Fujii, Atsushi Fujita, Takaaki Umedu, Hirozumi Yamaguchi, Teruo Higashino, Osaka University; Shigeru Kaneda, Space-Time Engineering Japan, Inc.; Mineo Takai, University of California, Los Angeles

5 How Severe is the Hidden Terminal Problem in VANETs when Using CSMA and STDMA?
Katrin Sjöberg, Elisabeth Uhlemann, Halmstad University; Erik G. Ström, Chalmers University of Technology

6 Multipath Delay Profile Models for ITS in 700MHz Band
Hisato Iwai, Satoshi Goto, Doshisha University

7 Optimum Capacity of MIMO Systems for High-speed Railway with Spare Antenna Array
Jiayi Zhang, Zhenhui Tan, Haibo Wang, Beijing Jiaotong University

8 RTMB/CTMB: A Collision Avoidance Scheme for VANET Broadcast
Lung-Chih Tung, Mario Gerla, University of California, Los Angeles

9 Throughput of Self-Organizing Time Division Multiple Access MAC Layer for Vehicular Networks based on measured SNR time-series
Arrate Alonso, Technische Universität Wien; Dieter Smely, Kapsch TrafficCom; Christoph F. Mecklenbräuker, Technische Universität Wien

10 WLAN-WiMAX Double-Technology Routing for Vehicular Networks
Kaveh Shafiee, Alireza Attar, Victor C. M. Leung, The University of British Columbia

11 Theoretical Analysis of Broadcast Packet Delivery Rate in ITS V2V Communication with CSMA/CA
Kazuya Minato, Jingze Dai, Yasushi Yamao, University of Electro-Communications, Japan

5 September 2011 13:40-15:20 Golden Gate Foyer

WiVec Demos

1 A Vehicle Group Communication System using IEEE 1609/802.11(p) Radios
Chih-Che Lin, Lo-Chuan Hu, Hsia-hsin Li, Industrial Technology Research Institute

2 CarbonRecorder: A Mobile-Social Vehicular Carbon Emission Tracking Application Suite
Bojin Liu, Dipak Ghosal, Yachao Dong, Chen-Nee Chuah, Michael Zhang, University of California, Davis

3 Demo of "Vis Magna": a Custom and Interactive Tool for the Visualization of VANET Protocols
Daniele Brevi, Qing Xu, Hector Agustin Cozzetti, Riccardo Scopigno, Istituto Superiore Mario Boella

4 Demonstration of Vehicle to Vehicle Communications over TV White Space
Onur Altintas, Mitsuhiro Nishibori, Oshida Takuro, Yutaka Ihara, Masahiro Saito, Rama Vuyyuru, Toyota InfoTechnology Center; Chikara Yoshimura, Youhei Fujii, Kota Nishida, Kazuya Tsukamoto, Masato Tsuru, Yuji Oie, Kyushu Institute of Technology; Abdulrahman Al Abbasi, Masaaki Ohtake, Mai Ohta, Takeo Fujii, The University of Electro-Communications; Si Chen, Srikanth Pagadarai, Alexander M. Wyglinski, Worcester Polytechnic Institute

5 Scalable Cooperative Vehicle Safety Systems: Adaptive Inter-Vehicle Communication
Somak Data Gupta, Yaser P. Fallah, Ching-ling Huang, Raja Sengupta, University of California, Berkeley; Hariharan Krishnan, General Motors

5 September 2011 15.50-17:30 Golden Gate 7 & 8

WiVeC Panel

Moderator: Raja Sengupta, UC Berkeley

Where are we in the research, development, testing and deployment dimension? And what are the 'real' problems?
Onur Altintas, Toyota InfoTechnology Center; Jérôme Härri, EURECOM; Ravi Puvvala, Savari Networks; Sateesh Addepalli, CISCO; Christoph Kirsch, University of Salzburg

VTC and WiVeC Reception
19:00 – 21:00 Upper Level Restaurant City Scape 6th Floor

VTC Opening Plenary
08:30 – 10:00 Plaza Ballroom

6 September 2011 10:30-12:10 Golden Gate 7
WiVec Networking
Chair: Elisabeth Uhlemann

1 Mathematical Modeling of Channel Load in Vehicle Safety Communications
Qi Chen, Daniel Jiang, Mercedes-Benz Research & Development North America, Inc.; Tessa Tielert, Karlsruhe Institute of Technology; Luca Delgrossi, Mercedes-Benz Research & Development North America Inc.

2 Cross-Validation of DSRC Radio Testbed and NS-2 Simulation Platform for Vehicular Safety Communications
Gaurav Bansal, John Kenney, Toyota InfoTechnology Center, USA; Aaron Weinfield, Denso International America Inc.

3 A Robust Broadcast Scheme for VANET One-hop Emergency Services
Xiaomin Ma, Oral Roberts University; Xiaoyan Yin, Kishor Trivedi, Duke University

4 Efficient Inter-Vehicle Data Dissemination
Fei Ye, Sumit Roy, Haobing Wang, University of Washington

VTC and WiVeC Lunch
12:10 – 13:40 Plaza Ballroom

6 September 2011 13:40-15:20 Golden Gate 7
WiVec Applications, Deployment, and Security
Chair: Onur Altintas

1 Adaptive Cooperative Awareness Messaging for Enhanced Overtaking Assistance on Rural Roads
Annette Böhm, Magnus Jonsson, Elisabeth Uhlemann, Halmstad University

2 Highway Capacity Benefits from Using Vehicle-to-Vehicle Communication and Sensors for Collision Avoidance
Patcharinee Tientrakool, Ya-Chi Ho, N. F. Maxemchuk, University Of Columbia

3 User/Operator Utility-Based Infrastructure Deployment Strategies for Vehicular Networks
Pasquale Cataldi, Eurecom; Jérôme Härri, EURECOM

4 C2X Communication: Securing the Last Meter
Hendrik Schweppe, Yves Roudier, EURECOM; Benjamin Weyl, BMW Group Research and Technology; Ludovic Apvrille, Telecom Paristech; Dirk Scheuermann, Fraunhofer SIT

6 September 2011 15:50-16:50 Golden Gate 8
WiVeC 2011 Closing Keynote

1. Information Assurance for Sensor-based Vehicular Networks
Zigmunt Haas, Cornell University

Program at a Glance : Monday 5 September 2011

	Golden Gate 1 (C)	Golden Gate 2 (D)	Golden Gate 3 (E)	Golden Gate 4 (F)	Golden Gate 6 (G)	Golden Gate 7 & 8 (W)
	MONDAY 5 September					
8:00-17:30	Registration (Golden Gate Ballroom Foyer)					
8:30-10:00	T1: Cooperative Wireless Communications	T3: QoS Provisioning in Wireless CR Networks	T5: Order Statistics in Wireless Communications	T7: LTE-Advanced Relay	T9: VANET MACs	WiVeC Opening & Keynote
10:00-10:30	Coffee (by Golden Gate 1)					
10:30-12:00	T1: Cooperative Wireless Communications	T3: QoS Provisioning in Wireless CR Networks	T5: Order Statistics in Wireless Communications	T7: LTE-Advanced Relay	T9: VANET MACs	WiVeC Radio
12:00-13:30	Lunch Break (No lunch provided)					
13:30-15:00	T2: Interference Alignment	T4: Millimeter-wave Mobile Broadband	T6: Internet Access under High Speed Mobility			WiVeC Posters and Demos (in Foyer)
15:00-15:30	Coffee (by Golden Gate 1)					
15:30-17:00	T2: Interference Alignment	T4: Millimeter-wave Mobile Broadband	T6: Internet Access under High Speed Mobility			WiVeC Panel
19:00-21:00	VTC & WiVeC Welcome Reception (Upper Level Restaurant City Scape 6th Floor)					