



*The 73<sup>rd</sup> IEEE  
Vehicular Technology Conference*

Final Programme



15 - 18 May 2011

**Budapest, Hungary**

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## Welcome from the General Chair

Dear Colleagues,

Allow me to commence by welcoming you to VTC 2011 Spring in the vibrant city of Budapest! I have been faithfully attending VTC for the past two decades and I have a vivid recollection of this dynamic period of spectacular growth across the wireless communications industry.

My hope is that you would enjoy the rich technical blend of plenaries and panels presented by distinguished industrial and academic leaders converging on Budapest from all over the globe. These will also be complemented by tutorials, workshops and the regular technical sessions.

I am indebted to the entire organizing and technical program committee, especially to the TPC Co-Chairs Drs Andrea Conti, Iain Collings and Wei Chen for their generous support as well as to all the Track Chairs for their dedication. Our committee has also been tirelessly assisted by the VTS board, in particular by Dr James Irvine and special thanks are due to Jim Budwey for ‘oiling the wheels’ every step of the way. Naturally, we are all grateful to our valued colleagues in the research community who assisted us in securing well over 3000 reviews!

It is my privilege to convey the community's gratitude to the conference patrons, namely to Ericsson, Huawei Technologies, HTE and Wiley-Blackwell. Needless to say that a lot of further volunteers contributed in numerous ways to the success of the conference.

On a technical note, the advances of the past three decades facilitated a 1000-fold throughput improvement, but naturally, this was achieved at the cost of a substantially increased power consumption. In the light of the escalating energy prices this motivated the design of ‘green radios’, aiming for more power-efficient solutions – all in all, an exciting era for our community.

My hope is that you, dear Colleague will enjoy the technical discussions, meeting old friends and forging new professional links, but that you will also be able to sample the local culture and history – I much look forward to an enlightening and enjoyable event with you!

Lajos Hanzo,  
*General Chairman, IEEE VTC2011 Spring*

## Welcome from the TPC Chair

On behalf of the Technical Program Committee (TPC), it is our pleasure to welcome you to the 73rd IEEE Vehicular Technology Conference(VTC) to take place in the beautiful city of Budapest, Hungary. The committee has organized an impressive program that advances the current technical and research trends “Beyond the Generations Game”, which is this year's conference theme. The technical program consists of 86 oral sessions and 9 poster and exhibition sessions. In total, the conference Track Chairs have selected 423 oral papers and 173 poster papers, from a total of 1164 submissions over 12 tracks. In addition to the regular sessions, the program offers 2 panel sessions and 6 tutorials addressing some of the main mobile and wireless communication and localization challenges. We are also pleased to announce that the 73rd IEEE VTC2011 Spring conference will also host 5 workshops that have selected 74 oral papers from 158 submissions.

The creation of this impressive program would not be possible without the voluntary support from an outstanding team of colleagues that we would like to strongly thank. Special thanks go to our Tutorials

Chair Sherman Shen as well as to conference Track Chairs that organised a very efficient and smooth reviewing process.

We would also like to thank the great job of our dedicated TPC members and reviewers, their dedication and cooperation have been fundamental for the professional and timely review of technical contributions. We are also very grateful to the constant support from James Irvine and Sherri M. Young in the technical program preparation process. Of course, making a successful technical conference is not possible without the participation from authors, to whom we would like to express our gratitude for having decided to present and share their ideas and contributions to our community.

Once again, we welcome you all to the 73rd IEEE VTC2011-Spring Conference and hope you will appreciate and enjoy both the technical program and social opportunities on offer in Budapest.

Andrea Conti, Iain Collings, and Wei Chen,  
*TPC Co-chairs, IEEE VTC2011-Spring*

## Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society, it is my pleasure to welcome you to the IEEE 73rd Vehicular Technology Conference in Budapest, Hungary. 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 Budapest, a historic city serving as a crossroad for various cultures, 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 for last five years in a row 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-Spring, Lajos Hanzo, and its Technical Program Chairs, Andrea Conti, Wei Chen, and Iain B. Collings, and other members of the committees for their thoughtful implementation of the excellent conference program.

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

Jae Hong Lee, *President*  
IEEE Vehicular Technology Society

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### **2<sup>nd</sup> Green Wireless Communications and Networks Workshop (GreeNet) TPC**

#### **Organisers:**

**John Thompson**, University of Edinburgh  
**Ngoc-Dung Dao**, Huawei Technologies Canada Co., Ltd.  
**Simon Armour**, University of Bristol  
**Vasilis Friderikos**, King's College London  
**Timothy O'Farrell**, Swansea University

**Imran Ashraf**, Bell Laboratories  
**Andre Brandao**, Communications Research Centre  
**Chan-Byoung Chae**, Bell Laboratories, Alcatel-Lucent  
**Congzheng Han**, University of Bristol  
**Oliver Holland**, King's College London  
**Mythri Hunukumbure**, Fujitsu Labs of Europe Ltd  
**Robert Joyce**, Telefonica O2

**Stefan Kaiser**, DOCOMO Euro-Labs  
**Chadi Khirallah**, University of Edinburgh  
**Raymond Kwan**, NEC Telecom Modus / University of Bedfordshire  
**Emilio Leonardi**, Politecnico di Torino  
**David Lister**, Vodafone  
**Richard Mackenzie**, British Telecommunications plc  
**Ha H. Nguyen**, University of Saskatchewan  
**Zhisheng Niu**, Tsinghua University, China  
**Man-Fai Wong**, Orange-France Telecom Group  
**Dietrich Zeller**, Alcatel-Lucent Bell Labs  
**Shunqing Zhang**, Huawei Technologies, Co. Ltd.  
**Liqiang Zhao**, Xidian University

### **Cognitive radio and Cooperative strategies for POWER saving (C2POWER) TPC**

#### **Organisers:**

**Kandeepan Sithamparanathan**, Create-Net  
**Klaus Moessner**, University of Surrey  
**Jonathan Rodriguez**, Instituto de Telecomunicações-Aveiro  
**TPC Chair: Ayman Radwan**, Instituto de Telecomunicações-Aveiro  
**Michele Albano**, Instituto de Telecomunicações – Pólo de Aveiro

**Muhammad Ali Imran**, University of Surrey  
**Alagan Anpalagan**, Ryerson University  
**Nallanathan Arumugam**, King's College London  
**Abdur Rahim-Biswas**, CREATE-NET  
**Andrea Giorgetti**, WiLAB, DEIS, University of Bologna  
**Fabrizio Granelli**, University of Trento  
**Sudharman K. Jayaweera**, University of New Mexico  
**Santosh Kawade**, British Telecom

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*Tharaka Anuradha Lamahewa*, The Australian National University  
*Alberto Nascimento*, University of Madeira  
*Dominique Noguét*, CEA-LETI  
*Tinku Rasheed*, Create-Net Research Center  
*Lars Rasmussen*, Royal Institute of Technology  
*Marios Raptopoulos*, SiGiNT

*T. Ratnarajah*, Queen's University Belfast  
*Sam Reisenfeld*, Macquarie University  
*Chava Vijaya Saradhi*, CREATE-NET  
*Vera Stavroulaki*, University of Piraeus (UPRC)  
*Christos Verikoukis*, CTTC  
*Qiwei Zhang*, University of Surrey  
*Andrew Zhang*, ICT Center, CSIRO

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### **Broadband Femtocell Technologies TPC**

**Chair:**

*Thierry Lestable*, SAGEMCOM, France

**Co-Chairs:**

*Matti Latva-aho*, University of Oulu, Finland

*Frank A. Zdarsky*, NEC Europe Ltd

*Muhammad Ali Imran*, University of Surrey

*Carles Anton*, CTTC

*Gunther Auer*, DOCOMO Euro-Labs

*Mehdi Bennis*, University of Oulu

*Stefan Brueck*, Qualcomm CDMA Tech., Germany

*Mirosław Brzozowy*, PTC, Poland

*Emilio Calvanese Strinati*, CEA-LETI MINATEC

*Frederic Geheniau*, SAGEMCOM, France

*Lorenza Giupponi*, CTTC

*Stefan Kaiser*, DOCOMO Euro-Labs

*Youngwook Ko*, University of Surrey

*Massinissa Lalam*, SAGEMCOM, France

*Mariano Lopez*, TTI, Spain

*Sylvie Mayrargue*, CEA-Leti Minatec

*Emilio Mino*, Telefonica ID

*Manuel Palmowski*, mimoOn, Germany

*Atta Quddus*, University of Surrey

*Willem Mulder*, mimoOn, Germany

*Stefan Schmidt*, NEC Europe Ltd, Germany

*Alexander Tyrrell*, DoCoMo Euro-Labs

*Jean Baptise Vezin*, SAGEMCOM, France

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### **1<sup>st</sup> International Workshop on Cross-Layer Operation Aided Multimedia Streaming TPC**

**Organisers**

*Roberta Fracchia*, Thales

*Marco Chiani*, CNIT

*Gianmarco Panza*, Cefriel

*Roxana Ojeda*, COMSIS

*Peter Amon*, Siemens

*Maria Martini*, Kingston University

*Janne Vehkaperä*, VTT

*László Pap*, BME

*Ivan V. Bajić*, Simon Fraser University, Canada

*Stefano Bregni*, Politecnico di Milano

*Marco Cagnazzo*, Telecom Paris Tech

*Anil Fernando*, University of Surrey

*Tasos Dagiuklas*, TEI of Mesolonghi

*Dmitri Jarnikov*, Eindhoven University of Technology

*Markus Kampmann*, Ericsson Research

*André Kaup*, University of Erlangen-Nürnberg

*Oscar Mayora Ibarra*, Create-Net

*Dario Rossi*, Telecom Paris Tech

*Tony Q. S. Quek*, Institute for Infocomm Research

*Lingfen Sun*, Plymouth University

*Jo Yew Tham*, Institute for Infocomm Research

*Christian Timmerer*, Klagenfurt University

*Giacomo Verticale*, Politecnico di Milano, Italy

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### **CAPS2011 (Context Awareness for Proactive Systems) TPC**

**Chair:**

*Klaus David*, University of Kassel

*Panagiotis Demestichas*, University of Piraeus, Greece

*Anind Dey*, Carnegie Mellon University, USA

*Laurent Hérault*, CEA-LETI, France

*Masugi Inoue*, NICT, Tokyo, Japan

*James Irvine*, Strathclyde University, Scotland

*Cornel Klein*, Siemens R&D, Germany

*Niklas Klein*, Kassel University, Germany

*Paul Lukowicz*, University of Passau, Germany

*Gerald Q. Maguire Jr.*, Royal Institute of Technology (KTH), Sweden

*Martti Mäntylä*, Aalto University, Finland

*Klaus Moessner*, University of Surrey, UK

*Masayoshi Ohashi*, Advanced Telecommunications Research Institute International, Japan

*Ichiro Satoh*, National Institute of Informatics, Japan

*Martin Strohbach*, NEC, UK

*Franco Zambonelli*, Università di Modena, Italy

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## Plenaries

*Monday 16 May 2011 08:30-10:00 (Budapest Ballroom)*

### **Navigating the Mobile Data Growth – Research Challenges**

**Magnus Frodigh** *Director Wireless Access Networks, Ericsson Research, Ericsson*

The mobile broadband traffic volumes are increasing rapidly and new network capabilities and applications continuously raise the expectations for ubiquitous services with higher data rates in both uplink and downlink.

Creating a heterogeneous network – HetNet – by introducing low power nodes in a conventional radio network is a promising approach to meet these traffic demands and performance expectations. By combining low power nodes with an enhanced and densified macro layer, very high traffic volumes and data rates can be supported. Key for doing this is sharing the same spectrum in the macro cells and the low power nodes. This poses challenges for the interference handling between layers, but it also enables coordination gains. Ongoing research on these advanced techniques show very promising results.

To provide higher data rates and capacity are not the only challenges that need to be addressed. The increased complexity of the networks needs to be reduced by self organizing features in order to save OPEX and optimize performance. To further address OPEX, the energy consumption of the network needs to be reduced. On top of that, there are requirements emerging from the M2M type of applications foreseen in the near future.

As the Research Area Director for Wireless Access Networks at Ericsson Research, **Dr. Magnus Frodigh** is responsible for research in radio network architecture, protocols and algorithms. The work addresses WCDMA, HSPA, and LTE including their continued evolution.

Magnus joined Ericsson in 1994 and has since held various key senior positions within Ericsson's Research & Development and Product Management focusing on 2G, 3G and 4G technologies. Further, Magnus is the holder of more than 20 patents within mobile system.

He is an enthusiastic proponent of next generation mobile broadband services and technology. "The traffic from Mobile Broadband is now increasing rapidly, motivating a continued evolution of the radio access technologies in order to offer high capacity networks to the operators".

He was born in Stockholm, Sweden, in 1964. Magnus holds a Master of Science degree from Linköpings University of Technology, Sweden and a PhD in Radio Communication Systems from Royal Institute of Technology in Stockholm, Sweden.

### **Theoretical and Practical Considerations for the Design of Green Radio Network**

**Steven D. Gray** *Huawei Technologies*

Demand for mobile data is increasing at an exponential rate fueled by media rich mobile web applications using smart mobile devices. The energy required to power the networks delivering this data is expensive due to the steady increase in electricity costs globally and the increasing demand for energy to power the networks. This increase demand for energy also has a negative environmental impact. Fundamental changes are required in how radio access networks are designed and deployed to address these challenges.

Traditional design of mobile wireless networks mainly focuses on ubiquitous access and large capacity. To meet the goals for a greener network, the focus needs shift to include energy-efficiency oriented design. This new greener paradigm consists of four fundamental tradeoffs: deployment efficiency – energy efficiency tradeoff, spectrum efficiency – energy efficiency tradeoff, bandwidth – power tradeoff, and delay – power tradeoff. The relationship between these four parameters is presented to illustrate how to achieve high network throughput and conserve energy.

Much of the work in 3GPP is focused on improving network throughput through the use of multiple antennas. Both UMTS and LTE use multiple antennas to increase spectrum efficiency. This presentation expands upon these spectrum efficiency advantages by showing network topologies and distributed antenna techniques that achieve the goal of increased data throughput while also reducing energy consumption.

In the future, green design methods will guide engineers on how to build communication networks in much the same way that information theory guides engineers today. The mathematical theories that helped us achieve state-of-the-art communications will be augmented to include new theories focused on how to balance network throughput with the energy consumption required by the network. Radio network performance will consider bits/second/Hertz, but also the Joules/bit when making decisions on modulation methods and protocols.

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**Dr. Steven D. Gray** is a Vice President in Huawei Technologies with the dual role of being Head for Corporate Research and CTO for US R&D. Dr. Gray is responsible for driving Innovation in US R&D build from ground Huawei's Center for Innovation. Since joining Huawei, he has created strategic work programs to architect the next generation content-oriented networks, media-oriented collaboration tools for next generation telepresence and a cloud services platform. Prior to joining Huawei in March 2009, Dr. Gray was Sr. Vice President and GM for the Commercial Wireless Division at HYPRES Inc where he was responsible for product architecture, marketing, sales and product development of an all digital remote radio head for mobile broadband infrastructure. From 2005 until 2007, Dr Gray was Associate Vice President in the Cellular and Handheld Group which was originally part of Intel's Mobility Group and was sold in 2006

to Marvell Technologies. While with the Cellular and Handheld Group, Dr Gray was GM of the Convergence Products and Director of Advanced Development. From 1996 until 2005, Dr Gray held several positions with Nokia including GM and Vice President of Corporate R&D US and Head of the Radio Communications Lab. During his tenure at Nokia he started RAN LTE R&D, drove the adoption of WiFi in Nokia's mobile phones and led the development of Ultra Low Power (ULP) Bluetooth. Dr. Gray is a Senior Member of the IEEE, and is a member of the honorary engineering societies Eta Kappa Nu and Tau Beta Pi. He has numerous journal papers, contributed to two books and given numerous invited presentations on cloud computing, future internet and mobile communications. He holds 12 US patents related to transceiver design and future wireless communication systems.

## Panels

**Monday 16 May 2011, 18:00–20:00 (Budapest Ballroom)**

### **Funding Wireless Research**

**Chair: Lajos Hanzo** *University of Southampton, UK*

**Panelists:**

**Andy Lawrence** *EPSRC*

**Werner Mohr** *Head of Research Alliances, Nokia Siemens Networks; Chair of eMobility ETP*

**Jorge Pereira** *European Commission*

**Bill Tranter** *Program Officer for Communications and Information Foundations, NSF*

**Buyong K. Yi** *LG Electronics*

This panel will address issues of financial and other support for research and development leading to new wireless systems, services and standards. Topics to be discussed include: what areas are considered top priorities by research-support organizations, such as governments and industry, how were these priority areas arrived at, are there future hot areas of wireless research that should be getting more support, what are the best practices of industry-academia collaboration, what is a reasonable level of funding per academic staff member to be able to make an impact, and what might be considered a reasonable success ratio per application?

**Prof Lajos Hanzo** (<http://www-mobile.ecs.soton.ac.uk>) FREng, FIEEE, FIET, DSc received his degree in electronics in 1976 and his doctorate in 1983. In 2009 he was awarded the honorary doctorate "Doctor Honoris 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 co-authored 20 John Wiley/IEEE Press books on mobile radio communications totalling in excess of 10 000 pages, published in excess of 1000 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>

**Dr. Andy Lawrence** is a research programme manager at the Engineering and Physical Sciences Research Council (EPSRC), the main UK government agency for funding research and training in engineering and the physical sciences, investing more than £850 million a year. Andy is responsible for looking after Communications research, consisting of around £50M research funding, in addition to focussing on the needs of the UK academic research base and interactions with industry and other stakeholders in the field of ICT. Prior to working at EPSRC, Andy was a researcher in the field of meteorology, having gained a PhD from the University of Cambridge (collaborating with the British Antarctic Survey) and has subsequently held research positions at Massachusetts Institute of Technology (Boston, USA) and the European Centre for Medium-Range Weather Forecasts (Reading, UK) before joining EPSRC in Dec 2007.

**Dr. Werner Mohr** was graduated from the University of Hannover, Germany, with the Master Degree in electrical engineering in 1981 and with the Ph.D. degree in 1987.

Dr. Werner Mohr joined Siemens AG, Mobile Network Division in Munich, Germany in 1991. He was involved in several EU funded projects and ETSI standardization groups on UMTS and systems beyond 3G. Since December 1996 he was project manager of the European ACTS FRAMES Project until the project finished in August 1999. This project developed the basic concepts of the UMTS radio interface. Since April 2007 he is with Nokia Siemens Networks GmbH & Co. KG in

Munich Germany, where he is Head of Research Alliances. He was the coordinator of the WINNER Project in Framework Program 6 of the European Commission, chairman of WWI (Wireless World Initiative) and of the Eureka Celtic project WINNER+. The WINNER project laid the foundation for the radio interface for IMT-Advanced and provided the starting point for the 3GPP LTE standardization. In addition, he was vice chair of the eMobility European Technology Platform in the period 2008 – 2009 and he is now eMobility (now called Net!works) chairperson for the period 2010 – 2011. Werner Mohr was chair of the “Wireless World Research Forum – WWRF” from its launch in August 2001 up to December 2003. He is member of VDE (Association for Electrical, Electronic & Information Technologies, Germany) and Senior Member of IEEE. 1990 he received the Award of the ITG (Information Technology Society) in VDE. He is board member of ITG in VDE, Germany for the term 2006 to 2008 and was re-elected for the term 2009 to 2011. Werner Mohr is co-author of a book on “Third Generation Mobile Communication Systems” and a book on “Radio Technologies and Concepts for IMT-Advanced”.

**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 VTS Magazine. He has recently taken up the position of Associate Editor of the ACM transactions on Sensor networks.

**Dr. William H. (Bill) Tranter** received the Ph.D. degree in 1970, respectively. He joined the faculty of the University of Missouri-Rolla in 1969. From 1980 to 1985, he served as Associate Dean of Engineering with responsibility for research and graduate affairs. He was appointed Schlumberger Professor of Electrical Engineering in 1985 and served in that position until his early retirement from UMR in 1997.

In 1996-7 Bill served as an Erskine Fellow at Canterbury University in Christchurch, New Zealand. In 1997 he joined the Electrical Engineering faculty of the Virginia Polytechnic Institute and State University, (Virginia Tech), in Blacksburg, VA, as the Bradley Professor of Communications. In 2009 Bill took an IPA leave from Virginia Tech and now serves as Program Director for Communications, Information Theory, and Coding at the National Science Foundation.

His research interests are digital signal processing and computer-aided design of communication systems applied to wireless communications systems. He has authored numerous technical papers and is the co-author of three textbooks: Principles of Communications: Systems, Modulation and Noise

(Wiley, 2002), Signals and Systems (Prentice-Hall, 1998), and Simulation of Communication Systems with Applications to Wireless Communications (Prentice-Hall).

He has held many positions within the IEEE Communications Society including Director of Journals, Director of Education, and as a member and chair of a number of technical committees. He served as a member of the Board of Governors of the IEEE Communications Society, and as Vice President—Technical Activities. For eleven years he served as Editor-in-Chief of the IEEE Journal on Selected Areas in Communications. In that position he founded the IEEE Transactions on Wireless Communications. He recently completed a three-year term as a member of the IEEE Fellow Committee for the IEEE Board of Directors.

He was named a Fellow of the IEEE in 1985 and has received numerous awards including the James McLellan Meritorious Service Award, the IEEE Exemplary Publications Award, the IEEE Centennial Medal, and the IEEE Third Millennium Medal.

**Buyong K. Yi** is the Senior E.V.P. of LG Electronics, heading the North America R&D center. His organization supports \$ 6.0 Billion annual sales revenue and conducted relevant researches.

His industrial career has been highlighted not only developing the wireless communication technologies at global standard bodies, but also putting those into mobile communication devices. He demonstrated his managerial and technical skills bridging multi-disciplined and multi-national organizations to a common threaded and goal oriented standard development group. He had been twice elected as a TSG-C Chairman of the 3GPP2, developing 3rd and 4th generation CDMA air interface specifications which become the technical choice of more than one Billion users.

He also invented the Space-Time coding schemes earlier than anyone else which could provide coding gains and diversity gains together, called as “the Softest Hand-Off Mechanism”. The well known Alamoti space coding scheme provided only the diversity gain. His space-time coding scheme has been implemented into the wireless standards and suggested for the satellite radio broadcasting combing multiple signals from satellites. His contributions allow multiple base stations supporting users at the cell edge improving the cell coverage area. Also, this technology could be extended as the network coding scheme combing the messages from the different routes.

His leadership demonstrates that he received the prestigious CDMA Development Group Industry Leadership awards, for the wireless communication standard activities and his technical contributions; the first recipient was Erwin Jacobs. He has been actively participating IEEE San Diego Vehicular Technology Society as a chairman, which is the most active in the region. His activities have been awarded by the RAB Award for his dedication to rejuvenate the San Diego Section VTS Chapter, 2007.

He has been recognized by the National Engineer Week (NEW) Foundation for his engineering contributions on the wireless communication technology electing as an outstanding engineer of the year and inducted to the Hall of Fame (HoF) by the SEAS of the George Washington University.

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*Tuesday 17 May 2011, 08:30–10:00 (Budapest Ballroom)*

### **Wireless Futures...**

**Chair: Lajos Hanzo** *University of Southampton, UK*

**Panelists:**

**Fumiyuki Adachi** *Tohoku University, Japan*  
**Jorge Pereira** *European Commission*  
**Rahim Tafazolli** *CCSR, University of Surrey*  
**Reinaldo Valenzuela** *Bell Labs, Lucent Technologies*

This research panel will speculate on the future directions of wireless communications research, touching upon crucial design aspects, such as coherent versus non-coherent communications, orthogonal versus non-orthogonal signalling techniques, co-located and distributed MIMOs as well as cooperation at both the physical and upper layers, etc The exploration of high-frequency radio frequency bands is of high importance in the interest of supporting demanding, high-rate wireless Internet applications, but requires substantial further research efforts . Come and join the debate facilitated by distinguished experts of the field!

**Prof. Lajos Hanzo's** biography is given above.

**Dr. Fumiyuki Adachi** received the B.S. and Dr. Eng. degrees in electrical engineering from Tohoku University, Sendai, Japan, in 1973 and 1984, respectively. In April 1973, he joined NTT Laboratories and conducted various types of research related to digital cellular mobile communications. From July 1992 to December 1999, he was with NTT DoCoMo, Inc., where he led a research group on W-CDMA for 3G systems. Since January 2000, he has been with Tohoku University, Sendai, Japan, where he is a Professor of Electrical and Communication Engineering at the Graduate School of Engineering. His research interests are in gigabit wireless signal processing and networking including wireless access, equalization, transmit/receive antenna diversity, equalization, channel coding, and distributed MIMO signal processing. He is an IEEE Fellow and an IEICE Fellow. He was a recipient of the IEEE VTS Avant Garde Award 2000, IEICE Achievement Award 2002, Thomson Scientific Research Front Award 2004, Ericsson Telecommunications Award 2008, Telecom System Technology Award 2010, Prime Minister Invention Prize 2010.

**Dr. Jorge M. Pereira's** biography is given above.

**Prof. Rahim Tafazolli** is the Director of the Centre for Communications Systems Research (CCSR), Faculty of Engineering and Physical Sciences, The University of Surrey in the UK. CCSR is the largest academic communications research centre in Europe with extensive activities with academia and industry in the UK, Europe and the rest of the world. He has published more than 500 research papers in refereed journals, international conferences and as invited

speaker. He currently has more than 15 patents in the field of mobile communications. He is the editor of two books on "Technologies for Wireless Future" published by Wiley's Vol.1 in 2004 and Vol.2 2006. He is currently chairman of EU Net!Works Technology Platform Expert Group, board member of the UK Future Internet Strategy Group (UK-FISG). He is Fellow of WWRF (Wireless World Research Forum).

**Dr. Reinaldo A. Valenzuela** obtained his B.Sc. at the University of Chile, and his Ph.D. from Imperial College of Sc. and Tech., U. of London, England. At Bell Laboratories, he carried out indoor microwave propagation measurements and developed statistical models. He also worked on packet reservation multiple access for wireless systems and optical WDM networks. He became Manager, Voice Research Dept., at Motorola Codex, involved in the implementation integrated voice and data packet systems. On returning to Bell Laboratories he was involved in propagation measurements and ray tracing propagation prediction. He received the Distinguished Member of Technical Staff award and is Director of the Wireless Communications Research Department. He is currently engaged in MIMO / space time systems achieving high capacities using transmit and receive antenna arrays. He is a Fellow of the IEEE. He has been editor for the IEEE Transactions on Communications and the IEEE Transactions on Wireless. He has published over 130 papers and has 12 patents. He has over 10 000 Google Scholar citations and he is a 'Highly Cited Author' in Thomson ISI and a Fulbright Senior Specialist. He is the 2010 recipient of the IEEE Eric E. Sumner Award.

*Wednesday 18 May 2011, 08:30–10:30 (Margit A)*

### **The Networked, Plugged Smart Vehicle**

**Chair: Jorge Pereira** *European Commission*

**Panelists:**

**Onur Altintas** *Toyota InfoTechnology Center, Japan*  
**Andras Kovacs** *BROADBIT*  
**Patricia Rodriguez** *ETRA I+D, Spain*  
**Jan H. van Schuppen** *CWI, The Netherlands*

The panel aims at bringing together the two critical components that will define the future of Mobility and Transportation: the Smart Vehicle that is simultaneously plugged into the Internet and will be an integral part of the Smart Power Grid, therefore encompassing the Full Electric Vehicle.

**Dr. Jorge M. Pereira's** biography is given above.

**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

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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 general co-chair of the First IEEE Vehicular Networking Conference (IEEE VNC 2009) held in October 2009, in Tokyo and the Second IEEE VNC 2010 held in New Jersey, in December 2010.

**Andras Kovacs** has been working in the intelligent transportation industry since 2004, specializing in electronic tolling systems and automotive V2X communications research. He has been a contributing expert in the group which has defined the enforcement recommendations for the European Electronic Tolling System (EETS).

He has been contributing to the technical work of Car-2-Car Communication Consortium during 2006-2008. Since the establishment of the ETSI ITS committee, he has taken part in the work of its Networking and Media working groups, currently serving as a BroadBit delegate.

His main research contribution has been the leading of the 'Specification' and 'Conformance Testing' work packages of the GeoNet project. The specifications developed within GeoNet have been adapted into ETSI ITS standardisation; the 'GeoNetworking' and 'IPv6 over GeoNetworking' protocol standards are based on the finalisation of these specification results. During the past year Mr Kovacs has been involved in the ETSI task force developing the test specifications and the test platform for the V2X communication protocols developed within ETSI ITS. Since 2011, his research activity also includes expert contribution to FP7 projects for the

development of the Vehicle-to-Grid (V2G) interface for electric vehicles. He works at BroadBit, where his responsibility is the management of the company's research work.

**Patricia Rodriguez** is a Telecom Engineer from the Polytechnic University of Valencia (SPAIN) performing the final project in the École Supérieur d'Électricité (SUPELEC) in Paris. In the past she has worked in Alcatel CIT (Paris) as tendering engineer in the Wireless Transmission Division. She is working in ETRA I+D since 2002 where she has been the project manager of several IST and ICT projects. Currently, she is the project manager of the PECES (Pervasive Computing in Embedded Systems) project and the infrastructure manager of the national project MARTA (Automotion and Mobility for Advanced Transport Networks).

**Jan H. van Schuppen** is affiliated as CWI Fellow with the the research institute Centrum voor Wiskunde en Informatica (CWI) in Amsterdam, The Netherlands and as Full Professor with the Department of Mathematics of the Delft University of Technology (part time) in Delft, The Netherlands. He is a member of IEEE Societies of Control Systems, Computers, and Information Theory, and is a member of SIAM.

Van Schuppen's research interests include control of distributed/decentralized systems, control of hybrid systems and of discrete-event systems, stochastic control, realization, and system identification. In applied research his interests include engineering problems of control of motorway traffic, of communication networks, and control and system theory for the life sciences. In regard to control of motorway traffic he has been active in dynamic speed control, routing control, and adaptive prediction of inflows into a network.

He is Editor-in-Chief of the journal Mathematics of Control, Signals, and Systems, was Associate Editor-at-Large of the journal IEEE Transactions Automatic Control, and was Department Editor of the journal Discrete Event Dynamic Systems. Currently he is the coordinator of the project Control for coordination of distributed systems (C4C) which is financed by the European Commission. The direction of automated guided vehicles and control of road networks are research issues of this project. (<http://c4c-project.eu/>).

## Registration

Registration will take place in the Erzsébet Ballroom Foyer. Opening times are:

- Sunday 15 May 2011 0730 – 1730 \*
- Monday 16 May 2011 0800 – 1730
- Tuesday 17 May 2011 0800 – 1730
- Wednesday 18 May 2011 0800 – 1730

\* Also outside the reception for badge and ticket pickup only – bags can be picked up later.

## Breaks

Coffee breaks will take place in the exhibit and poster area in the Erzsébet Ballroom.

## Social Events

Lunches, which are included in the full registration, will be served in the Budapest Ballroom. This is also the venue for the reception on Sunday evening. Again a ticket is required for entry, although all registration categories include the reception.

The banquet on Tuesday evening will be held in the Lázár Equestrian Park. Busses have been arranged to take delegates to and from the banquet. The busses start at 17:15 **and the last bus will have left by 17:45**. After this time you will need to make your own way to the banquet.

**Lunches, the reception and banquet are ticket only – you will need the ticket included in your registration packet to gain entry.** If you have not yet registered on Sunday, you can pick up your tickets if you bring your registration receipt to the reception.

CAMBRIDGE

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Technologies, Solutions, Services

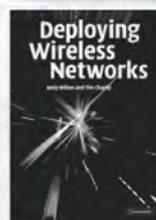
Joseph Ghetie

\$99.00; Hb: 978-0-521-51356-2; 464 pp.

### Cooperative Communications and Networking

K. J. Ray Liu, Ahmed K. Sadek, Weifeng Su, and Andres Kwasinski

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## Tutorials

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

Sunday 15 May 2011 08:30-12:00

### T1: Towards Holistic Green Communications and Networking

*Konstantinos Samdanis and Dominique Dudkowski, NEC Europe Ltd.*

The steadily rising energy cost and the need to reduce global CO<sub>2</sub> emission to protect our environment are today's economical and ecological drivers for the emerging consideration of energy consumption in all fields of communications and networking. After a steep increase of contributions, the energy-related research is currently entering a mature phase, in which specific solutions address energy conservation in particular parts of the network based on a specific set of constraints.

Our tutorial presents and analyzes the most significant technical proposals considering radio access networks, heterogeneous access, core optical networks and the Internet, database systems as well as the device perspective in an effort to identify and summarize the main energy saving principles. A key objective of our tutorial is to go beyond the current state of the art and provide a view into a potential holistic end-to-end energy analysis that combines and extends the current set of energy saving techniques. Such a holistic approach aims to combine wireless and wired research joining our experience from both fields.

*Konstantinos Samdanis graduated from Brunel University in 2000 with a degree in electrical and electronic engineering (telecommunication systems). In 2003 he received his M.Sc. in telecommunication research and in 2009 his Ph.D. in mobile communications from King's College London. Konstantinos worked in the EVEREST IST project and as a teaching assistant in King's College London as well as a research analyst at eGov Monitor before joining the NEC Laboratories Europe. Currently member of network management group, he conducts research on 3GPP LTE self-organized networks and energy saving in RANs, while he is also involved in the 3GPP SA5 group with numerous contributions in the field of energy management.*

*Dominique Dudkowski received his diploma in computer science in 2002 and his doctoral degree in mobile communications in 2009 from Stuttgart University, Germany. He worked as a research assistant in the Distributed Systems Group at University Stuttgart until he joined the Network Management Group of NEC Laboratories Europe in Heidelberg, Germany, in 2008. At the labs, he has been working on management principles and architectures for the future Internet and cloud networks within the large-scale EU projects AWARD and SAIL. He is also developing energy-efficient solutions for large fixed networks, focusing on innovative data center energy*

management approaches based on OpenFlow technology. Dominique is a member of several technical program committees of key conferences and workshops that have emerged in green communications and networking in the past few years. He has also been a panelist on energy measurement in communication networks and involved in standardization of Internet-related energy consumption monitoring.

Sunday 15 May 2011 08:30-12:00

## **T2: Cognitive radio based on UWB technology – a perfect binomial**

*Andrea Giorgetti, University of Bologna; Sithamparanathan Kandeepan, Create-Net; and Luca De Nardis, La Sapienza University*

Studies have shown that the spectrum is under utilized in the frequency, time and spatial domains in several licensed frequency bands. Cognitive Radio (CR) is proposed and encouraged especially by the radio regulatory bodies around the world as a solution to increase the efficiency of the spectral usage by opportunistically re-utilize spectrum already allocated. Ultra wideband (UWB) technology, in particular, is a potential candidate for the deployment of cognitive radio (CR) systems, given its implicit need for coexistence. Moving from this premise, this tutorial will identify the requirements and open research issues for the development of CR networks, and will address them in the specific case of UWB technology. To this aim, the tutorial will introduce the key characteristics of UWB communication systems, focusing on industrial standards (including both short distance, high data rate devices and low rate devices with ranging capabilities) and identifying application scenarios for UWB-CR networks.

The tutorial will first introduce the concept of Software Defined Radios (SDR) and the corresponding architecture enabling to have intelligence (cognition) in the radio in order to operate as a CR. The tutorial will then cover the problem of analyzing the external environment and adapting to it: spectrum sensing techniques, learning algorithms and generation of environment-related information, in the form of Radio Environment Maps (REM) will be addressed. Furthermore, the requirements posed on the UWB-CR wireless systems in the creation of REMs will be defined, with specific focus on the combination of positioning capabilities and detection of legacy or primary users.

*Andrea Giorgetti (MIEEE'04) received the Ph.D. degree from the University of Bologna, Italy in 2003. Since 2006 he is an A/Professor at the II Engineering Faculty, Department of Electronics, Computer Science and Systems (DEIS) at the University of Bologna. Since 2006 he is Research Affiliate at the Massachusetts Institute of Technology (MIT), Cambridge, USA, working on the ultra-wide bandwidth technology.*

*He was Co-chair of the Wireless Networking Symposium at the IEEE Int. Conf. on Commun. (ICC 2008), Beijing, CHINA, May 2008, and Co-chair of the MAC track of the IEEE Wireless Comm. & Networking Conf. (WCNC 2009), Budapest, Hungary, Apr 2009. He was co-recipient of the best student paper award at the IEEE International Conference on Ultra-Wideband*

*(ICU), held in Waltham, Massachusetts, Sept. 2006. His research interests include ultra-wideband communications and radar, wireless sensor networks and multiple-antenna-systems.*

*Sithamparanathan Kandeepan (MIEEE'03, SMIEEE'09) received his PhD from the University of Technology, Sydney in 2003. He is currently a Senior Researcher and leads the Cognitive Information Networks (CoIN) group at the Create-Net Research Centre, Italy. He was awarded the 'Earth Station Satellite Fellow' award to conduct his PhD degree at UTS with the CRCSS on the Fedsat project. He has presented many IEEE lectures in the areas of cognitive radios at University of New Mexico and Ryerson University.*

*Luca De Nardis (MIEEE'04) received his PhD from the University of Rome La Sapienza in 2005. Since 2008 he is an A/Professor at the INFO-COM department. In 2005/2006 he was a visiting-scholar at the Berkeley Wireless Research Center, University of California Berkeley. He also worked as postdoctoral fellow at the same institution in 2006/2007. His research interests focus on UWB, ad-hoc networks organization, MAC, positioning and routing protocols.*

Sunday 15 May 2011 08:30-12:00

## **T3: Participatory Sensing: Crowdsourcing Data from Mobile Smartphones in Urban Spaces**

*Salil Kanhere, University of New South Wales, Sydney*

The recent wave of sensor-rich, Internet-enabled, smart mobile devices such as the Apple iPhone has opened the door for a novel paradigm for monitoring the urban landscape known as participatory sensing. Using this paradigm, ordinary citizens can collect multi-modal data streams (e.g., audio, video, sound, location coordinates, etc) from the surrounding environment using their mobile devices and share the same using existing communication infrastructure (e.g., 3G service or WiFi access points). The data contributed from multiple participants can be combined to build a spatiotemporal view of the phenomenon of interest and also to extract important community statistics. Given the ubiquity of mobile phones and the high density of people in metropolitan areas, participatory sensing can achieve an unprecedented level of coverage in both space and time for observing events of interest in urban spaces. This tutorial will provide a comprehensive overview of this exciting new sensing paradigm and discuss the associated research challenges.

*Dr. 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 in the School of Computer Science and Engineering at the University of New South Wales in Sydney, Australia. His current research interests include participatory sensing, vehicular communication and wireless mesh and sensor networks. He has published over 75 peer-reviewed articles on these research topics. He has served on the organizing committee of a number of IEEE and ACM international conferences (e.g., ACM SenSys, IEEE LCN, ACM MSWiM., IEEE SenseApp, ACM IWCMC, ISSNIP). He is active on the program*

committee of numerous well-known conferences (e.g., IEE LCN, IEEE DCSS, IEEE ICC, IEEE GLOBECOM, IEEE WCNC, etc). He currently serves as the Area Editor for the ICST Journal on Ubiquitous Environments.

Sunday 15 May 2011 13:30-17:00

#### **T4: Cooperative active and passive localization and tracking: fundamental limits and UWB case study**

*Davide Dardari, University of Bologna; Andrea Conti, University of Ferrara*

In this tutorial, the theoretical fundamental limits in ranging and active/passive localization based on the UWB technology, as well as practical schemes, will be explained. The main ranging/positioning sources of errors such as multipath, clock offsets and interference will be illustrated. Some results derived from measured data in real environments will be shown to investigate the effect of system parameters on ranging, localization, and tracking accuracy. Some possible localization and tracking algorithms will be discussed and their implementation in a real test bed shown as case studies. Finally, some advanced issues such as cooperative localization and cognitive ranging will be discussed.

*Davide Dardari received the Laurea degree in electronic engineering (summa cum laude) and the PhD degree in electronic engineering and computer science from the University of Bologna, Italy, in 1993 and 1998, respectively. Since 2005, he has been a Research Affiliate at Massachusetts Institute of Technology (MIT), Cambridge, USA. Now, he is an Associate Professor at the University of Bologna at Cesena, Italy, where he participates with WiLAB (Wireless Communications Laboratory). Recently, he has focused his activity on ultra-wide bandwidth (UWB) systems, ranging and localization techniques, as well as wireless sensor networks. He is Senior Member of the IEEE where he is the current chair for the Radio Communications Committee of the IEEE Communication Society.*

*He currently serves as an Editor for IEEE Transactions on Wireless Communications, Lead Editor for the EURASIP Journal on Advances in Signal Processing (Special Issue on Cooperative Localization in Wireless Ad Hoc and Sensor Networks), Guest Editor for Proceedings of IEEE (Special Issue on UWB Technology & Emerging Applications) and for Physical Communication Journal (ELSEVIER) (Special Issue on Advances in UWB Wireless Communications). He is co-author of the book 'Wireless Sensor and Actuator Networks: enabling technologies, information processing and protocol design', Elsevier, 2008.*

*Andrea Conti received the Dr.Ing. degree (with honors) in telecommunications engineering and the Ph.D. degree in electronic engineering and computer science in 1997 and 2001, respectively, from the University of Bologna, Italy. From 1999 to 2002, he was with CNIT at the University of Bologna, and from November 2002, he joined the IEIIT-BO/CNR. In July 2005, he joined the University of Ferrara, Italy, where*

*he is currently an Assistant Professor. He is research affiliate with WiLAB, IEIIT-BO/CNR, CNIT, and Wireless Communications Group at LIDS, MIT.*

*His actual research interests are in the area of wireless communications including localization, adaptive transmission and multi-channel reception, coding in faded multiple-input multiple-output channels, wireless sensor networks.*

*Among others services for IEEE he is Editor for IEEE Communications Letters, was Editor for IEEE Transactions on Wireless Communications and TPC vice-chair for WCNC2009. He is co-author of the book 'Wireless Sensor and Actuator Networks: enabling technologies, information processing and protocol design', Elsevier, 2008.*

Sunday 15 May 2011 13:30-17:00

#### **T5: Low-Complexity Algorithms for Large-MIMO Detection**

*A. Chockalingam, Indian Institute of Science, Bangalore*

This tutorial will address the challenging issue of detection complexity in realizing high spectral efficiency MIMO systems with large number (tens) of antennas (referred to as large-MIMO systems). Complexity of optimal signal detection grows exponentially in number of antennas. We will present detection algorithms that achieve near-optimal performance in large-MIMO systems at practically affordable complexities (e.g., polynomial/linear complexities in number of antennas).

Interestingly, certain algorithms rooted in machine learning/artificial intelligence show increasingly closer to optimum performance for increasing number of dimensions. We will illustrate that this large-dimension behavior of these algorithms can be exploited in large-MIMO detection. Detailed exposition of several such algorithms, their bit error performances and complexities, and comparison with other widely known detection algorithms will be the focus in this tutorial.

Specifically, algorithms based on local search heuristics, including likelihood ascent search (LAS) and reactive tabu search (RTS) algorithms, that achieve near maximum likelihood (ML) performance with large number of antennas will be presented. We will also present algorithms that achieve near maximum a posteriori (MAP) performance in large dimensions. They are based on probabilistic data association (PDA), belief propagation (BP) on Markov random fields/factor graphs, and Markov Chain Monte-Carlo (MCMC) methods. We will show that these algorithms are attractive for 16x16, 32x32, 64x64 MIMO systems with 4-QAM/16-QAM/64-QAM. Feasibility of such algorithms and growing maturity in compact antennas design can enable large-MIMO implementations, for applications including Wireless HDTV.

*A. Chockalingam received the B.E. (Honours) degree in Electronics and Communication Engineering from the P. S. G. College of Technology, Coimbatore, India, in 1984, the M.Tech. degree with specialization in satellite communications from the Indian Institute of Technology, Kharagpur, India, in 1985, and the Ph.D.*

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degree in Electrical Communication Engineering (ECE) from the Indian Institute of Science (IISc), Bangalore, India, in 1993. During 1986 to 1993, he worked with the Transmission R & D division of the Indian Telephone Industries Limited, Bangalore. From December 1993 to May 1996, he was a Postdoctoral Fellow and an Assistant Project Scientist at the Department of Electrical and Computer Engineering, University of California, San Diego. From May 1996 to December 1998, he served Qualcomm, Inc., San Diego, CA, as a Staff Engineer/Manager in the systems engineering group. In December 1998, he joined the faculty of the Department of ECE, IISc, Bangalore, India, where he is a Professor, working in the area of wireless communications and networking. Recently, his research group (<http://wrl.ece.iisc.ernet.in/>) has been making pioneering contributions in the nascent field of low-complexity near-optimal detection in large-MIMO systems.

Dr. Chockalingam is a recipient of the Swarnajayanti Fellowship from the Department of Science and Technology, Government of India. He served as an Associate Editor of the IEEE Transactions on Vehicular Technology from May 2003 to April 2007. He currently serves as an Editor of the IEEE Transactions on Wireless Communications. He also served as a Guest Editor for the IEEE JSAC Special Issue on Multiuser Detection for Advanced Communication Systems and Networks. Currently, he serves as a Guest Editor for the IEEE JSTSP Special Issue on Soft Detection on Wireless Transmission. He is a Fellow of the Institution of Electronics and Telecommunication Engineers, and a Fellow of the Indian National Academy of Engineering.

Sunday 15 May 2011 13:30-17:00

## **T6: Mobility models and social networks**

Paolo Santi, Istituto di Informatica e Telematica del CNR

Mobility is a fundamental property of several short range wireless networks, such as vehicular networks, opportunistic networks, some types of sensor networks, and so on. Given this, significant efforts have been devoted in the wireless networking literature to deriving simple mobility models resembling salient features of these types of networks.

As a result of these efforts, a plethora of mobility models have been introduced in the literature.

In this tutorial, we will give an organic view of this large body of literature, surveying the most representative mobility models introduced for general short-range wireless networks, as well as models tailored to more specific application scenarios such as vehicular and opportunistic networks. With respect to this latter type of network, we will carefully describe mobility models taking into account the social structure underlying opportunistic networks composed of mobile individuals (a.k.a. Pocket Switched Networks).

When presenting the mobility models, we will survey not only their definition and possible utilization, but also (when possible) their stationary properties for what concerns, e.g., node spatial distribution, average node velocity, etc. As we shall see, knowledge of stationary properties of a mobility model is fundamental in the set-up of an accurate mobile network simulation environment.

Dr. Santi received the Laura Degree and Ph.D. degree in computer science from the University of Pisa in 1994 and 2000, respectively. He is part of the research staff at the Istituto di Informatica e Telematica del CNR in Pisa, Italy, since 2001, first as a Researcher and now as a Senior Researcher.

During his career, he visited Georgia Institute of Technology in 2001, and Carnegie Mellon University in 2003. His research interests include fault-tolerant computing in multiprocessor systems (during PhD studies), and, more recently, the investigation of fundamental properties of wireless multihop networks such as connectivity, topology control, lifetime, capacity, mobility modeling, and cooperation issues. He has contributed more than 50 papers and a book in highly reputed conferences and journals in the field of wireless ad hoc, vehicular, and sensor networking.

Dr. Santi has been General Co-Chair of ACM VANET 2007 and 2008, Technical Program Co-Chair of IEEE WiMesh 2009, and he is involved in the organizational and technical program committee of several conferences in the field. Since February 2008, Dr. Santi is Associate Editor for IEEE Transactions on Mobile Computing. He is a member of IEEE CS, and a senior member of ACM and SIGMOBILE.

# VTC2011-Spring Technical Programme

## Monday 16 May 2011

Monday, 16 May 10:30-12:00 Margit A

### 1A: Routing 1

- 1 A Novel Scheme for Message-Forwarding in Multi-Hop Ad-Hoc Wireless Networks**  
Mikel Hernaez, Pedro M. Crespo, CEIT and TECNUN (University of Navarra)
- 2 Adaptive Power-Aware Routing in Wireless Mesh Networks**  
Auon Muhammad Akhtar, Mohammad Reza Nakhai, Hamid Aghvami, King's College London
- 3 An Efficient Cluster-based Data Dissemination Scheme in Wireless Sensor Networks**  
Ren-Jhong Liu, National Chiao Tung University; Kuo-chen Wang, Rong-Hong Jan, Yuh-Jyh Hu, National Chiao Tung University; Tien-Hsiung Ku, Changhua Christian Hospital
- 4 Framework for Integration of IEEE 802.21 MIH Function with Ad Hoc Routing Protocol**  
John Lee, Anthony McAuley, Subir Das, Telcordia Technologies
- 5 iXOR : Intelligent XOR using Holding-x Strategy in Ad hoc networks**  
Hayoung Oh, Junjie Lee, Suchul Lee, Chong-kwon Kim, Seoul National University

Monday, 16 May 10:30-12:00 Margit B

### 1B: OFDM

Chair: Xianbin Wang

- 1 A Flexible Parallel Transmission Scheme Using Frequency Domain Multi-Layered OFDM System**  
Jiaxin Yang, Xianbin Wang, The University of Western Ontario; Sung Ik Park, Heung Mook Kim, Electronics and Telecommunications Research Institute
- 2 An Efficient FRS-Cooperative Strategy with No CSIT in OFDM-based Networks**  
Hyukmin Son, University of Yonsei; Sanghoon Lee, Hojae Lee, Yonsei University; Sanghoon Lee, Wireless Network Lab. in Yonsei University
- 3 An Enhanced OFDM/OQAM System Exploiting Walsh-Hadamard Transform**  
Mohammed Al-Attraqchi, Said Boussakta, Stephane Le-Goff, Newcastle University
- 4 Optical Wireless OFDM System on FPGA: Study of LED Nonlinearity Effects**  
Irina Stefan, Hany Elgala, Jacobs University Bremen; Raed Mesleh, University of Tabuk; Dominic O'Brien, University of Oxford; Harald Haas, University of Edinburgh
- 5 Upper Bounds on Achievable PMEPR Through Subcarrier Sign Selection**  
Mohammad Ghasemi Damavandi, Aliazam Abbasfar, University of Tehran

Monday, 16 May 10:30-12:00 Lanchid A

### 1C: Cooperative Communications

Chair: Inkyu Lee, Korea University, Korea

- 1 A Cooperative Three-Time-Slot Transmission in Asymmetric Two-Way Relay Channels**  
WU Dan, TIAN Yafei, Beihang University; Chenyang Yang, Beihang University, China
- 2 A Novel Two-Way Relay UWB Network with Joint Non-Coherent Detection in Multipath**  
Zicheng Wang, Hui Gao, Beijing University of Posts and Telecommunications; Tiejun Lv, Beijing University of Posts and Telecommunication

- 3 Achievable Rate Regions for Two-Way MIMO AF Multiple-Relay Channels**  
Kyoung-Jae Lee, Inkyu Lee, Korea University
- 4 Decode-Quantize-Forward for OFDM-based Relaying Systems**  
Dirk Wübben, Wu Meng, University of Bremen
- 5 MIMO Cellular Systems with Irregular Cell Geometry Based on Base Station Cooperation**  
Tetsuki Taniguchi, Yoshio Karasawa, Nobuo Nakajima, The University of Electro-Communications

Monday, 16 May 10:30-12:00 Lanchid B

### 1D: Relay Selection

Chair: Jens Zander, KTH, Sweden

- 1 A Novel Multiple Relay Selection Strategy for LTE-A Relay Systems**  
Yulin Hu, Ling Qiu, University of Science and Technology of China
- 2 Cooperative Beamforming with Multi-Relay Selection for Wireless Ad Hoc Networks**  
Chin-Liang Wang, Ting-Nan Cho, Syue-Ju Syue, National Tsing Hua University
- 3 Joint Relay Selection and Power Allocation for Energy-Constrained Multi-Hop Cognitive Networks**  
Yiyi Chen, Xin Chen, Feng Zhiyong, Beijing University of Posts and Telecommunications
- 4 Optimization of the Relay Selection Scheme in Cooperative Retransmission Networks**  
Xin He, Frank Y. Li, University of Agder
- 5 Relay Selection Aided Distributed Space-Time Block Code for Two-Way Relay Channel with Physical-Layer Network Coding**  
Kai Zhu, Alister Burr, University of York

Monday, 16 May 10:30-12:00 Corso A

### 1E: Handoff and Mobility Management 1

Chair: Thomas Kuerner

- 1 Adaptive Handoff Management in the Proxy Mobile IPv6 Domain**  
Seil Jeon, Young Han Kim, Soongsil University
- 2 Dynamic Dwell Timer for Hybrid Vertical Handover in 4G Coupled Networks**  
Ammar Haider, Iqbal Gondal, Joarder Kamruzzaman, Monash University
- 3 Fast PMIPv6 Multicast Handover Procedure for Mobility-Unaware Mobile Nodes**  
Jong-Hyouk Lee, Thierry Ernst, INRIA
- 4 Media Independent Handover Management in Heterogeneous Access Networks - An Empirical Evaluation**  
Tiago Cardoso, Universidade do Porto / PT Inovação; Pedro Neves, Portugal Telecom Inovação; Manuel Ricardo, University of Porto; Susana Sargento, IT - Universidade de Aveiro
- 5 Mobility Performance in Heterogeneous LTE Networks with Indoor Base Stations**  
Niko Kolehmainen, Magister Solutions Ltd.; Olli Alanen, Magister Solutions Ltd; Tero Henttonen, Nokia Research Center

Monday, 16 May 10:30-12:00 Margit A

### 1F: Energy Efficiency

- 1 Energy balancing in an OFDM-based WSN**  
Di Wu, Gang Zhu, Beijing Jiaotong University; Dongmei Zhao, McMaster University; Lina Liu, Beijing Jiaotong University
- 2 Energy Minimization in Wireless Multihop Networks Using Two-Way Network Coding**  
Lianghui Ding, Ping Wu, Uppsala University; Hao Wang, Southeast University & Uppsala University; Z Peng, Xiaohu You, Southeast University
- 3 EVAN: Energy-aware SVC Video Streaming over Wireless Ad hoc Networks**  
Lamia Kaddar, University of Versailles; Yassine HADJADJ AOUL, University of Rennes; Ahmed Mehaoua, University of Paris Descartes
- 4 Lifetime Maximization with Inter-Session Network Coding in Energy Constrained Wireless Networks**  
Lianghui Ding, Ping Wu, Uppsala University; Hao Wang, Southeast University & Uppsala University; Z Peng, Xiaohu You, Southeast University
- 5 Sleep Scheduling Protocol for Mobile WSNs**  
Gergely Öllös, Rolland Vida, Budapest University of Technology and Economics

Monday, 16 May 10:30-12:00 Istvan

### 1G: Channel Estimation

Chair: Fredrik Tufvesson

- 1 Application Method of Interlink Correlation for Multilink MIMO Propagation Channel Estimation**  
Wataru Yamada, Naoki Kita, Motoharu Sasaki, Takatoshi Sugiyama, NTT Access Network Service Systems Laboratories
- 2 Development and Implementation of a Real Time High-Resolution Channel Sounder – IF Stage**  
David Ferreira, Instituto de Telecomunicações; Rafael F. S. Caldeirinha, Polytechnic Institute of Leiria, Instituto de Telecomunicações
- 3 Directional Analysis of Measured 60 GHz Indoor Radio Channels using SAGE**  
Carl Gustafson, Fredrik Tufvesson, Lund University; Katsuyuki Haneda, Aalto University School of Science and Technology; Shurjeel Wyne, COMSATS Institute of Information Technology - Islamabad; Andreas F. Molisch, University of Southern California
- 4 Estimation of the Radio Channel Parameters from a Circular Array with Directional Antennas**  
Annika Böttcher, RWTH Aachen University; Christian Schneider, Milan Narandžić, Technische Universität Ilmenau; Peter Vary, RWTH Aachen; Reiner Thomä, Technische Universität Ilmenau
- 5 Noise power and SNR estimation Based on the Preamble in Tri-sector OFDM systems**  
Hyeongsook Park, ETRI

Monday, 16 May 10:30-12:00 Erzsébet

### 1P: Poster 1

- 1 Energy and Spectrum Efficient systems with Adaptive Modulation and Spectrum Sharing for Cellular Systems**  
Talal Alsedairy, Muhammad Ali Imran, University of Surrey
- 2 A 3G-802.11p based OLT-TDMA Mechanism for Cooperative Safety in a Dense Traffic Scenario**  
Ran Wang, Zi Wang, ZHANG Lin, Beijing University of Posts and Telecommunications
- 3 Communication Strategy to Reflect Group Mobility Issue of Mobile Sinks in Wireless Sensor Networks**  
Sungkee Noh, Electronics and Telecommunications Research Institute; Soochang Park, Euisin Lee, Sang-Ha Kim, Chungnam National University

- 4 Performance Study of Cooperative Routing Metric for Multi-Hop Wireless Networks**  
Shoukang Zheng, Institute for Infocomm Research
- 5 On Achievable Rate Region of Multiple Coordinated Multiple Access Channels**  
Oluwakayode Onireti, Muhammad Ali Imran, Fabien Heliot, University of Surrey
- 6 Energy Efficient Ultra-Wideband Signaling for Cooperative Spectrum Sensing in Cognitive Radio**  
Daniel Bielefeld, Gernot Fabeck, Milan Zivkovic, Rudolf Mathar, RWTH Aachen University
- 7 Multihop multibranch DF relaying for cooperative systems**  
Sami Amara, Hatem Boujemaa, SUPCOM
- 8 Pedestrian Movement Recognition for Radio Based Collision Avoidance: A Performance Analysis**  
Alexander Flach, Abdul Qudoos Memon, Sian Lun Lau, Klaus David, University of Kassel
- 9 Comparison of Rain Fade Mitigation Techniques using CRC and embedded Pilot methods in Ka-band Satellite Links**  
Suvra Sekhar Das, Indian Institute of Technology Kharagpur
- 10 Compressive Sensing with Sparse Measurement Matrices**  
Keying Wu, Alcatel Shanghai Bell Co., Ltd; Xiaoyong Guo, Alcatel-Lucent Shanghai Bell
- 11 Regular and Irregular Quasi-Cyclic LDPC Codes**  
Xueqin Jiang, Donghua University; Moon-ho Lee, Chonbuk National University
- 12 Energy Efficient Timing Synchronizer for MB-OFDM UWB**  
Debarati Sen, Chalmers University of Technology, Sweden
- 13 Multi-user Joint Tx/iterative Rx MMSE-FDE And Successive MUI Cancellation For Uplink DS-CDMA**  
Kazuki Takeda, Fumiyuki Adachi, Tohoku University
- 14 Analysis of Packet-Level Forward Error Correction for Video Transmission**  
Matteo Mazzotti, Enrico Paolini, Marco Chiani, University of Bologna; Benjamin Gadat, Thales Communications; Cyril Bergeron, Thales Communications; Roberta, Fracchia
- 15 A New Channel Assignment Scheme for Interference-Aware Routing in Vehicular Networks**  
Peppino Fazio, Floriano De Rango, Cesare Sottile, University of Calabria; Carlos T. Calafate, Polytechnic University of Valencia
- 16 Performance evaluations for multiuser CQI enhancements for LTE-Advanced**  
Helka Maattanen, Aalto University, School of Technology and Science; Toni Huovinen, Tampere University of Technology; Tommi Koivisto, Mihai Enescu, Renesas Mobile; Olav Tirkkonen, Aalto University; Mikko Valkama, Tampere University of Technology
- 17 Performance Evaluation of Spectrum Sensing Using Welch Periodogram for OFDM Signals**  
Ilkka Harjula, Atso Hekkala, Marja Matinmikko, Miia Mustonen, VTT Technical Research Centre of Finland
- 18 Comparison and Analysis of Secure Mobile Architecture (SMA) and Evolved Packet System**  
Jani Pellikka, Marek Skowron, Andrei Gurtov, University of Oulu
- 19 System Level Analysis of ACK/NACK Bundling for Multi-Component Carrier LTE-Advanced**  
Yuanye Wang, Aalborg University; Klaus I. Pedersen, Nokia Siemens Networks; Troels B. Sørensen, Preben Mogensen, Aalborg University
- 20 Average Energy Efficiency Contours for Single Carrier AWGN MAC**  
Amir Akbari, Muhammad Ali Imran, University of Surrey; Reza Hoshyar, National Semiconductor; Rahim Tafazolli, University of Surrey



## National Innovation Office

	Margit A (A)	Margit B (B)	Lanchid A (C)	Lanchid B (D)	Corso A (E)	Corso B (F)	Istvan (G)	Buda (H)	Pest (I)
8:00-17:30					SUNDAY 15 May Registration (Erzsébet Ballroom Foyer)				
8:30-10:00	W3: C2POWER	W4: BeFEMTO (Broadband evolved Femtocell Techs)	W5: 1st Int Workshop on Cross-Layer Operation	T1: Towards Holistic Green Comms and Networking	T3: Participatory Sensing: Crowdsourcing Data		T2: Cognitive Radio based on UWB Technology	W1: International Workshop on Self- Organizing Networks	W2: GreeNet
10:00-10:30									
10:30-12:00	W3: C2POWER	W4: BeFEMTO (Broadband evolved Femtocell Techs)	W5: 1st Int Workshop on Cross-Layer Operation	T1: Towards Holistic Green Comms and Networking	T3: Participatory Sensing: Crowdsourcing Data		T2: Cognitive Radio based on UWB Technology	W1: International Workshop on Self- Organizing Networks	W2: GreeNet
12:00-13:30					Lunch Break (No lunch provided)				
13:30-15:00	W3: C2POWER	W4: BeFEMTO (Broadband evolved Femtocell Techs)	W5: 1st Int Workshop on Cross-Layer Operation	T4: Cooperative Localization & Tracking	T6: Mobility Models and Social Networks	Context Awareness for Proactive Systems CAPS2011	T5: Low-Complexity Algorithms for Large- MIMO Detection	W1: International Workshop on Self- Organizing Networks	W2: GreeNet
15:00-15:30					Coffee (Erzsébet Ballroom)				
15:30-17:00	W3: C2POWER	W4: BeFEMTO (Broadband evolved Femtocell Techs)	W5: 1st Int Workshop on Cross-Layer Operation	T4: Cooperative Localization & Tracking	T6: Mobility Models and Social Networks	Context Awareness for Proactive Systems CAPS2011	T5: Low-Complexity Algorithms for Large- MIMO Detection	W1: International Workshop on Self- Organizing Networks	W2: GreeNet

Margit A (A)	Margit B (B)	Lanchid A (C)	Lanchid B (D)	Corso A (E)	Corso B (F)	Istvan (G)	Buda (H)	Pest (I)	Erzsébet (P)
<b>SUNDAY 15 May</b>									
7:30-17:30	Registration (Erzsébet Ballroom Foyer)								
8:30-17:00	Tutorials & Workshop: See separate program above								
19:00-21:00	VTC Welcome Reception (Buda)								
<b>MONDAY 16 May</b>									
8:00-17:30	Registration (Erzsébet Ballroom Foyer)								
8:30-10:00	Opening Plenary / (Budapest Ballroom)								
10:00-10:30	Coffee and Exhibits (Erzsébet Ballroom)								
10:30-12:00 (1)	Routing 1	OFDM	Relay Selection	Handoff and Mobility Management 1	Energy Efficiency	Channel Estimation			Poster 1
12:00-13:30	Lunch (Budapest Ballroom)								
13:30-15:00 (2)	MAC 1	Multuser and Cooperative Diversity	Scheduling 2	Handoff and Mobility Management 2	Precoding	Multi-antenna Signal Processing	Transportation (14:00-15:00)	Multimedia (14:00-15:00)	Poster 2
15:00-15:30	Coffee and Exhibits (Erzsébet Ballroom)								
15:30-17:00 (3)	Wireless Sensor Networks 1	Performance Analysis	Interference Management	Resource Allocation 1	Signal Processing	Transmission over MIMO Channels 1	Interference Management	Propagation Modeling	Poster 3
18:00-20:00	Evening Panel: Funding Wireless Research (Budapest Ballroom)								
<b>TUESDAY 17 May</b>									
8:00-17:30	Registration (Erzsébet Ballroom Foyer)								
8:30-10:00	Panel: Wireless Futures... (Budapest Ballroom)								
10:00-10:30	Coffee and Exhibits (Erzsébet Ballroom)								
10:30-12:00 (4)	Wireless Sensor Networks 2	Channel Estimation 1	Transmission Techniques	Interference Mitigation	Power Control and Energy Awareness	Transmission over MIMO Channels 2	PHY Techniques (10:30-11:30)		Poster 4
12:00-13:30	Lunch (Budapest Ballroom)								
13:30-15:00 (5)	Beamforming	Channel Estimation 2	Cognitive Radio	Distributed Antenna	Medium Access Protocol	Multi-antenna Resource Allocation	Adaptive MAC Mechanism (14:00-15:00)	Traffic Management 1 (14:00-15:00)	Poster 5
15:00-15:30	Coffee and Exhibits (Erzsébet Ballroom)								
15:30-17:00 (6)	Resource and Traffic Management	Scheduling 1	Carrier Allocation and Aggregation	Timing, Code and Detector Design	Femtocell Wireless Networks	Channel Characterization	Robust MIMO Transmission Technology	Localization and Tracking 1	Poster 6
17:15-22:00	VTC2011-Spring Banquet ( <b>Busses depart from the Marriott at 17:15</b> )								
<b>WEDNESDAY 18 May</b>									
8:00-17:30	Registration (Erzsébet Ballroom Foyer)								
8:30-10:00 (7)	Panel: The Networked, Plugged Smart Vehicle	Resource Allocation	Transmission Techniques 3	Channel Estimation and Quantization	Transmission and Use of Channel State Information	MIMO Channels	Cooperative MIMO 1	Satellite Systems	Poster 7
10:00-10:30	Coffee and Exhibits (Erzsébet Ballroom)								
10:30-12:00 (8)	Mobility	Coding	Cooperative MIMO 2	Resource Allocation 2	Scheduling	Multuser MIMO	Vehicle Applications (10:30-11:30)	Network Architecture (10:30-11:30)	Poster 8
12:00-13:30	Lunch (Buda)								
13:30-15:00 (9)	Routing 2	Transmission Techniques 1	Multiple Access System	Spectrum Detection and Multiple Access	Wireless Networks Modeling	Antenna	Vehicle Networking (14:00-15:00)	Traffic Management 2 (14:00-15:00)	Poster 9
15:00-15:30	Coffee (Erzsébet Ballroom)								
15:30-17:00 (10)	MAC 2	Transmission Techniques 2	Simulation and Performance Evaluation	Multicasting and Broadcasting	Traffic Management and Network Planning	Network Performance Optimization	Signal Processing for Sensor Networks	Localization and Tracking 2	Poster 10

Monday, 16 May 13:30-15:20 Margit A

## 2A: MAC 1

- 1 A Reliable Multicast MAC protocol with LPD capability for Tactical Ad-hoc networks**  
Jeonghun Kim, Junwoo Jung, Ajou University; Jaesung Lim, Graduate School of Information and Communication Ajou University
- 2 Achieving minimum latency in multi-hop MAC protocol for Wireless Sensor Networks**  
Kien Nguyen, The Graduate University for Advanced Studies; Yusheng Ji, National Institute of Informatics
- 3 Advanced Aloha with SIC for Beaconing in a MANET**  
Nico Franzen, German Aerospace Center (DLR)
- 4 Distributed Backoff Mechanism for Traffic Adaptive Active Period Control in Cluster-based IEEE 802.15.4 WSNs**  
Kazuo Mori, Katsuhiko Naito, Hideo KOBAYASHI, Mie University
- 5 On the Capacity of a CSMA-Based Multi-Hop Linear Network with Poisson Distributed Nodes**  
Chiara Buratti, Roberto Verdone, University of Bologna; Alberto Zanella, CNR, Italy
- 6 Formal Analysis of a VANET Congestion Control Protocol through Probabilistic Verification**  
Savas Konur, Michael Fisher, University of Liverpool

Monday, 16 May 13:30-15:00 Margit B

## 2B: Multiuser and Cooperative Diversity

Chair: Tad Matsumoto

- 1 Individual Packet Deadline Constrained Opportunistic Scheduling For a Multiuser System**  
Majid Butt, Kimmo Kansanen, Norwegian University of Science and Technology; Ralf Müller, NTNU
- 2 On the SER of Distributed TAS/MRC in MIMO Multiuser Relay Networks**  
Nan Yang, CSIRO ICT Centre; Phee Lep Yeoh, University of Sydney; Maged Elkashlan, CSIRO ICT Centre; Jinhong Yuan, University of New South Wales; Iain B. Collings, CSIRO
- 3 Outage Performance of Opportunistic Scheduling in Multiuser Relay Network with Selective Decode-and-Forward Relaying**  
Xiaoyi Liu, Haochuan Zhang, Xin Zhang, Dacheng Yang, Beijing University of Posts and Telecommunications
- 4 Performance of a reduced feedback OFDMA system employing joint scheduling and diversity**  
Seong-Ho Hur, UCSD; Prof. Bhaskar D. Rao, University of California, San Diego, USA
- 5 Simple Coded Amplify-and-Forward Two-Way Relay Systems with Imperfect Side Information**  
Nguyen Xuan Quy, Japan Advanced Institute of Science and Technology; Khoirul Anwar, Tad Matsumoto, Japan Advanced Institute of Science and Technology (JAIST)

Monday, 16 May 13:30-15:00 Lanchid A

## 2C: Spectrum Sensing

Chair: Homayoun Nikookar, Delft University of Technology

- 1 A Fuzzy Decision Scheme for Cooperative Spectrum Sensing in Cognitive Radio**  
Hongtao Zhang, Wang Xiaoxiang, Beijing University of Posts and Telecommunications
- 2 A Low Complexity Cooperative Sensing Method Exploiting Two Level Sequential Detection**  
Yu Rao, Wei Chen, Zhigang Cao, Tsinghua University
- 3 A Novel Signal Detection Method for Spectrum Sensing Using Directionality**  
Zezhou Luo, Jietao Zhang, Huawei Technologies Co., Ltd.; Hongcheng Zhuang, Huawei Technologies Co., Ltd.
- 4 A Spectrum Sharing Algorithm Based on Spectrum Heterogeneity for Centralized Cognitive Radio Networks**  
Guoqin Ning, Huazhong Normal University

## 5 A Wavelet Packet Transceiver for Spectral Analysis and Dynamic Spectrum Access

D.D.Ariananda, M.K.Lakshmanan, Homayoun Nikookar, Delft University of Technology

Monday, 16 May 13:30-15:00 Lanchid B

## 2D: Scheduling 1

Chair: Xianbin Wang

- 1 Multi-QoS-aware Fair Scheduling for LTE**  
Yasir Zaki, Thushara Lanka Weerawardane, Carmelita Görg, University of Bremen; Andreas Timm-Giel, Hamburg University of Technology
- 2 Multiuser Scheduling on the LTE Downlink with Simulated Annealing**  
Mehmet Emin Aydin, University of Bedfordshire; Raymond Kwan, NEC Telecom Modus / University of Bedfordshire; Joyce Wu, RanPlan Ltd, UK; Jie Zhang, University of Bedfordshire
- 3 On Channel Correlation Based Scheduling and Signalling for MIMO-OFDMA Downlink**  
Andreas Ibing, Philip Otto, TU Berlin; Holger Boche, Technical University of Berlin
- 4 Space-Frequency Scheduling in TDD based LTE-Advanced MIMO-OFDMA Systems**  
Jouko Leinonen, University of Oulu, Centre for Wireless Communications; Harri Pennanen, University of Oulu; Tuomas Haataja, University of Oulu, Centre for Wireless Communications; Antti Tolli, University of Oulu; Matti Latva-aho, Centre for Wireless Communications, University of Oulu
- 5 Uplink QoS Scheduling for LTE System**  
Sungoh Kwon, University of Ulsan; Neung-Hyung Lee, Samsung Electronics Co., LTD.

Monday, 16 May 13:30-15:00 Corso A

## 2E: Handoff and Mobility Management 2

Chair: Thomas Kuerner

- 1 Host Identity Protocol based NEMO solutions: An evaluation of the signaling overhead**  
Nerea Toledo, University of the Basque Country; Jean-Marie BONNIN, Telecom Bretagne; Marivi Higuero, Eduardo Jacob, University of The Basque Country
- 2 Influence of Positioning Error on X-Map Estimation in LTE**  
Michaela Neuland, TU Braunschweig; Thomas Kürner, Technische Universität Braunschweig; Mehdi Amirijoo, Ericsson Research, Ericsson AB, Sweden
- 3 Multichannel Virtual Access Points for Seamless Handoffs in IEEE 802.11 Wireless Networks**  
Maria Eugenia Berezin, Franck Rousseau, Andrzej Duda, Grenoble Informatics Laboratory
- 4 Positioning and Relay Assisted Robust Handover Scheme for High Speed Railway**  
Linghui Lu, Xuming Fang, Meng Cheng, Chongzhe Yang, Wantuan Luo, Cheng Di, Southwest Jiaotong University
- 5 Signalling Overhead Evaluation of HeNB Mobility Enhanced Schemes in 3GPP LTE-Advanced**  
Haijun Zhang, Beijing University of Posts and Telecommunications; Wei Zheng, Beijing University of Posts & Telecom; Xiangming Wen, Beijing university of posts and telecom; Chunxiao Jiang, Tsinghua University
- 6 Vertical Handoff Algorithm for Heterogeneous Wireless Networks Based on Scalar Kalman Filtering**  
Saif eddine Abdelmalek, École de Technologie Supérieure; Francois Gagnon, École de Technologie Supérieure; Charles Despains, École de Technologie Supérieure; Honglin Hu, Shanghai Research Center for Wireless Communications (SHRCWC)

Monday, 16 May 13:30-15:00 Corso B

## 2F: Precoding

- 1 A Novel Precoder Design for Coordinated Multipoint Downlink Transmission**  
Huan Sun, R&I Institute, Alcatel-Lucent Shanghai Bell; Wei Fang, R&I, Alcatel-Lucent Shanghai Bell; Lin Yang, University of Manchester

- 2 MIMO Precoding for Filter Bank Modulation Systems Based on PSVD**  
Nicola Moret, University of Udine; Stephan Weiss, University of Strathclyde; Andrea Tonello, University of Udine
- 3 MMSE Precoding for Downlink Coordinated Base Station Transmission**  
Ana García-Armada, Universidad Carlos III de Madrid; Roberto Corvaja, University of Padova; Matilde Sanchez, Univ. Carlos 3, Spain; Ana Santos-Rodriguez, University Carlos III of Madrid
- 4 Multicellular Zero Forcing Precoding Performance in Rayleigh and Shadow Fading**  
Dorra Ben Cheikh, Jean-Marc Kelif, Orange Labs; Marceau Coupechoux, TELECOM Paris Tech; Philippe Godlewski, Ecole Telecom ParisTech
- 5 Transmitter Preprocessing Aided Spatial Modulation for Multiple-Input Multiple-Output Systems**  
Prof. Lie-Liang Yang, University of Southampton

*Monday, 16 May 13:30-15:00 Istvan*

**2G: Multi-antenna Signal Processing**

- 1 A Low Complexity MIMO detection based on Pair-wise Markov Random Fields**  
Seokhyun Yoon, Dankook University
- 2 Enhancing ZF-SIC by Selective Retransmissions: On Algorithms for Determining the Decoding Order**  
Marc Selig, Thomas Hunziker, Dirk Dahlhaus, University of Kassel
- 3 Experimental Evaluation for Multicell MIMO Systems with Downlink Interference Nulling**  
Harry Z.B. Chen, Alcatel-Lucent Shanghai Bell Co., Ltd.; Yong Liu, Alcatel-Lucent Shanghai Bell Co., Ltd
- 4 Multi-Feedback Successive Interference Cancellation with Multi-Branch Processing for MIMO Systems**  
Peng Li, Rodrigo de Lamare, University of York; Rui Fa, University of Liverpool
- 5 Tree Search Space Reduction for Soft-input Soft-output Sphere Decoding in MIMO Systems**  
Dan Zhang, RWTH Aachen University; I-Wei Lai, National Taiwan University; Gerd Ascheid, RWTH Aachen University

*Monday, 16 May 14:00-15:00 Buda*

**2H: Transportation**

*Chair: Bih-Yuan Ku, National Taipei University of Technology*

- 1 Electrical Impact and Power Capability of the Battery Pack Equipped in the PHEVs**  
Hua Bai, Kettering University; Chris Mi, University of Michigan-Dearborn (USA)
- 2 Outlier Detection of Handover Data for Inner-suburban Freeway Traffic Information Estimation Using Mobile Probes**  
Yueming Yuan, Wei Guan, Beijing Jiaotong University
- 3 Compact Vehicular Trajectory Encoding**  
Markus Koegel, Department of Computer Science, Heinrich Heine University Düsseldorf; Wolfgang Kiess, University of Düsseldorf; Markus Kerper, Volkswagen Group; Martin Mauve, Heinrich Heine University, Düsseldorf, Germany

*Monday, 16 May 14:00-15:00 Pest*

**2I: Multimedia**

- 1 An Effective Code Generator for Frequent Authentication of Multimedia Contents in Mobile Applications and Services**  
Francesco Benedetto, University of Roma Tre - Dept. of Applied Electronics; Gaetano Giunta, University of Roma Tre
- 2 Effects of Rain Attenuation on Satellite Video Transmission**  
Yee Hui Lee, Nanyang Technological University; Stefan WINKLER, Cheetah Technologies
- 3 Utilizing Locality of Demand for Lower Response Times in Underwater Data Broadcasting**  
Konstantinos Christidis, Nikopolitidis Petros, Department of Informatics, Aristotle University of Thessaloniki; G.I.Papadimitriou, Aristotle University; Panagiotis Sarigiannidis, Department of

Engineering Informatics, University of Western Macedonia; Andreas Pomportsis, Department of Informatics, Aristotle University of Thessaloniki

*Monday, 16 May 13:30-15:00 Erzsébet*

**2P: Poster 2**

- 1 A Hybrid Simulation Framework for Modeling and Analysis of Vehicular Ad Hoc Networks**  
Attila Török, Bay Zoltán Foundation for Applied Research; Dániel József, Balázs Sonkoly, Budapest University of Technology and Economics
- 2 Routing Mechanisms Analysis in Vehicular City Environment**  
Kahina Ait Ali, Université de technologie de Belfort-Montbéliard; Oumaya Baala, UTBM; Alexandre Caminada, Université de Technologie Belfort-Montbéliard
- 3 Experimental Evaluation of Rate Switch Control in Wireless Mesh Networks**  
Tomoya Togashi, Kenichi Mase, Niigata University; Hiraku Okada, Nagoya University
- 4 Simple and Accurate Approximations for the Two Dimensional Gaussian Q-function**  
Paschalis C. Sofotasios, Steven Freear, University of Leeds
- 5 On Partial Spectrum Sharing of Two Licensed Networks Using Cognitive Radios**  
Xueyuan Jiang, University of Oxford; Yangyang Zhang, Kuang-Chi Institute of Advanced Technology; Kit Wong, University College London; David J. Edwards, University of Oxford
- 6 Low-Complexity Strategies for Multiple Access Relaying**  
Pen-Shun Lu, Valtteri Tervo, University of Oulu; Tadashi Matsumoto, Japan advanced Institute of Science and Technology
- 7 Optimal Myopic Sensing and Dynamic Spectrum Access in Centralized Secondary Cognitive Radio Networks with low-complexity Implementations**  
Yang Li, Sudharman K. Jayaweera, Mario Bkassiny, University of New Mexico; Keith A. Avery, Air Force Research Laboratory
- 8 Performance acceleration in a push-based wireless network considering data item popularity**  
Nikopolitidis Petros, Department of Informatics, Aristotle University of Thessaloniki
- 9 Complexity Reduction in Iterative Soft-In Soft-Out Sphere Detection**  
Mohammad Ali Shah, Technical University Dresden; Björn Mennenga, Janis Werner, Gerhard Fettweis, Technische Universität Dresden
- 10 Most Dispersed and Greedy Tree Growing Algorithm for Designing LBG Initial Codebook**  
Jiawei Yang, Yanxia Liang, Ye LI, Wei Liu, Xidian University
- 11 Uniform Bit and Power Allocation with Subcarrier Selection for Coded OFDM Systems**  
Eddy Kwon, University of California, San Diego; Bhaskar D. Rao, University of California
- 12 Multicarrier interference evaluation with jointly non-linear amplification and timing errors**  
Daniel Roviras, CNAM; Khodjet-Kesba, CNAM, Paris; Yahia Medjahdi, Charbel Saber, CNAM
- 13 Analytical Approximations of EESM Effective SNR Distribution using Pearson System**  
Hui Song, University of Bedfordshire; Raymond Kwan, NEC Telecom Modus / University of Bedfordshire; Jie Zhang, University of Bedfordshire
- 14 Frequency Band Allocation in MIMO System Based on Received Power Difference among Users**  
Hironori Kizuka, Koichi Adachi, Tomoaki Ohtsuki, Keio University
- 15 A QoS Supported Multi-channel MAC for Vehicular Ad Hoc Networks**  
Qing Wang, Supeng Leng, University of Electronic Science and Technology of China; Yan Zhang, Simula Research Laboratory and University of Oslo, Norway; Huirong Fu, Oakland University, USA

## 16 Power Loading and Resource Allocation for Femtocells

Fengming Cao, Toshiba Research Europe; Zhong Fan, Toshiba Research Laboratory

## 17 A Novel TCP-oriented Multi-layer Packet Scheduling Algorithm

Xiaoqiu Wang, Satoshi KONISHI, KDDI R&D Laboratories Inc.

## 18 SFBC MIMO Energy Efficiency Improvements of Common Packet Schedulers for the Long Term Evolution Downlink

Charles Turyagyenda, Timothy O'Farrell, Jianhua He, Pavel Loskot, Swansea University

## 19 Downlink Link Aggregation Performance with Delay Adjustment Capability in Multi-Radio Access System

Akira Yamaguchi, Takashi Fujimoto, Yuichi Imagaki, Tadayuki Fukuhara, KDDI R&D Laboratories; Kanshiro Kashiki, KDDI R & D Laboratories; Toshinori Suzuki, KDDI R&D Laboratories

## 20 Dynamic Neighbor Cell List Management for Handover Optimization in LTE

Yoshinori Watanabe, Yasuhiko Matsunaga, Kosei Kobayashi, Hiroto Sugahara, Kojiro Hamabe, NEC Corporation

Monday, 16 May 15:30-17:00 Margit A

### 3A: Wireless Sensor Networks 1

#### 1 A Wireless Sensor Network Approach to Signalized Left Turn Assist at Intersections

Fabien Chraim, Thomas Watteyne, Ali Ganji, Kris Pister, University of California, Berkeley

#### 2 Adaptive Event Forecasting in Wireless Sensor Networks

Gergely Öllös, Rolland Vida, Budapest University of Technology and Economics

#### 3 An Interference Avoidance Routing Protocol for Wireless Networks

Bai Du, Hongyan Li, Xidian University; Michael Fang, University of Florida

#### 4 Analytical Study of Wireless Sensor Sleep Mechanism Based on Group Arrival Modeling

Zheng Liang, Qingshan Zhang, Jun Zheng, Jiayuan Chen, Wei Fang, R&I, Alcatel-Lucent Shanghai Bell

#### 5 Distributed Beamforming with Sidelobe Control using One Bit of Feedback

Lazar Berbakov, Carles Anton, Javier Matamoros, CTTC

Monday, 16 May 15:30-17:00 Margit B

### 3B: Performance Analysis

Chair: Nan Yang

#### 1 An Exact Closed-Form Expression for the BER of Binary Modulations with Dual-Branch Selection over Generalized-K Fading

Imran Shafique Ansari, King Abdullah University of Science and Technology; Saad Al-Ahmadi, King Fahd University of Petroleum & Minerals; Ferkan YILMAZ, Mohamed-Slim Alouini, KAUST; Halim Yanikomeroglu, Carleton University

#### 2 Exact BER Analysis of Physical Layer Network Coding for Two-Way Relay Channels

Moonseo Park, Ilhwan Choi, Inkyu Lee, Korea University

#### 3 Outage Probability of Amplify-and-Forward Opportunistic Relaying with Multiple Interferers over Rayleigh Fading Channels

Dongwoo Lee, Jae Hong Lee, Seoul National University

#### 4 Performance analysis of cooperative communication in the UWB differential transmitted reference system

Tsan-Ming Wu, Yi-Fang Hou, Chung Yuan Christian University

#### 5 Performance of Hybrid-ARQ with Incremental Redundancy over Double Rayleigh Fading Channels

Ali Chelli, University of Agder; John Barry, Georgia Institute of Technology; Matthias Pätzold, University of Agder

Monday, 16 May 15:30-17:00 Lanchid A

### 3C: Green Communications

Chair: Tirkkonen Olav

#### 1 A Counter-Driven Adaptive Sleep Mode Scheme for 802.16e networks

Enjie Liu, University of Bedfordshire

#### 2 A Universal Power Saving Mechanism for Random Traffic Intensity in IEEE 802.16e Wireless Metropolitan Area Networks

Shiann-Tsong Sheu, Luwei Chen, National Central University

### 3 Investigation on System Performance of L1/L3 Relays in LTE-Advanced Downlink

Satoshi Nagata, Yan Yuan, NTT DoCoMo; Xinying Gao, Anxin Li, DoCoMo Beijing Communications Laboratories Co., Ltd; Hidetoshi Kayama, Tetsushi Abe, Takehiro Nakamura, NTT DoCoMo, INC.

### 4 On the Capacity and Energy Trade-off in LTE-like Network

Anis OUNI, INSA Lyon; Hervé Rivano, INSA Lyon, INRIA; Fabrice Valois, INSA Lyon - INRIA Rhone Alpes

### 5 Power Savings and QoS Impact for VoIP Application with DRX / DTX Feature in LTE

Michele Polignano, Dario Vinella, Aalborg University; Jeroen Wigard, Daniela Laselva, Nokia Siemens Networks; Troels B. Sørensen, Aalborg University

### 6 Reducing Energy Consumption in LTE with Cell DTX

Pål Frenger, Ericsson Research, Linköping, Sweden; Peter Moberg, Jens Malmodin, Ylva Jading, Ericsson Research; Istvan Godor, Ericsson Research, Budapest, H-1117, Hungary

Monday, 16 May 15:30-17:00 Lanchid B

### 3D: Interference Management

Chair: Loutfi Nuaymi

#### 1 A Distributed Inter-Cell Interference Coordination Scheme between Femtocells in LTE-Advanced networks

Fanglong Hu, Kan Zheng, Beijing University of Posts & Telecommunications, Beijing, China; Lei Lei, China Mobile Research Institute, Beijing, China; Wenbo Wang, Beijing Univer. of Posts & Telecommunications

#### 2 An Inter-Cell Interference Cancellation Scheme with Multi-Cell Coordinated Scheduling for Downlink of MIMO/OFDM Cellular Systems

Manabu Mikami, Teruya Fujii, Softbank Mobile Corp.

#### 3 Inter-cell Interference Management in SC-FDMA Cellular Systems

Javier Lafuente, Ángela Hernández-Solana, Israel Guio, Antonio Valdivinos, University of Zaragoza

#### 4 Inter-Code Interference Canceller for Control Signals Using Cyclic Shift CDMA in LTE Uplink

Mamoru Sawahashi, Tokyo City University; Teruo Kawamura, Nobuhiko Miki, NTT DoCoMo; Yuichiro Hikosaka, Tokyo City University

#### 5 InterCell Interference Coordination Algorithms in OFDMA wireless systems

Loutfi Nuaymi, Ahmed Triki, Telecom Bretagne

#### 6 Intrasite Scheduling for Interference Avoidance in LTE

Ashley Mills, Vodafone Group R&D; David Lister, Vodafone

Monday, 16 May 15:30-17:00 Corso A

### 3E: Resource Allocation 1

Chair: H.S. Al Raweshidy

#### 1 Handling of Uplink Transmitted Carrier Power Difference in DC-HSUPA

Muhammad Kazmi, Henrik Nyberg, Ericsson; Oskar Drugge, ST-Ericsson; Farshid Ghasemzadeh, Ericsson

#### 2 Multi-cell Coordinated Power Control with Adjacent Cell Cooperative Transmission Considering Actual Environment

Kenji Hoshino, Teruya Fujii, Softbank Mobile

### 3 Per Cluster Based Opportunistic Power Control for Heterogeneous Networks

Mi-seong Jin, Seung Ah Chae, Dong In Kim, Sungkyunkwan University

### 4 Power Control in Two-tier OFDMA Femtocell Networks with Particle Swarm Optimization

Zhenglei Huang, Zhimin Zeng, Hailun Xia, Junfeng Shi, Beijing University of Posts and Telecommunications

### 5 Redundant Residue Number System Based Multicarrier DS-CDMA for Dynamic Multiple-Access in Cognitive Radios

Shuo Zhang, Beihang University; Prof. Lie-Liang Yang, University of Southampton; Youguang Zhang, Beihang University

### 6 Throughput Enhancement of IEEE 802.11e WLAN by Transmission Power Randomization

Amir Kenarsari-Anhari, Farid Ashtiani, Sharif University of Technology

Monday, 16 May 15:30-17:00 Corso B

## 3F: Signal Processing

### 1 A Suboptimal User Maximization Algorithm for an OFDMA Based Cognitive Radio Network

Jie Tang, Sangarapillai Lambotharan, Loughborough University

### 2 Analytical Performance Evaluation of SC-FDE Modulations with Packet Combining and Multipacket Detection Schemes

Francisco Ganhão, Rui Dinis, Luis Bernardo, Paulo Carvalho, Rodolfo Oliveira, Paulo Pinto, Universidade Nova de Lisboa

### 3 OFDM Receiver Performance Using Rotating Circular Array Antenna for Vehicle Communications

Hiroshi Yasukawa, Hironori Ogihara, Aichi Prefectural University

### 4 Phase Allocation Aspects of Interleave-Division Multiplexing from PAPR Prospective

Meelis Noemm, Peter Adam Hoehner, University of Kiel; Yi Wang, Huawei Technologies, CO.,LTD

### 5 Tomlinson Harashima Precoding Design for Non-regenerative MIMO Relay Networks

Andrew P. Millar, Stephan Weiss, University of Strathclyde

Monday, 16 May 15:30-17:00 Istvan

## 3G: Transmission over MIMO Channels 1

### 1 A chaos MIMO transmission scheme for secure communications on physical layer

Eiji Okamoto, Nagoya Institute of Technology

### 2 A New and Improved Perfect Space-Time Code for $5 \times 5$ MIMO Channels

Ming-Yang Chen, John M. Cioffi, Stanford University

### 3 A Novel Approach for Capacity Improvement of 2x2 MIMO in LOS Channel Using Reflectarray

Jiyun Shen, Yasuhiro Oda, Tatsuo Furuno, Tamami Maruyama, Tomoyuki Ohya, NTT DoCoMo, Inc.

### 4 Beamforming Matrix Transformation for Random Beamforming

Jongrok Park, Hojae Lee, Sanghoon Lee, Yonsei University; Sanghoon Lee, Wireless Network Lab. in Yonsei University

### 5 Constrained Optimization of Universal Codebook for MIMO Precoding

Katsutoshi Kusume, DOCOMO Euro-Labs; Karim Khashaba, Technische Universität München; Tetsushi Abe, NTT DOCOMO; Dr Wolfgang Utschick, Technische Univesitat Munchen

Monday, 16 May 15:30-17:00 Buda

## 3H: Interference Management

Chair: Loutfi Nuaymi

### 1 An Effective Inter-Cell Interference Coordination Scheme for Heterogeneous Network

li Bo, Dacheng Yang, Yafeng Wang, Dun Luo, Bowei Li, Beijing University of Posts and Telecommunications

### 2 Coexistence and mutual interference between mobile and broadcasting systems

Alessandro Guidotti, University of Bologna; Doriana Guiducci, Fondazione Ugo Bordoni; Marina Barbiroli, University of Bologna; Claudia Carciofi, Paolo Grazioso, Guido Riva, Fondazione Ugo Bordoni

### 3 Coordination of Clusters for Inter-cell Scheduling

Ki Won Sung, Jens Zander, Royal Institute of Technology (KTH)

### 4 Improving the Spatial Consistency of the Assignment of Base Stations to Controllers in Cellular Networks

Matías Toril, University of Málaga; Volker Wille, Nokia Siemens Networks, Performance Services, UK; Pablo Guerrero-García, University of Málaga

### 5 Inter-cluster Interference Management based on Cell-clustering in Network MIMO Systems

Jung-Min Moon, Korea Advanced Institute of Science and Technology; Dong-Ho Cho, KAIST

### 6 Potential Game Approach for Self-Organized Interference Management in Closed Access Femtocell Networks

I Wayan Mustika, Koji Yamamoto, Hidekazu Murata, Susumu Yoshida, Kyoto University

Monday, 16 May 15:30-17:00 Pest

## 3I: Propagation Modeling

### 1 A Scattering Model to Improve the Accuracy of 3D Ray Tracing for UWB Indoor Channel

Edgar Haddad, Nadine Malhouroux, Orange Labs; Patrice Pajusco, Michel Ney, Telecom Bretagne Lab STICC

### 2 Correlation Properties of Large Scale Parameters from 2.66 GHz Multi-site Macro Cell Measurements

Meifang Zhu, Fredrik Tufvesson, Lund University; Jonas Medbo, Ericsson Research

### 3 Empirical Modeling of Nomadic Peer-to-Peer Networks in Office Environment

Claude Oestges, Université catholique de Louvain (UCL); Paolo Castiglione, Nicolai Czink, FTW

### 4 Fading Characteristics in the Railway Terrain Cuttings

Jinghui Lu, Gang Zhu, Beijing Jiaotong University; C. Briso-Rodríguez, Universidad Politécnica de Madrid

### 5 Hybrid Model for Indoor-to-Outdoor Femtocell Radio Coverage Prediction

Guillaume de la Roche, Centre for Wireless Network Design; Alvaro Valcarce Rial, Triagnosys GmbH; Jie Zhang, University of Bedfordshire

### 6 Model for the Path Loss of In-room Reverberant Channels

Gerhard Steinboeck, Troels Pedersen, Bernard H. Fleury, Aalborg University; Wei Wang, German Aerospace Center (DLR); Thoma Jost, German Aerospace Center; Ronald Raulefs, DLR

Monday, 16 May 15:30-17:00 Erzsébet

## 3P: Poster 3

### 1 VANET based Adaptive Traffic Signal Control

Nitin Maslekar, Mounir Boussedjra, Irseem-Esigelec; Houada Labiod, Telecom ParisTech; Joseph Mouzna, Irseem-Esigelec

### 2 A Mean Field Based Methodology for Modeling Mobility in Ad Hoc Networks

Marco Beccuti, Massimiliano De Pierro, András Horváth, Università di Torino; Ádám Horváth, Károly Farkas, University of West Hungary

### 3 Broadband Channel Long Delay Cluster Measurements and Analysis at 2.4GHz in Subway Tunnels

Ruisi He, Zhangdui Zhong, Beijing Jiaotong University; C. Briso-Rodríguez, Universidad Politécnica de Madrid

### 4 Network Coding-based Block ACK for Wireless Relay Networks

Quoc-Tuan Vien, Glasgow Caledonian University; Huan X. Nguyen, Middlesex University; Jinho Choi, University of Wales Swansea; Brian G Stewart, Huaglory Tianfield, Glasgow Caledonian University

- 5 Performance of Multiway Relay DS-CDMA Systems over Nakagami-m Fading Channels**  
Jia Shi, University of Southampton; Prof. Lie-Liang Yang, University of Southampton
- 6 Performance Analysis of Primary User Energy Detection in a Cognitive Relay System with Diversity**  
Tachporn Sanguanpuak, Asian Institute of Technology; Nandana Rajatheva, Telecommunication Field of Study, Asian Institute of Technology
- 7 A Cooperative Incumbent User Detection for Cognitive MAC Protocol**  
Sonia Fourati, Soumaya Hamouda, Sup'Com; Sami Tabbane, Sup'Com Tunis
- 8 Cooperative Localization in a Distributed Base Station Scenario**  
Ziming He, Yi Ma, Rahim Tafazolli, University of Surrey
- 9 Joint data detection and channel sounding for TDD systems with antenna selection**  
Magnus Sandell, Toshiba Research Europe Ltd; Justin Coon, Toshiba Research Europe Ltd.
- 10 Full non-Orthogonal Integration of Unicast and Single Cell Broadcast in LTE-Advanced**  
Hua CHAO, Alcatel-Lucent Shanghai Bell Co. Ltd
- 11 Analytical Correlation of Spreading Sequences for Nonlinear OQPSK-Type Modulations**  
Daniel Afonso, ISCTE; Francisco Cercas, Instituto de Telecomunicações; Rui Dinis, IST, Tech. Univ. of Lisbon; Rui Rodrigues, Instituto de Telecomunicações
- 12A correlating receiver for OFDM at low SNR**  
André Kokkeler, G.J.M. Smit, University of Twente
- 13 Mutual Information Evolution Based Performance Analysis in IDMA System**  
Shuang Wu, Xiang Chen, Tsinghua University; Zhong Xiaofeng, University of Tsinghua; Shidong Zhou, Jing Wang, Tsinghua University
- 14 Adaptive Rate Control of Dedicated Short Range Communications for Road Safety Applications**  
Wenyang Guan, Swansea University; Jianhua He, University of Wales Swansea; Lin Bai, Swansea University; Zuoyin Tang, Aston University
- 15 Throughput and Coverage Performance for IEEE 802.11ad Millimeter-Wave WPANs**  
Xiaoyi Zhu, Angela Doufexi, Taskin Kocak, University of Bristol
- 16 Resource Allocation with Subcarrier Cooperation in OFDM-based Wireless Multicast System**  
Mmliboy, Wang Xiaoxiang, Hongtao Zhang, Beijing University of Posts and Telecommunications
- 17 Architecture and Approach for Obtaining Spectrum Availability Information**  
Marja Matinmikko, VTT - Technical Research Centre of Finland; Tapio Rauma, Miia Mustonen, VTT Technical Research Centre of Finland; Javier Del Ser, TECNALIA-TELECOM
- 18 Dynamic Resource Allocation with Precoding for OFDMA-based Wireless Multicast Systems**  
Song Li, Wang Xiaoxiang, Hongtao Zhang, Yuan Zhao, Beijing University of Posts and Telecommunications
- 19 Enhanced Resource Sharing Strategies for LTE Pico Cells with Heterogeneous Traffic Loads**  
Afef Feki, Veronique Capdevielle, Elias Temer, Alcatel Lucent Bell Labs France

## Tuesday 17 May 2011

Tuesday, 17 May 10:30-12:00 Margit A

### 4A: Wireless Sensor Networks 2

- 1 Energy Efficient Low-Complexity Symbol-by-Symbol GMSK Demodulator for BAN**  
Yan Li, Sumei Sun, Y.S. Kwok, Institute for Infocomm Research
- 2 Enhanced Slotted Aloha Protocols for Underwater Sensor Networks with Large Propagation Delay**  
Yi Zhou, Kai Chen, Shanghai Jiaotong University; Jianhua He, University of Wales Swansea; Haibing Guan, Shanghai Jiaotong University
- 3 Improving QoS in Wireless Sensor Networks using a Multi-Stack Architecture**  
Nancy EL RACHKIDY, Alexandre Guitton, Clermont University; Michel MISSON, Université Blaise PASCAL
- 4 Novel load balancing algorithms ensuring uniform packet loss probabilities for WSN**  
Kalman Tornai, Gergely Treplan, Peter Pazmany Catholic University; Janos Levendovszky, Budapest University of Technology and Economics; Andras Olah, Pazmany Peter Catholic University
- 5 Feasibility of Rainbow Signature for Broadcast Authentication in Sensor Networks**  
Pradheepkumar singaravelu, India Institute of Information Technology - Allahabad; Shekhar Verma, Indian Institute of Information Technology

Tuesday, 17 May 10:30-12:00 Margit B

### 4B: Channel Estimation 1

Chair: Debarati Sen

- 1 Channel Estimation with Dedicated Pilot Signal in MIMO-OFDM Systems**  
Han-Jun Park, Keon-Wook Lee, Yong-Hwan Lee, Seoul National University

- 2 Dynamic pilot allocation channel estimation with spatial multiplexing for MIMO-OFDM systems**  
Li Li, Rodrigo de Lamare, Alister Burr, University of York
- 3 Low-Complexity Joint Timing Synchronization and Channel Estimation for MIMO OFDM Systems**  
Chin-Liang Wang, Hung-Chin Wang, National Tsing Hua University
- 4 Particle Filtering based Automatic Gain Control for ADC-limited Communication**  
Feifei Sun, Beijing University of Posts and Telecommunications; Danpu Liu, Beijing Univ. Posts and Telecommunications; Guangxin Yue, Beijing University of Posts and Telecommunications
- 5 Particle Swarm Enhanced Graph-Based Channel Estimation for MIMO-OFDM**  
Christopher Knievel, Peter Adam Hoehner, University of Kiel; Alexander Tyrrell, DoCoMo Euro-Labs; Gunther Auer, DOCOMO Euro-Labs

Tuesday, 17 May 10:30-12:00 Lanchid A

### 4C: Spectrum Sensing

Chair: Tapio Rauma, VTT Technical Research Center, Finland

- 1 Bayesian Spectrum Sensing for Digitally Modulated Primary Signals in Cognitive Radio**  
Shoukang Zheng, Institute for Infocomm Research; Pooi Yuen Kam, National University of Singapore; Ying-Chang Liang, Yonghong Zeng, Institute for Infocomm Research
- 2 Cooperative Spectrum Sensing over Non-Identical Fading Channels**  
Anlei Rao, King Abdullah University of Science and Technology; Mohamed-Slim Alouini, KAUST
- 3 Cooperative Spectrum Sharing for a Primary Network with Capacity Constraint**  
Alireza Babaei, Prathima Agrawal, Auburn University; Bijan Jabbari, George Mason University

- 4 Cooperative Wavelet Communication over Multi-relay, Multi-scale and Multi-lag Wireless Channels**  
Hao Lu, T. Xu, M.K.Lakshmanan, Homayoun Nikookar, Delft University of Technology
- 5 Distributed Streaming Compressive Spectrum Sensing for Wide-Band Cognitive Radio Networks**  
Yang Lu, Wenbin Guo, Xing Wang, Wenbo Wang, Beijing Univer. of Posts & Telecommunications

*Tuesday, 17 May 10:30-12:00 Lanchid B*

#### **4D: Transmission Techniques**

*Chair: Rui Dinis, Universidade Nova de Lisboa, Portugal*

- 1 Delay Analysis of Cooperative Communication with Opportunistic Relay Access**  
Sithamparanathan Kandeepan, Create-Net International Research Centre; Chava Vijaya Saradhi, CREATE-NET; Marcin Filo, Radoslaw Piesiewicz, WCB - EIT+
- 2 Distributed Linear Precoding for Coordinated Multiple-Point Downlink Transmission**  
Dennis Hui, Ericsson Research
- 3 Dynamic Carrier Allocation for Cognitive Radio Networks**  
Mathieu Lessinnes, Jean-Michel Dricot, Philippe De Doncker, Université Libre de Bruxelles; Luc Vandendorpe, Université catholique de Louvain; Francois Horlin, ULB
- 4 Heuristic Thresholds for Busy Burst Signalling in a Decentralised Coordinated Multipoint Network**  
Birendra Ghimire, Jacobs University Bremen; Gunther Auer, DOCOMO Euro-Labs; Harald Haas, University of Edinburgh
- 5 Impact of the Channel Time-selectivity on BER Performance of Broadband Analog Network Coding with Two-slot Channel Estimation**  
Haris Gacanin, Alcatel-Lucent Bell N.V.; Mika Salmela, Aalto University; Fumiyuki Adachi, Tohoku University

*Tuesday, 17 May 10:30-12:00 Corso A*

#### **4E: Interference Mitigation**

*Chair: André Kokkeler*

- 1 Achievable Degrees of Freedom for Interference Broadcast Channels with Asymmetric Complex Signaling**  
Hun-Young Shin, Seok-Hwan Park, Haewook Park, Inkyu Lee, Korea University
- 2 Efficient Inter-carrier Interference Mitigation for Pilot-Aided Channel Estimation in OFDM Mobile Systems**  
Ingmar Groh, Armin Dammann, Christian Gentner, German Aerospace Center (DLR)
- 3 Group-Wise Joint Detection for Dual Rate TD-SCDMA Systems**  
Zan Yang, Xiang Cheng, Yuping Zhao, Peking University
- 4 Inter-Carrier Interference Estimation in MIMO OFDM Systems with Arbitrary Pilot Structure**  
Michal Simko, Christian Mehlführer, Vienna University of Technology; Thomas Zemen, Forschungszentrum Telekommunikation Wien ftw.; Markus Rupp, Vienna University of Technology
- 5 Other-Cell Interference Aware Precoding for the Downlink of Multi-User MIMO AF Communication**  
Fabien Heliot, Usama Asif, University of Surrey; Reza Hoshyar, National Semiconductor; Rahim Tafazolli, University of Surrey

*Tuesday, 17 May 10:30-12:00 Corso B*

#### **4F: Power Control and Energy Awareness**

*Chair: Oliver Holland, Kings College London*

- 1 An energy efficient cellular mobile network planning algorithm**  
Istvan Toros, Peter Fazekas, Budapest University of Technology & Economics
- 2 Energy Aware Transmission in Cellular Uplink with Clustered Base Station Cooperation**  
Efsthios Katranaras, Muhammad Ali Imran, University of Surrey; Dr Reza Hoshyar, National Semiconductor

- 3 Energy efficiency in LTE-Advanced networks with Relay Nodes**  
Roberto Fantini, Dario Sabella, Marco Caretti, Telecom Italia
- 4 Energy Efficient Evolution of Mobile Networks - Macro-Only Upgrades vs. a Joint-Pico Deployment Strategy**  
Gilbert Micallef, Aalborg University; P. E. Mogensen, Nokia Siemens Networks, Aalborg; Hans-Otto Scheck, Ekkehard Lang, Nokia Siemens Networks
- 5 Negotiation-Based Distributed Power Control in Wireless Networks with Autonomous Nodes**  
Vaggelis Douros, George C. Polyzos, Stavros Toumpis, Athens University of Economics and Business

*Tuesday, 17 May 10:30-12:00 Istvan*

#### **4G: Transmission over MIMO Channels 2**

- 1 Experimental Evaluation on SU-MIMO Transmission with Closed-loop Precoding in LTE-Advanced Uplink**  
Shinpei Yasukawa, NTT DOCOMO, Inc.; Teruo Kawamura, NTT DOCOMO, INC.; Yoshihisa Kishiyama, NTT DoCoMo, Inc.; Hidekazu Taoka, DOCOMO Communications Labs Europe GmbH, Munich, Germany; Takehiro Nakamura, NTT DoCoMo, Inc.
- 2 Filter Design with Secrecy Constraints: The Degraded Multiple-Input Multiple-Output Gaussian Wiretap Channel**  
Hugo Reboredo, Munnujahan Ara, Instituto de Telecomunicações, University of Porto; Miguel R. D. Rodrigues, Faculdade de Ciências da Universidade do Porto / IT Porto; João Xavier, TU Lisbon
- 3 On the Capacity of ASTC-MIMO-OFDM System in a Correlated Rayleigh Frequency-Selective Channel**  
Bannour Ahmed, 6<sup>th</sup> TEL unit ,SUP<sup>COM</sup>; Mohamed Laasad Ammari, Ecole de Technologie Supérieure; Yichuang Sun, University of Hertfordshire
- 4 Random Coding Error Exponent for OSTBC Nakagami-m Fading MIMO Channel**  
Jiang Xue, Md. Zahurul I. Sarkar, Queen's University, Belfast; T. Ratnarajah, Queen's University Belfast
- 5 Weighted DFT Codebook for Multiuser MIMO in Spatially Correlated Channels**  
Fang Yuan, Mr. Sheng Qian Han, Beihang University; Prof. Chenyang Yang, Beihang University, Beijing; Yu Zhang, NEC Laboratories China; Gang Wang, Ming Lei, NEC Laboratories, China

*Tuesday, 17 May 10:30-11:30 Buda*

#### **4H: PHY Techniques**

- 1 A Multi Channel Synchronization Approach in Dual Radio Vehicular Ad-Hoc Networks**  
Rober Lasowski, Cirquent; Florian Gschwandtner, Constantin Scheuermann, University of Munich; Markus Duchon, Ludwig Maximilian University of Munich
- 2 Influence of Image/Video Compression on Night Vision based Pedestrian Detection in an Automotive Application**  
Tankred Hase, Technische Universität München; Wolfgang Hintermaier, BMW Research and Technology; Andreas Frey, Tobias Strobel, BMW AG; Uwe Baumgarten, Technische Universität München; Eckehard Steinbach, Munich University of Technology
- 3 Linear Diversity Combining Techniques Employed in Car-to-X Communication Systems**  
Jörg Nuckelt, Hendrik Hoffmann, Moritz Schack, Thomas Kürner, Technische Universität Braunschweig

*Tuesday, 17 May 10:30-12:00 Erzsébet*

#### **4P: Poster 4**

- 1 A Novel Genetic-Fuzzy Power Controller with Feedback for Interference Mitigation in Wireless Body Area Networks**  
Ramtin Kazemi Beidokhti, Rein Vesilo, Eryk Dutkiewicz, Macquarie University
- 2 Visual Capacity Analysis of Wireless Networks**  
Sanghoon Lee, Hyukmin Son, Jongrok Park, Sanghoon Lee, Yonsei University

- 3 On the Delay to Reliably Detect Channel Availability in Cooperative Vehicular Environments**  
Dusan Borota, WINLAB Rutgers University; Goran Ivkovic, WINLAB, Rutgers University; Rama Vuyyuru, Toyota InfoTechnology Center USA; Onur Altintas, Toyota InfoTechnology Center; Ivan Seskar, WINLAB, Rutgers University; Predrag Spasojevic, Rutgers University
- 4 A Distributed Algorithm for Wireless Resource Allocation Using Coalitions and the Nash Bargaining Solution**  
Stefanos Vatsikas, University of Bristol; Simon Armour, Electrical and Electronic Department, University of Bristol; Marina De Vos, Department of Computer Science, University of Bath; Tim Lewis, Toshiba Research Europe Ltd.
- 5 A Cooperative Scheme for ZP-OFDM with Multiple Carrier Frequency Offsets over Multipath Channel**  
Hao Lu, T. Xu, Homayoun Nikookar, Delft University of Technology
- 6 Physical Layer Considerations For Cognitive Radio: Modulation Techniques**  
Zsolt Kollár, Peter Horvath, Budapest University of Technology and Economics
- 7 Physical Layer Considerations for Cognitive Radio: Synchronization Point of View**  
Zsolt Kollár, Peter Horvath, Budapest University of Technology and Economics
- 8 Multi-user Multi-stream Generalized Channel Inversion Vector Perturbation**  
Rui Chen, University of Xidian; Jiandong Li, Xidian University; Wei Liu, Xidian University; Li Changle, National Institute of Information and Communications Technology, Japan; Min Sheng, Xidian University
- 9 On the feedback enhancement and system performance evaluation of downlink MU-MIMO for 3GPP LTE-Advanced**  
Di Lu, Alcatel-Lucent Shanghai Bell; Hongwei Yang, Alcatel Shanghai Bell; Keying Wu, Alcatel Shanghai Bell Co., Ltd
- 10A Multiuser, Multicarrier Link Adaptation Strategy for Fading Channels with PER Constraints**  
Marios Nicolaou, Angela Doufexi, University of Bristol; Simon Armour, Electrical and Electronic Department, University of Bristol; Yong Sun, Toshiba Research Europe Limited
- 11 Combined Effect of Transmit Diversity and Frequency Hopping for DFT-Precoded OFDMA in Uplink Frequency-Selective Fading Channels**  
Mamoru Sawahashi, Lianjun Deng, Tokyo City University; Teruo Kawamura, NTT DOCOMO, INC.; Hidekazu Taoka, DOCOMO Communications Labs Europe GmbH, Munich, Germany
- 12 Iterative Inter-cell Interference Coordination in MU-MIMO Systems**  
Yan Zhou, Ying Wang, Tan Wang, Ke Zhang, Beijing University of Posts and Telecommunications
- 13 Adaptive Traffic Light Control of Multiple Intersections in WSN-based ITS**  
Zhou Binbin, Jiannong Cao, Hejun Wu, The Hongkong Polytechnic University
- 14 Car-to-Car Safety Broadcast with Interference using Raptor Codes**  
Nor Fadzilah Abdullah, Angela Doufexi, Robert J. Piechocki, University of Bristol
- 15 Subcarrier and Power Allocation for LDS-OFDM System**  
Mohammed AL-Imari, Muhammad Ali Imran, Rahim Tafazolli, University of Surrey; Dageng Chen, Huawei Technologies.co.,ltd
- 16 Cooperative Cognitive Radio Beamforming in the Presence of Location Errors**  
Auon Muhammad Akhtar, Oliver Holland, King's College London; Mohammad Reza Nakhai, Kings College London; Hamid Aghvami, King's College London
- 17 Uplink Performance of Type-1 Relay Enhanced FDD LTE-Advanced Networks with Unaligned Backhaul Subframes**  
Wei Hong, Jing Han, Renesas Telecommunication Technology (Beijing) Co.,Ltd.; Haiming Wang, Nokia Devices R&D/Wireless System Research
- 18 Energy Efficient Application Controlled Multi Radio PAN over Optical Network**  
Saqib Chaudhry, H S Al Raweshidy, Brunel University; Imran Raza, COMSATS Institute of Information Technology
- 19 Location-Based Hybrid Spectrum Allocation and Reuse For Tiered LTE-A Networks**  
Lin Yang, University of Manchester; Tao Yang, Bell Labs; Lu zhang, Bell labs; Wei Fang, R&I, Alcatel-Lucent Shanghai Bell

*Tuesday, 17 May 13:30-15:00 Corso B*

**5A: Beamforming**

- 1 A 2-Dimensional Transmit Beamforming Method: Performance Results for Slow Fading Channels**  
Seyed Morteza Razavi, Ferdowsi University of Mashhad
- 2 An Adaptive Transmission Scheme Robust to Variant Moving Speeds**  
Chunlin Yan, DOCOMO Beijing Communication Labs; Hidetoshi Kayama, Research strategy and coordination group, NTT DOCOMO, Inc.; Atsushi Harada, DOCOMO Beijing Communications Laboratories Co., Ltd
- 3 Optimal Uplink Pilot Time Interval Design for TDD MISO Beamforming Systems with Channel Estimation Error and Delay**  
ZhouBaolong, Shanghai Jiaotong University, Alcatel-Lucent Shanghai Sbell; Zhang Lei, Shengjie Zhao, Zhao Kun, Alcatel-Lucent Shanghai Sbell
- 4 Sum Rates of Random Beamforming MISO Downlink Systems with Other Cell Interference**  
Sung-Hyun Moon, Sang-Rim Lee, Inkyu Lee, Korea University
- 5 Symbol-Wise Beamforming with Limited Feedback for MIMO-OFDM Systems**  
Hyun-Ho Lee, Young-Chai Ko, Korea University

*Tuesday, 17 May 13:30-15:00 Margit B*

**5B: Channel Estimation 2**

*Chair: Hao Wu*

- 1 A Vector Quantization Approach to LMMSE Channel Estimation for OFDM systems**  
Hao Wu, Hongwei Luo, Yunxia Yang, ZTE Corporation
- 2 Channel Gain Estimation from Sounding Reference Signal in LTE**  
Pierre Bertrand, Texas Instruments Inc
- 3 Semi-Analytical Performance Prediction Method for Iterative MMSE-IC Detection and Semi-blind Channel Estimation**  
Baozhu Ning, Orange Labs- Supelec; Raphaël Visoz, Orange Labs; Antoine O. Berthet, Supelec
- 4 Sparse channels structured estimation in OFDM systems**  
Leila Najjar, Supcom school
- 5 Suppression of Quantization Noise for EPWM Transmitter with 2nd-order  $\Delta$ - $\Sigma$  Modulator**  
Shinsuke Yokozawa, Yasushi Yamao, University of Electro-Communications Tokyo

*Tuesday, 17 May 13:30-15:00 Lanchid A*

**5C: Adaptive Relay Communications**

*Chair: Tadashi Matsumoto, University of Oulu, Finland*

- 1 Adaptive Compressive Sampling for Wideband Signals**  
Xing Wang, Wenbin Guo, Yang Lu, Wenbo Wang, Beijing University of Posts & Telecommunications

## 2 Adaptive Joint Power and Bandwidth Control for Spectrum Sharing Systems

Chin Choy Chai, Yong Huat Chew, Institute for Infocomm Research

## 3 Adaptive Partial Decode-and-Forward Relaying with Quantized Feedback

Luo Chen, Beijing Institute of Technology; Yi Wu, Linköping University; Zesong Fei, Beijing Institute of Technology; Erik G. Larsson, Linköping University, Sweden; Jingming Kuang, Beijing Institute of Technology

## 4 Adaptive Resource Allocation and Scheduling for Cognitive Radio MIMO-OFDMA Systems

Wei Liu, Chinese Academy of Sciences; Song Ci, University of Nebraska-Lincoln; Yahui Hu, Hui Tang, Chinese Academy of Sciences

## 5 Uplink CoMP for HSPA

Stephen Grant, Claes Tiestav, Ericsson Research; Gu Xinyu, Ericsson China; Niklas Johansson, Ericsson Research

*Tuesday, 17 May 13:30-15:00 Lanchid B*

## 5D: Cognitive Radio

*Chair: Wei Liu, Xidian University, China*

### 1 Cognitive Time Variant Power Control in Slow Fading Mobile Channels

Olasunkanmi Durowoju, Kamran Ashrad, Klaus Moessner, University of Surrey

### 2 Context Discovery Mechanisms for Cognitive Radio

Liliana Bolea, Universitat Politècnica de Catalunya; Jordi Perez-Romero, Ramon Agusti, Universitat Politècnica de Catalunya (UPC); Oriol Sallent, Universitat Politècnica de Catalunya

### 3 Detection of Pulsed Radar in a Time Division Duplexed System

Brad W Zarikoff, Hamilton Institute; David Weldon, Vecima Networks

### 4 Efficient Zero-Forcing Based Interference Coordination for MISO Networks

Andreas Dotzler, Technische Universität München; Dr Wolfgang Utschick, Technische Universität München; Guido Dietl, DoCoMo Euro-Labs

### 5 Power Control for Relay-Assisted Cognitive Radio Networks—Part II: Distributed Scenario

Wei Liu, Chinese Academy of Sciences; Song Ci, University of Nebraska-Lincoln; Yahui Hu, Hui Tang, Chinese Academy of Sciences

*Tuesday, 17 May 13:30-15:00 Corso A*

## 5E: Distributed Antenna

*Chair: Zhengang Pan*

### 1 Deployment of Distributed Antenna Systems in High Buildings

Hassan Osman, H. Zhu, Temitope Alade, University of Kent

### 2 On the use of Distributed Directive Antenna Arrays in mobile OFDMA Networks

Christos Papathanasiou, University of Thessaly; Nikos Dimitriou, University of Athens; Theodoros Samios, Technological Educational Institute of Piraeus (T.E.I.); Leandros Tassioulas, University of Thessaly

### 3 On the Use of Frequency Reuse in Distributed Antenna Systems

H. Zhu, University of Kent

### 4 Performance Analysis of Distributed Antenna System for High Building Wireless Communications

Temitope Alade, H. Zhu, Hassan Osman, University of Kent

### 5 System Outage Probability Analysis of Uplink Distributed Antenna Systems over a Composite Channel

Jin-Yuan Wang, Jun-Bo Wang, Nanjing University of Aeronautics and Astronautics; Ming Chen, Southeast University, China; Hua-Min Chen, National Mobile Communications Research Lab., Southeast University; Xiaoyu Dang, Han-Yin Li, Nanjing University of Aeronautics and Astronautics

*Tuesday, 17 May 13:30-15:00 Corso B*

## 5F: Medium Access Protocol

*Chair: Fernando J. Velez*

### 1 Dimensioning of the LTE Access Network for the Transport Network Delay QoS

Xi Li, University of Bremen; Wojciech Bigos, Dominik Dulas, Nokia Siemens Networks; Yi Chen, Umar Toseef, Carmelita Görg, University of Bremen; Andreas Timm-Giel, Hamburg University of Technology; Andreas Klug, Nokia Siemens Networks

### 2 Measuring IEEE 802.11p Performance for Active Safety Applications in Cooperative Vehicular Systems

Francesca Martelli, Maria Elena Renda, Paolo Santi, CNR Italy

### 3 Random access capacity evaluation with synchronized MTC users over wireless networks

Rafael Cauduro Dias de Paiva, Robson. D. Vieira, Nokia Technology Institute (INdT); Mikko Säily, Nokia-Siemens Networks

### 4 Simulation of IEEE 802.11p vehicular networking with real-life traffic scenario

Daria Stepanova, Timo Sukuvaara, Finnish Meteorological Institute

### 5 Throughput and Delay Analysis for a Differentiated p-Persistent CSMA Protocol with the Capture Effect

Salim Abukharis, Swansea university; Richard Mackenzie, British Telecommunications plc; Timothy O'Farrell, Swansea University

*Tuesday, 17 May 13:30-15:00 Istvan*

## 5G: Multi-antenna Resource Allocation

*Chair: Witold Krzymien, University of Alberta*

### 1 A New Dedicated Pilot Allocation Scheme in Multiuser MIMO OFDM With Vector Perturbation

Henning Vetter, Toshiba Research Europe Limited; Magnus Sandell, Toshiba Research Europe Ltd

### 2 Antenna Placement for Downlink Distributed Antenna Systems with Selection Transmission

Eunsung Park, Inkyu Lee, Korea University

### 3 Downlink Linear Transmission Schemes in a Single-Cell Distributed Antenna System with Port Selection

Talha Ahmad, Carleton University; Saad Al-Ahmadi, King Fahd University of Petroleum & Minerals; Halim Yanikomeroglu, Carleton University; Gary Boudreau, Ericsson Canada

### 4 Low Complexity Transmit Antenna Selection for Spatial Multiplexing Systems with OSIC Receivers

Liang Zhou, Fujitsu Laboratories Ltd.

### 5 Transmit Antenna Selection Based on Shadowing Side Information

Ferkan Yilmaz, KAUST; Ahmet Yilmaz, Gebze Institute of Technology; Mohamed-Slim Alouini, KAUST; Oguz Kucur, Gebze Institute of Technology (GYTE)

*Tuesday, 17 May 14:00-15:00 Buda*

## 5H: Adaptive MAC Mechanism

### 1 Agent-based Scheduling Scheme for IEEE 802.11p Wireless Vehicular Networks

Shiann-Tsong Sheu, Yen-Chieh Cheng, Ping-Jung Hsieh, National Central University; Jung-Shyr Wu, National Central University,

### 2 RLAB: A Reinforcement Learning-based Adaptive Broadcasting for Vehicular Ad-hoc Networks

Seyedali Hosseini-zhad, University of British Columbia; Ghasem Naddafzadeh Shirazi, University of British Columbia; Victor C. M. Leung, The University of British Columbia

### 3 Road Layout Adaptive Overlay Multicast for Urban Vehicular Ad Hoc Networks

Yi-Ling Hsieh, Kuochen Wang, National Chiao Tung University

*Tuesday, 17 May 14:00-15:00 Pest*

## 5I: Traffic Management 1

### 1 A DSRC-Based Traffic Flow Monitoring and Lane Detection System

Nima Alam, Asghar Tabatabaie Balaie, Andrew G Dempster, University of New South Wales

- 2 Hidden Markov Model based Tracking of a Proxy RP in Wi-Fi Localization**  
Yong Cheol Kim, In Park, WS Bong, University of Seoul
- 3 VoIP and Tracking Capacity Over WiFi Networks**  
Imdad ullah, NUST, Pakistan; Zawar Shah, National University of Sciences and Technology (NUST), Pakistan; Madeeha Owais, Adeel Baig, NUST
- Tuesday, 17 May 13:30-15:00 Erzsébet*  
**5P: Poster 5**
- 1 Asymmetric Spray Based Routing for Delay Tolerant Networks**  
YueCao, Haitham Cruickshank, Zhili Sun, University of Surrey
- 2 Implementing Distributed Admission Control in Wireless Ad Hoc Networks**  
Haitao Zhao, National University of Defense Technology, China; Emi Garcia, Queen's University Belfast
- 3 Evaluation of 60 GHz MIMO Channel Capacity in the Conference Room STA-STA Scenario**  
Seung Joon Lee, Kangwon National University; Kyeong Pyo Kim, ETRI; Kapseok Chang, Electronics and Telecommunications Research Institute; Mun Geon Kyeong, Woo Yong Lee, Hyun Kyu Chung, ETRI
- 4 Outage Probability of Interference-Limited Amplify-and-Forward Relaying with Partial Relay Selection**  
Sung-Il Kim, Jun Heo, Korea University
- 5 Priority Preemption for Real-time Application QoS Guarantees in Cooperative Vehicular Networks**  
Ting Zhou, Michael Hempel, Hamid Sharif, Puttipong Mahasukhon, Tao Ma, Pradhumna Lal Shrestha, University of Nebraska - Lincoln
- 6 A Low Complexity Equalization Method For Cooperative Communication Systems Based on Distributed Frequency-domain Linear Convolutional Space-Frequency Codes**  
Jun Xiao, Yanxiang Jiang, Xiaohu You, Southeast University
- 7 Randomized Spectrum Access in Cognitive Radio Networks with a Large Number of Cognitive Users**  
Fu-Te Hsu, Hsuan-Jung Su, National Taiwan University
- 8 A Novel Channel Sharing Scheme for Optimizing ODFC in IEEE 802.22 Systems**  
Seung-Hoon Hwang, Cha-eul Jeon, Dongguk University; Byoungjo Choi, University of Incheon
- 9 Optimum Beamforming for Correlated Rician MISO Channels**  
Dimitris Kontaxis, University of Athens; George Tsoulos, University of Peloponnese; Serafeim Karaboyas, University of Athens

- 10 A Novel Linear Interpolated Channel Estimation Method in Non-Continuous Subcarrier Mapping**  
Ke Zhong, Xia Lei, Dr., Shaoqian Li, University of Electronic Science and Technology of China
- 11 Performance Analysis of Relay Systems in an Interference-Limited Environment**  
Hyun Seok Ryu, Jun Seok Lee, Chung Gu Kang, Korea University
- 12 De-Centralized Dynamic ICIC using X2 Interfaces for Downlink LTE Systems**  
Dai Kimura, Yuya Harada, Fujitsu Laboratories Ltd.; Hiroyuki Seki, Fujitsu Laboratories Ltd.
- 13 Joint application of spread spectrum and OFDM modulation for microwave radio communication used for Unmanned Aerial Vehicle**  
Zoltán Bels?, Budapest University of Technology and Economics; Tamás Szilágyi, László Pap, Kálmán Elek, István Koller, Budapest University of Technology and Economics (BME)
- 14 An experimental study of 2.4GHz Frequency Band Leaky Coaxial Cable in CBTC train ground communication**  
Wang Hongwei, Beijing Jiaotong University; Bing Ning, Beijing Jiaotong University; Hailin Jiang, Beijing Jiaotong University
- 15 Directional Analysis of Vehicle-to-Vehicle Propagation Channels**  
Taimoor Abbas, Johan Karedal, Fredrik Tufvesson, Lund University; Alexander Paier, Vienna University of Technology; Laura Bernadó, Forschungszentrum Telekommunikation Wien; Andreas F. Molisch, University of Southern California
- 16 A PHY Design for Asynchronous Multi-Packet Reception in 802.11 Heterogeneous Networks**  
Fulvio Babich, Massimiliano Comisso, Aljosa Dorni, University of Trieste
- 17 Cooperative Iterative Water-Filling for Two-User Gaussian Frequency-Selective Interference Channels**  
Na Yi, Yi Ma, Rahim Tafazolli, University of Surrey
- 18 Ring Based Call Admission Control Scheme For Future Mobile Networks**  
Sándor Imre, Karoly Lendvai, Sándor Szabó, Budapest University of Technology and Economics
- 19 Energy Efficient Configuration of dual RAT Cellular Networks in Homogenous Environment**  
Márton Bérces, Fazekas Péter, Budapest University of Technology and Economics

*Tuesday, 17 May 15:30-17:00 Margit A*

**6A: Resource and Traffic Management**

*Chair: Oliver Holland, Kings College London*

- 1 A Fast and Efficient Node Loss-rate Estimator for Wireless Networks**  
Ruijie Lin, Dritan Kaleshi, University of Bristol
- 2 Adaptive VoIP Multiplexing in LTE Backhaul**  
Arpad Drozdy, Budapest University of Technology; Attila Rakos, Zoltan Vincze, Csaba Vulkan, Nokia Siemens Networks
- 3 Minimum Cell Size for Information Capacity Increase in Cellular Wireless Network**  
Kwashie Amartei Anang, The University of Greenwich; Predrag Rapajic, University of Greenwich at Medway, UK; Titus I. Eneh, Yogesh Nijssure, The University of Greenwich
- 4 On the Potentials of Traffic Steering Techniques between HSDPA and LTE**  
Niels Terp Kjeldgaard Jørgensen, Aalborg University; Daniela Laselva, Jeroen Wigard, Nokia Siemens Networks
- 5 Outage Optimal Resource Allocation for Two-hop Multiuser Multirelay Cooperative Communication in OFDMA Upstream**  
Irfan Ahmed, Amr Mohamed, Qatar University

**6 Strategies for Mobile Broadband Growth: Traffic Segmentation for Better Customer Experience**

David Soldani, Hou Xiao Jun, Huawei; Bernd Lück, Deutsche Telekom AG

*Tuesday, 17 May 15:30-17:00 Margit B*

**6B: Scheduling 2**

*Chair: Enjie Liu*

- 1 Cross Layer Scheduling Algorithms For Downlink Multi-Antenna CDMA Systems**  
Elmahdi Driouch, Université du Québec à Montréal; Wessam Ajib, University of Québec at Montréal
- 2 Fair QoS-aware Scheduling in Dual-Carrier HSDPA**  
Jin-Yup Hwang, Korea Advanced Institute of Science and Technology; Jinyoung Oh, KAIST; Younghan Han, Korea Advanced Institute of Science and Technology; Tai-Suk Kim, Samsung Electronics Co., Ltd.
- 3 Game-theoretic Approach to Distributed Scheduling for Relay-Aided OFDMA systems**  
Jeong Ae Han, Wha Sook Jeon, Seoul National University
- 4 Joint Power Control and Scheduling Strategies for OFDMA Femtocells in Hierarchical Networks**  
Zhang Ping, Yami Chen, FENG Zhiyong, Qixun Zhang, Yizhe Li, Li Tan, Beijing University of Posts and Telecommunications

## 5 Joint Proportional Fair Scheduling for Uplink and Downlink in Wireless Networks

Jaewoo So, Sogang University; Hyun-Cheol Jeon, Donggun Ahn, SK Telecom

## 6 On the Delay-Fairness through Scheduling for Wireless OFDMA Networks

Alireza Sharifian, Halim Yanikomeroglu, Carleton University

Tuesday, 17 May 15:30-17:00 Lanchid A

### 6C: CRCC Scheduling

#### 1 A Multi-Channel Cooperative MAC

David Tung Chong Wong, Shoukang Zheng, Anh Tuan Hoang, Ying-Chang Liang, Francois Chin, Institute for Infocomm Research

#### 2 Incremental and complementary coding techniques for Cooperative Medium Access Control Protocols

Fulvio Babich, Alessandro Crismani, University of Trieste

#### 3 Multi-User Scheduling in AF Relay Network with Antenna Correlation

Nuwan S. Ferdinand, Nandana Rajatheva, Asian Institute of Technology

#### 4 Opportunistic Scheduling for Three-way Relay Systems with Physical Layer Network Coding

Youngil Jeon, Young-Tae Kim, Moonseo Park, Inkyu Lee, Korea University

#### 5 Optimal Channel Reservation in Cooperative Cognitive Radio Networks

Jin Lai, Macquarie University; Ren Ping Liu, CSIRO; Eryk Dutkiewicz, Rein Vesilo, Macquarie University

Tuesday, 17 May 15:30-17:00 Lanchid B

### 6D: Carrier Allocation and Aggregation

Chair: Mamoru Sawahashi

#### 1 Component Carrier Management for Carrier Aggregation in LTE-Advanced System

Liu Liu, Mingju Li, Juejia Zhou, Xiaoming She, Lan Chen, DoCoMo Beijing Communications; Yuta Sagae, Mikio Iwamura, NTT DoCoMo

#### 2 Dynamic Sub-carriers Allocation for OFDMA systems based on effective SINR measurements

Ilaria Dalmasso, University of Rome 'Tor Vergata'; Franco Mazzenga, University of Rome tor Vergata; Romeo Giuliano, University of Rome Tor Vergata

#### 3 Energy Efficiency in Random Opportunistic Beamforming

Zhijiat Chong, Dresden University of Technology, Communications Lab; Eduard Jorswieck, Dresden University of Technology

#### 4 Enhanced Downlink Control Channel Resource Allocation Algorithm for Cross-Carrier Scheduling in LTE-Advanced Carrier Aggregation System

Yuan Yan, DOCOMO Beijing Labs; Anxin Li, Atsushi Harada, DOCOMO Beijing Communications Laboratories Co., Ltd; Hidetoshi Kayama, Research strategy and coordination group, NTT DOCOMO, Inc.

#### 5 Experimental Evaluation on Throughput Performance of Asymmetric Carrier Aggregation in LTE-Advanced

Yuichi Kakishima, Teruo Kawamura, NTT DOCOMO, INC.; Yoshihisa Kishiyama, NTT DoCoMo, Inc.; Hidekazu Taoka, DOCOMO Communications Labs Europe GmbH, Munich, Germany; Takehiro Nakamura, NTT DoCoMo, Inc.

#### 6 On the Performance of IEEE 802.11n Cyclic Shift Diversity Scheme for 802.11a/g Legacy Compatibility

André Câmara, Federal University of Rio Grande do Sul (UFRGS); Roger Pierre Fabris Hoefel, Federal University of Rio Grande do Sul, Brazil

Tuesday, 17 May 15:30-17:00 Corso A

### 6E: Timing, Code and Detector Design

Chair: Muhammad Kazmi

#### 1 A ML-based Detector considering Transmit Power Allocation for SC-FDMA Systems

Sungmook Lim, Yonsei University; Jemin Lee, Massachusetts Institute of Technology; Taehoon Kwon, Woo Hyun Seo, Daesik Hong, Yonsei University

## 2 A Practical Double Peak Detection Coarse Timing for OFDM in Multipath Channels

Zhengang Pan, Hong Kong Applied Science and Technology Institute Corp.; Yiqing Zhou, Institute of Computing Technology, Chinese Academy of Science

## 3 Channel-Dependent Adaptive Spreading Code Selection in Downlink MC-CDMA

Shota Yoshimura, Kenichi Higuchi, Tokyo University of Science

## 4 Design and evaluation of LTE-Advanced double codebook

Tan Shuang, Tommi Koivisto, Renesas Mobile; Helka Maattanen, Aalto University, School of Technology and Science; Kari Pietikäinen, Nokia; Timo Roman, Nokia Research Center; Mihai Enescu, Renesas Mobile

## 5 Investigation of optimum double codebook design for Downlink MIMO in LTE-A

Xiang Yun, Xiaoming She, Lan Chen, Jianchi Zhu, Yu Jiang, DoCoMo Beijing Communications Laboratories Co. Ltd.; Hidekazu Taoka, Katsutoshi Kusume, DoCoMo Euro-Labs; Satoshi Nagata, NTT DoCoMo, INC.

## 6 Streamlining HSUPA TTI Lengths without Compromising HSUPA Capacity

Frans Laakso, Kari Aho, Ilmari Repo, Magister Solutions Ltd.; Thomas Chapman, Roke Manor Research Ltd.

Tuesday, 17 May 15:30-17:00 Corso B

### 6F: Femtocell Wireless Networks

#### 1 A New Autonomous Component Carrier Selection Scheme for Home eNB in LTE-A System

Yuan Yan, Anxin Li, Xinying Gao, DoCoMo Beijing Communications Laboratories Co., Ltd; Hidetoshi Kayama, NTT DoCoMo, Inc.

#### 2 DAS, Uncoordinated Femto and Joint Scheduling Systems for In-building Wireless Solutions

zhen Liu, Troels B. Sørensen, Aalborg University; Jeroen Wigard, Nokia Siemens Networks; Preben Mogensen, Aalborg University

#### 3 Impact of Carrier Configuration and Allocation Scheme on 3G Femtocell Offload Effect

Troels E. Kolding, Pawel Ochal, Przemyslaw Czerepinski, Klaus I. Pedersen, Nokia Siemens Networks

#### 4 Load Based Cell Selection Algorithm for Faulted Handover in Indoor Femtocell Network

Yong-Jin Kwon, Dong-Ho Cho, KAIST

#### 5 Practical limits of femtocells in a realistic environment

Gábor Jeney, Budapest University of Technology and Economics

#### 6 Signalling Cost Evaluation of Handover Management Schemes in LTE-Advanced Femtocell

Haijun Zhang, Ma wenmin, Beijing University of Posts and Telecommunications; Wei Li, Beijing university of posts and telecommunications; Wei Zheng, Beijing University of Posts & Telecom; Xiangming Wen, Beijing university of posts and telecom; Chunxiao Jiang, Tsinghua University

Tuesday, 17 May 15:30-17:00 Istvan

### 6G: Channel Characterization

#### 1 A Generalized Analysis of Three-Dimensional Anisotropic Scattering in Mobile Wireless Channels-Part I: Theory

Petros Karadimas, Centre for Wireless Network Design (CWIND); Jie Zhang, University of Bedfordshire

#### 2 In-Tunnel Vehicular Radio Channel Characterization

Laura Bernadó, Anna Roma, ftw. Forschungszentrum Telekommunikation Wien; Thomas Zemen, Forschungszentrum Telekommunikation Wien ftw.; Nicolai Czink, FTW; Johan Karedal, Lund University; Alexander Paier, Vienna University of Technology; Andreas Thiel, Delphi Delco Electronics Europe; Fredrik Tufvesson, Lund University; Andreas F. Molisch, University of Southern California; Christoph F. Mecklenbräuer, Technische Universität Wien

#### 3 Markov Chain Based Two-state Satellite Mobile Channel Model

Yang Mingchuan, Meng Fanyu, Shi Shuo, Guo Qing, Harbin Institute of Technology

- 4 Modeling Time-Variant Fast Fading Statistics of Mobile Peer-to-Peer Radio Channels**  
Mingming Gan, Nicolai Czink, Paolo Castiglione, FTW; Claude Oestges, Université catholique de Louvain (UCL); Fredrik Tufvesson, Lund University; Thomas Zemen, Forschungszentrum Telekommunikation Wien ftw.
- 5 Pathloss and Multipath Power Decay of the Wideband Car-to-Car Channel at 5.7 GHz**  
Panagiotis Paschalidis, Kim Mahler, Andreas Kortke, Michael Peter, Wilhelm Keusgen, Fraunhofer Heinrich Herz Institut
- 6 UWB and Wideband Channel Models for Working Machine Environment**  
Attapongse Taparugssanagorn, Matti Hämäläinen, Jari Iinatti, University of Oulu

*Tuesday, 17 May 15:30-17:00 Buda*

**6H: Robust MIMO Transmission Technology**

*Chair: Witold Krzymien, University of Alberta*

- 1 A Novel Unequal-Error-Protected STBC Design for Multimedia Transmission**  
Yang Liu, Hui Zhao, Bin Zheng, Wenbo Wang, Beijing University of Posts & Telecommunications; Bin Wu, Institute of Microelectronics of Chinese Academy of Sciences
- 2 Adaptive Semi-Blind Space-Time Equalisation for Frequency Selective Rayleigh Fading MIMO Systems**  
Huiting Cheng, University of Electro-Communications; Sheng Chen, Univ. of Southampton; Yasushi Yamao, University of Electro-Communications (UEC Tokyo), Japan
- 3 on BER of TDD Multiuser MIMO System with Channel Estimation Error and Delay**  
ZhouBaolong, Shanghai Jiaotong University, Alcatel-Lucent Shanghai Sbell; Zhang Lei, Alcatel-Lucent Shanghai Sbell; Shengjie Zhao, Bell Laboratories, Alcatel-Lucent Shanghai Bell Co., Ltd.; Lin lingfeng, Alcatel-Lucent Shanghai Sbell
- 4 Rate Loss Caused by Limited Feedback and Channel Delay in Coordinated Multi-point System**  
Junfeng Shi, Tiankui Zhang, Beijing University of Posts and Telecommunications; Yiqing Zhou, Institute of Computing Technology, Chinese Academy of Science; Zhimin Zeng, Zhenglei Huang, Beijing University of Posts and Telecommunications
- 5 Semi-Blind Adaptive Space-Time Shift Keying Systems Based on Iterative Channel Estimation and Data Detection**  
Peichang Zhang, Indrakshi Dey, University of Southampton; Shinya Sugiura, Toyota Central R&D Labs., Inc.; Sheng Chen, Univ. of Southampton

*Tuesday, 17 May 15:30-17:00 Pest*

**6I: Localization and Tracking 1**

- 1 Accuracy Limits and Mobile Terminal Selection Scheme for Cooperative Localization in Cellular Networks**  
Ziming He, Yi Ma, Rahim Tafazolli, University of Surrey
- 2 Analytical Derivation of the False Alarm and Detection Probability for NLOS Detection**  
Christian Gentner, Ingmar Groh, German Aerospace Center (DLR)
- 3 Anchor-Free Absolute Localization and Tracking System for Wireless Sensor Networks**  
Frederic Evennou, Orange Labs; Antoine Couteau, David Cibaud, Orange Lab
- 4 Comparison of Algorithms for UWB Indoor Location and Tracking Systems**  
Juan Choliz, Miguel Eguizabal, Ángela Hernández-Solana, Antonio Valdovinos, University of Zaragoza
- 5 Lost at the Center of a Circle: A Failure Mode and its Remedy in the Two-Step Weighted Least Squares Method**  
Yasong Zhu, PLA University of Science and Technology; Wangdong Qi, Nanjing University of Posts and Telecommunication; Li Wei, Peng Liu, PLA University of Science and Technology; En Yuan, Han Wang, PLA University of Science and Technology

*Tuesday, 17 May 15:30-17:00 Erzsébet*

**6P: Poster 6**

- 1 Integrating Forwarding and Replication in DTN Routing: A Social Network Perspective**  
Yong Li, Yuan Cao, Depeng Jin, Li SU, Lieguang Zeng, Tsinghua University
- 2 A Self-Organization Mechanism for a Cold Chain Monitoring System**  
Charbel Nicolas, Michel Marot, Monique Becker, Telecom Sudparis
- 3 Routing for Data-Collection in Heterogeneous Wireless Sensor Networks**  
Bilel Romdhani, Dominique Barthel, Orange Labs; Fabrice Valois, INSA Lyon - INRIA Rhone Alpes
- 4 Analysis on Average Sum Rate of Two-Way Relaying with Simple Analog Network Coding in Nakagami Fading Channels**  
Jae Cheol Park, Electronics and Telecommunications Research Institute; Ji-Hye Lee, Kyung Hee University; Jin Soo Wang, Kyung Hee University; Yun Hee Kim, Kyung Hee University
- 5 Transmission Mode Selection in Cooperative Multi-cell Systems Considering Training Overhead**  
Qian Zhang, Beihang University; Prof. Chenyang Yang, Beihang University, Beijing
- 6 Performance of Type-I and Type-II Hybrid ARQ in Decode and Forward Relaying**  
Hirley Alves, Federal University of Technology of Paraná, Brazil; Richard Demo Souza, Glauber Brante, UTFPR; Marcelo Eduardo Pellenz, PPGIA - PUC - PR
- 7 A Credibility-Based Cooperative Spectrum Sensing Technique for Cognitive Radio Systems**  
Chin-Liang Wang, Han-Wei Chen, Yu-Ren Chou, National Tsing Hua University
- 8 An Adaptive Base Station Cooperated Cellular System and Its Theoretical Performance Analysis**  
Yoshihiko Akaiwa, The University of Electro-Communications
- 9 Toward Distributed Relay Selection for Opportunistic Amplify-and-Forward Transmission**  
Kamel Tourki, Texas A&M University at Qatar; Mohamed-Slim Alouini, KAUST
- 10 Power Allocation for Practicable Capacity Maximization in Eigen-MIMO**  
S. Alireza Banani, Rodney G. Vaughan, Simon Fraser University
- 11 Low Complexity Interference Rejection Combining for MLSE**  
Frank Hsieh, Motorola Networks; Jun Tan, Motorola Inc; Luis Lopes, Motorola
- 12 A Pragmatic PAPR Reduction Scheme for Multiple Antenna OFDM with Frequency Switched Transmit Diversity**  
Jin Soo Wang, Jin Bae Park, Kyung Hee University; SungHyun Hwang, Electronics and Telecommunications Research Institute (ETRI); Chang-Joo Kim, ETRI; Yun Hee Kim, Kyung Hee University
- 13 Decoder Optimised Progressive Edge Growth Algorithm**  
Cornelius Healy, Rodrigo de Lamare, University of York
- 14 Performance Bound for LDPC Codes Over Mobile LOS Wireless Optical Channel**  
Nicolas Barbot, Stephanie Sahuguede, University of Limoges; Anne Julien-Vergonjanne, ENSIL University of Limoges; Jean-Pierre Cances, ENSIL
- 15 TDplanner: Public Transport Planning System with Real-time Route Updates Based on Service Delays and Location Tracking**  
Dung Nguyen Tien, Tristram MacDonald, Zhiyong Xu, Suffolk University, Boston
- 16 Link Adaptation in Wireless Body Area Networks**  
Flavia Martelli, Roberto Verdone, Chiara Buratti, University of Bologna

**17 Multicell Multiuser OFDMA Dynamic Resource Allocation Using Ant Colony Optimization**

Hamed Ahmadi, National University of Singapore; Yong Huat Chew, Chin Choy Chai, Institute for Infocomm Research

**18 Novel Packet Retransmission in OFDMA Systems Using Frequency Diversity**

Xiaoyan Liu, H. Zhu, Jiangzhou Wang, University of Kent

**19 Testbed Evaluation of Dynamic GGSN Load Balancing for High Bitrate 3G/UMTS Networks**

Laszlo Bokor, Szabolcs Kustos, Gábor Jeney, Budapest University of Technology and Economics

## Wednesday 18 May 2011

Wednesday, 18 May 08:30-10:00 Margit B

### 7B: Resource Allocation

Chair: Matilde Sanchez

**1 Bandwidth-Efficient Bit and Power Loading for Underwater Acoustic OFDM Communication System with Limited Feedback**

Xiaopeng Huang, Victor Lawrence, Stevens Institute of Technology

**2 Channel Prediction-Based Adaptive Power Control for Dynamic Wireless Communications**

Viet-Ha Pham, Xianbin Wang, Md. Jahidur Rahman, Jay Nadeau, University of Western Ontario

**3 Costly power and symbol rate allocation to sub-channels for optimal real performance: Water-filling for maximal throughput**

Virgilio Rodriguez, Rudolf Mathar, RWTH Aachen University

**4 Resource Allocation in Multi-Antenna MAC Networks: FBMC vs OFDM**

Miquel Payaro, CTTC; Antonio Pascual Iserte, Universitat Politècnica de Catalunya; Ana García-Armada, Universidad Carlos III de Madrid; Matilde Sanchez, Univ. Carlos 3, Spain

**5 Robust Beamforming and Power Control for Two-tier Femtocell Networks**

Ronghong Mo, Tony Q.S. Quek, Institute for Infocomm Research, A\*STAR; Robert Heath, The University of Texas at Austin

Wednesday, 18 May 08:30-10:00 Lanchid A

### 7C: Transmission Techniques

**1 Joint Link Scheduling, Beamforming and Power Control for Maximizing the Sum-Rate of Cognitive Wireless Mesh Networks**

Md Habibur Islam, École de technologie supérieure; Zbigniew Dziong, Ecole de Technologie Supérieure

**2 Novel Coherent Receivers for AF Distributed STBC using Disintegrated Channel Estimation**

Fahd Ahmed Khan, King Abdullah University of Science and Technology (KAUST); Yunfei Chen, University of Warwick; Mohamed-Slim Alouini, KAUST

**3 Optimal Power Allocation Algorithm for OFDM-Based Decode-and-Forward Dual-Hop Cognitive Systems**

Musbah Shaat, (CTTC) Centre Tecnològic de Telecomunicacions de Catalunya; Faouzi Bader, CTTC

**4 Power Allocation and Beamforming in Overlay Cognitive Radio Systems**

Liang Li, Technical University Darmstadt; Faheem Khan, Queen's University, Belfast, UK; Marius Pesavento, TU Darmstadt; T. Ratnarajah, Queen's University Belfast

**5 Transmit Beamforming in MIMO Cognitive Radio Network via Semidefinite Programming**

Huiqin Du, T. Ratnarajah, Queen's University Belfast

Wednesday, 18 May 08:30-10:00 Lanchid B

### 7D: Transmission Techniques 3

Chair: Youngju Kim

**1 Differential Carrier Frequency Offset and Sampling Frequency Offset Estimation for 3GPP LTE**

Kaifeng Guo, Delft University of Technology; Wen Xu, Guangxia Zhou, Intel

**2 EDFA-Based All-Optical Relaying in Free-Space Optical Systems**

Ehsan Bayaki, Diomidis Michalopoulos, Robert Schober, University British Columbia

**3 Feasibility Study of a Mm-Wave Impulse Radio Using Measured Radio Channels**

Katsuyuki Haneda, Aalto University School of Science and Technology; Fredrik Tufvesson, Lund University; Shurjeel Wyne, COMSATS Institute of Information Technology - Islamabad; Mats Arlelid, Lund University; Andreas F. Molisch, University of Southern California

**4 Joint Detection and CFO Estimation for QAM Constellations**

Pedro Pedrosa, Instituto Superior Técnico; Rui Dinis, Universidade Nova de Lisboa; Fernando Nunes, Instituto Superior Técnico

**5 Limits on Information Transmission in Vehicle-to-Vehicle Communication**

Norbert Goertz, Johannes Gonter, Vienna University of Technology

Wednesday, 18 May 08:30-10:00 Corso A

### 7E: Channel Estimation and Quantization

**1 Application of Compressed Sensing to DRM Channel Estimation**

Chenhao Qi, Lenan Wu, Southeast University

**2 Channel Estimation Using Minimum Bit Error Rate Framework for BPSK Signals**

Amit Kumar Dutta, Indian Institute of Science (IISc); K. V. S. Hari, IISc, Bangalore

**3 Fast and Accurate Velocity Estimation for OFDM Systems Based on Channel Frequency Response**

Shu Zhou, Xiaoxin Zhang, Yuping Zhao, Tingting Zhao, Peking University; Timo Korhonen, Helsinki University of Technology

**4 Phase Ambiguity Quantization for Per-cell Codebook Based Limited Feedback Coordinated Multi-point Transmission Systems**

Fang Yuan, Beihang University; Prof. Chenyang Yang, Beihang University, Beijing

**5 Pilot placement algorithms for OFDM based communications in indoor wideband channels**

Cheran Vithanage, Toshiba Research Europe Ltd; Rafael Cepeda, Toshiba Research Europe; Justin Coon, Toshiba Research Europe Ltd.

Wednesday, 18 May 08:30-10:00 Corso B

### 7F: Transmission and Use of Channel State Information

**1 A Systematic Limited Feedback Scheme for Temporally Correlated MISO Channels with Feedback Delay**

Yu Zhang, NEC Laboratories China; Ming Lei, NEC Laboratories

**2 Codebook Design and Selection for Multi-cell Cooperative Transmission Limited Feedback Systems**

Xueying Hou, Beihang University; Prof. Chenyang Yang, Beihang University, Beijing

**3 Mixed CSIT DL Channel: Gains with an Additional Receive Antenna**

Umer SALIM, Irfan Ghauri, Intel Mobile Communications

**4 Optimizing CSI Feedback for MU-MIMO: Tradeoffs in channel correlation, user diversity and MU-MIMO efficiency**  
Nihar Jindal, University of Minnesota; Sean Ramprasad, DoCoMo USA Labs

**5 Scalable limited channel feedback for downlink coordinated multi-cell transmission**  
Hao Liu, Alcatel Shanghai Bell Co.; Yang Song, ASB; Dong Li, Alcatel-Lucent Shanghai Bell; Liyu Cai, Hongwei Yang, Alcatel Shanghai Bell; Di Lu, Alcatel-Lucent Shanghai Bell; Keying Wu, Alcatel Shanghai Bell Co., Ltd

*Wednesday, 18 May 08:30-10:00 Istvan*

### **7G: MIMO Channels**

- 1 Capacity analysis of Intra-Site Coordinated Multi-Points (CoMP) scheme based on a measurement at 2.35 GHz**  
Fenghua Zhang, Zhang Jianhua, Chengxiang Huang, Nan Sheng, Lei Tian, Beijing University of Posts and Telecommunications
- 2 Experimental Evaluation of Outdoor-to-Indoor MIMO Systems with a Multi-Antenna Handset**  
Amir Ali Basri, Amir Ghasemi, Communications Research Centre Canada; John Sydor, Communications Research Centre
- 3 Improved Detected Data Processing for Decision-Directed Tracking of MIMO Channels**  
Emna Eitel, Joachim Speidel, University of Stuttgart
- 4 The Modeling Method of Time-Correlated MIMO channels using the Particle Filter**  
Kentaro Saito, NTT DOCOMO INC.; Koshiro Kitao, NTT DOCOMO; Tetsuro Imai, NTT DoCoMo Inc.; Yoshiaki Okano, Shunji Miura, NTT DoCoMo, Inc.
- 5 Variation of estimated large-scale MIMO channel properties between repeated measurements**  
Milan Narandžić, Martin Käske, Technische Universität Ilmenau; Stephan Jaeckel, Fraunhofer Heinrich Hertz Institute; Gerd Sommerkorn, Christian Schneider, Reiner Thomä, Technische Universität Ilmenau

*Wednesday, 18 May 08:30-10:00 Buda*

### **7H: Cooperative MIMO 1**

*Chair: Witold Krzymien, University of Alberta*

- 1 Backhaul Design and Controller Placement for Cooperative Mobile Access Networks**  
Thorsten Biermann, Luca Scalia, DOCOMO Euro-Labs; Joerg Widmer, Institute IMDEA Networks; Holger Karl, University of Paderborn
- 2 Codebook-Based Precoding and Power Allocation for Nonregenerative Dual Hop Relay Systems**  
Payam Padidar, Fabien Heliot, University of Surrey; Dr Reza Hoshyar, National Semiconductor
- 3 Determinant Based Multiuser MIMO Scheduling with Reduced Pilot Overhead**  
Kyeongjun Ko, Jungwoo Lee, Seoul National University
- 4 Dual Hop MIMO OSTBC Communication over Rayleigh-Rician Channel**  
Keeth Saliya Jayasinghe, University of Oulu; Nandana Rajatheva, Telecommunication Field of Study, Asian Institute of Technology; Prathapasinghe Dharmawansa, Hong Kong University of Science and Technology; Matti Latva-aho, Centre for Wireless Communications, University of Oulu
- 5 Interference Alignment in Multi-User Two Way Relay Networks**  
Rakash SivaSiva Ganesan, Technische Universität Darmstadt; Tobias Weber, University of Rostock; Anja Klein, Darmstadt University of Technology

*Wednesday, 18 May 08:30-10:00 Pest*

### **7I: Satellite Systems**

- 1 Effect of Satellite System Impairments on a Multilevel Coding System for Satellite Broadcasting**  
Aharon Vargas, Cédric Keip, Fraunhofer IIS; Wolfgang Gerstacker, University of Erlangen-Nuremberg; Marco Breiling, Fraunhofer Institute IIS
- 2 Feasibility Study of a HSPA Backhauling over Satellite for Crisis Management**  
Dimitris Komnagos, National Technical University of Athens; Demosthenes Vouyioukas, University of the Aegean; Ilias Maglogiannis, University of Central Greece
- 3 Handover Management Optimization for LTE Terrestrial Network with Satellite Backhaul**  
Michael Crosnier, EADS Astrium / INPT-IRIT; Fabrice Planchou, EADS Astrium; Riadh DHAOU, University of Toulouse, ENSEEIHT/IRIT; André-Luc Beylot, IRIT/ENSEEIHT
- 4 Satellite frequency reuse method for complementary ground components in an integrated MSS system**  
Hee Wook Kim, Unhee Park, ETRI; Kun Seok Kang, Electronics and Telecommunications Research Institute; Bonjun Gu, ETRI
- 5 Vehicle Heading Estimation Using a Two Low-Cost GPS Receiver Configuration**  
Guilherme Trigo, Instituto Superior Técnico, Technical University of Lisbon, Portugal; Duarte Donas-Boto, Instituto Superior Técnico, Technical University of Lisbon; Cláudio Silva, José E. Sanguino, Instituto Superior Técnico, Technical University of Lisbon, Portugal

*Wednesday, 18 May 08:30-10:00 Erzsébet*

### **7P: Poster 7**

- 1 Active Congestion Control Based Routing for Opportunistic Delay Tolerant Networks**  
YueCao, Haitham Cruickshank, Zhili Sun, University of Surrey
- 2 Distributed Field Estimation Algorithms in Vehicular Sensor Networks**  
Dietmar Schabus, Thomas Zemen, Michael Pucher, Telecommunications Research Center Vienna (FTW)
- 3 Joint Rate Control and Scheduling for Delay-Sensitive Traffic in Multihop Wireless Networks**  
Soroush Jahromizadeh, Veselin Rakocevic, City University London
- 4 Cooperative relay transmission with relay's private information**  
Koichi Adachi, Sumei Sun, Jington joun, Institute for Infocomm Research
- 5 A Model for Aggregate Adjacent Channel Interference in TV White Space**  
Evanny Obregon, Royal Institute of Technology (KTH); Lei Shi, Royal Institute of Technology; Javier Ferrer, Center for RF Measurement Technology, Höskolan i Gävle; Jens Zander, Royal Institute of Technology (KTH)
- 6 Power Allocation in Cognitive Radio based on Minimum Interference Generation**  
Brage Ellingsater, Forsvarets Forskningsintitut; Torleiv Maseng, Forsvarets Forskningsinstitut
- 7 Design And Performance Evaluation of Multiple AF-Relay Processing in Multi-Cell Environment**  
Jington joun, Sumei Sun, Institute for Infocomm Research
- 8 Design and Test of a High QoS Radio Network for CBTC Systems in Subway Tunnels**  
C. Briso-Rodríguez, Universidad Politécnica de Madrid
- 9 A Location Prediction Scheme Based on Social Correlation**  
Yu Gong, Yong Li, Depeng Jin, Li Su, Lieguang Zeng, Tsinghua University
- 10A Fast Algorithm for Sparse Channel Estimation via Orthogonal Matching Pursuit**  
Xue Jiang, Sunplus mMobile Inc. Beijing Branch; Wen-Jun Zeng, En Cheng, Xiamen University

**11 Low complexity SLM technique with an interleaver-Butterfly ensemble for PAPR reduction of power limited OFDM system**

Hyunseuk Yoo, Frederic Guilloud, Ramesh Pyndiah, Telecom Bretagne

**12 A Preamble Design Technique for Efficient Handover in Mobile Mesh Networks**

Hyun Il Yoo, Yeong Jun Kim, Chang Hwan Park, Yong Soo Cho, Chung-Ang University

**13 Performance of a Partial Retransmissions Hybrid ARQ Scheme in Rayleigh Block Fading Channels**

André Gustavo Degraf Uchôa, Richard Demo Souza, Glauber Brante, UTFPR; Marcelo Eduardo Pellenz, PPGIa - PUC - PR

**14 Discrete Time Rake receiver for Cooperative Systems**

Leila Gazzah, Hatem Boujemaa, Mohamed Siala, SUPCOM

**15 LTE Outdoor & Indoor Interference Assessment Based on GSM UE Measurements in a Dense Radio Network**

Kjell Larsson, Jan Christoffersson, Arne Simonsson, Bo Hagerman, Ericsson Research; Peter Cosimini, Vodafone New Technologies & Innovation

**16 Opportunistic Periodic Feedback Mechanisms for OFDMA Systems under Feedback Budget Constraint**

Mohammad Abdul Awal, University of Paris Sud 11; Lila Boukhatem, University Paris Sud 11

**17 On HSUPA Open Loop Switched Antenna Transmit Diversity Performance in Varying Load Conditions**

Petri Eskelinen, Ilmari Repo, Kari Aho, Frans Laakso, Magister Solutions Ltd.

**18 Adaptive Link Assignment Applied in Case of Video Streaming in a Multilink Environment**

Péter Kántor, János Bitó, Budapest University of Technology and Economics

**19 Virtual Networks and Software Router approach for Wireless Emergency Networks Design**

Giorgio Calarco, Maurizio Casoni, University Of Modena And Reggio Emilia

*Wednesday, 18 May 10:30-12:00 Margit A*

**8A: Mobility**

**1 Cluster based Iterative GPS-Free Localization for Wireless Sensor Networks**

Ruifeng Chen, Zhangdui Zhong, Minming Ni, Beijing Jiaotong University

**2 Hardware Implementation of PHD Particle Filter for Multiple Target Tracking**

Mengjun Jin, Zhiguo Shi, Jiming Chen, Shaohua Hong, Zhejiang University

**3 Improved Inter-Network Handover for Highly Mobile Users and Vehicular Networks**

Soumaya Cherkaoui, Université de Sherbrooke, Canada; Tarik Taleb, Tohoku University, Japan; Eugene David Ngangue Ndih, Université de Sherbrooke

**4 On The Capacity Of A Linear Vehicular Network**

Farah El Ali, Bertrand Ducourthial, Université de Technologies de Compiègne; Sidi-Mohammed Senouci, University of Bourgoigne, ISAT Nevers

**5 Range-based Localization in Wireless Networks using the DBSCAN Clustering Algorithm**

Khalid Almuzaini, Aaron Gulliver, University of Victoria

*Wednesday, 18 May 10:30-12:00 Margit B*

**8B: Coding**

*Chair: Rob Maunder*

**1 Joint Non-Binary LDPC-BICM and Network Coding with Iterative Decoding for the Multiple Access Relay Channel**

Mikel Hernaez, Pedro M. Crespo, CEIT and TECNUN (University of Navarra); Javier Del Ser, TECNALIA-TELECOM

**2 Low Complexity Joint Channel Estimation and Decoding for LDPC Coded MIMO-OFDM Systems**

Xiang Xu, Rudolf Mathar, RWTH Aachen University

**3 On the Super Codes of the First Order Reed-Muller Code Based on m-Sequence Pairs**

Ying Xu, Yuejun Wei, Huawei Technologies Co., Ltd; Yuhang Yang, Wen Chen, Shanghai Jiao Tong University

**4 Study on High Throughput Turbo Decoder**

Jaesung Choi, Jeong Woo Lee, University of Chung-Ang

**5 Turbo Linearizer for HPA**

Alexander Lozhkin, Fujitsu Ltd.

*Wednesday, 18 May 10:30-12:00 Lanchid A*

**8C: Spectrum Sharing**

*Chair: Fernando Velez, UBI, Portugal*

**1 Dual Branch Transmit Switch-and-Stay Diversity for Underlay Cognitive Networks**

Mostafa Sayed, Varkon Semiconductors; Mohamed Abdallah, Texas A&M University at Qatar; Mohamed-Slim Alouini, KAUST; Khalid A. Qaraqe, Texas A&M University at Qatar

**2 Energy-efficient Transmission for Hybrid Spectrum Sharing in Cognitive Radio Networks**

Qiu Tao, Beijing University of Posts and Telecommunications

**3 Investigation on Dynamic Spectrum Allocation with Virtual Antenna Array Deployment in Decentralized Cognitive Radio System**

Yejian Chen, Alcatel-Lucent Bell Labs Germany

**4 Optimal and Low-complexity Algorithms for Dynamic Spectrum Access in Centralized Cognitive Radio Networks with Fading Channels**

Mario Bkassiny, Sudharman K. Jayaweera, Yang Li, University of New Mexico; Keith A. Avery, Air Force Research Laboratory

**5 Overlay/Underlay Spectrum Sharing for Multi-Operator Environment in Cognitive Radio Networks**

K.B.Shashika Manosha, Nandana Rajatheva, Asian Institute of Technology; Matti Latva-aho, University of Oulu

*Wednesday, 18 May 10:30-12:00 Lanchid B*

**8D: Cooperative MIMO 2**

*Chair: Witold Krzymien*

**1 Joint Optimization of CQI Calculation and Interference Mitigation for User-Scheduling in MIMO-OFDM Systems**

Mirette Sadek, KAUST; Sonia Aissa, INRS-EMT, University of Quebec

**2 Low-Complexity Combining Schemes in Dual-Hop AF Relaying Systems**

Fakhreddine Gaaloul, Redha M. Radaydeh, Mohamed-Slim Alouini, KAUST

**3 MIMO Relay Networks with Distributed TAS/MRC**

Maged Elkashlan, CSIRO ICT Centre; Phee Lep Yeoh, University of Sydney; Chang Kyung Sung, Iain B. Collings, CSIRO

**4 New Exponential Lower Bounds on the Gaussian Q-Function via Jensen's Inequality**

Mingwei Wu, Xuzheng Lin, Pooi Yuen Kam, National University of Singapore

**5 Relay Precoder Designs for Amplify-and-forward MIMO Relay Networks with Imperfect Channel State Information**

Ronghong Mo, Yong Huat Chew, Institute for Infocomm Research; Chau Yuen, Singapore University of Technology and Design

Wednesday, 18 May 10:30-12:00 Corso A

## 8E: Resource Allocation 2

Chair: Velio Tralli

- 1 A Resource Block Assignment Scheme for OFDMA-Based Cellular Networks with Self-Organizing Terminal Relays**  
Yaser Mohamed Fouad, Ramy H. Gohary, Halim Yanikomeroglu, Carleton University
- 2 A Combinatorial Auction based Subcarrier Allocation Algorithm for multiuser OFDMA**  
Ioannis Stiakogiannakis, Dimitra I. Kaklamani, National Technical University of Athens
- 3 Centralized vs Distributed Resource Allocation in Multi-Cell OFDMA Systems**  
Sergio Cicalò, Velio Tralli, University of Ferrara; Ana Perez-Neira, UPC
- 4 Distributed Collaborative Radio Resource Allocation in the Downlink of OFDMA Systems**  
Bahareh Jalili, Mehrdad Dianati, Barry Evans, University of Surrey
- 5 QoS-enabled Dynamic Resource Management in Multi-cell OFDMA-based Systems**  
Su Yi, NEC Laboratories, China; Gang Wang, Yong Xia, NEC Labs, China

Wednesday, 18 May 10:30-12:00 Corso B

## 8F: Ad-hoc & Sensor Scheduling

- 1 Achieving Efficiency and Fairness in 802.11-based vehicle-to-infrastructure Communications**  
Waleed Alasmay, Otman Basir, University of Waterloo
- 2 An RPC-based Service Framework for Robot and Sensor Network Integration**  
Peter Corke, Wen Hu, Matthew Dunbabin, CSIRO
- 3 Secure Clustering Scheme Based Keys Management**  
Tahani Gazdar, University of Manouba; Abderrahim Benslimane, Université d'Avignon et des Pays de Vaucluse; Abdelfettah Belghith, University of Manouba, Tunisia

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## 8G: Multiuser MIMO

- 1 A Close to Capacity Double Iterative Based Precoder Design for MU-MIMO Broadcast Channel with Multi-Streams Support**  
Mustapha Amara, Eurecom; Yi Yuan, France Telecom R&D; Dirk T.M. Slock, Eurecom
- 2 CF-Based Adaptive PAPR Reduction Method for Block Diagonalization-Based Multiuser MIMO-OFDM Signals**  
Ryosuke Kimura, Yuki Tajika, Kenichi Higuchi, Tokyo University of Science
- 3 MMSE Modified Multi-User MIMO Downlink Transmission with Imperfect CSI**  
Pengfei Chang, Tiejun Lv, Taotao Wang, Hui Gao, Yonghua Li, Beijing University of Posts and Telecommunications
- 4 Orthogonal Beamforming Using Gram-Schmidt Orthogonalization for Multi-User MIMO Downlink System**  
Kunitaka Matsumura, Tomoaki Ohtsuki, Keio University
- 5 Power Allocation for Maximizing Sum Capacity of Multiuser MIMO Downlink with Transmit Precoding Based on SLNR**  
Wei Fang, Huan Sun, R&I Institute, Alcatel-Lucent Shanghai Bell; Lin Yang, University of Manchester

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## 8H: Vehicle Applications

- 1 Driving More Efficiently - The Use of Inter-Vehicle Communication to Predict a Future Velocity Profile**  
Markus Kerper, Christian Wewetzer, Volkswagen Group; Holger Trompeter, Wolfgang Kiess, University of Düsseldorf; Martin Mauve, Heinrich Heine University, Düsseldorf, Germany

## 2 MobSampling: V2V Communication for Traffic Density Estimation

Laura Garelli, Claudio Casetti, Politecnico di Torino; Carla Fabiana Chiasserini, Politecnico di Torino; Marco Fiore, INSA Lyon

## 3 Real-vehicle integration of driver support application with IPv6 GeoNetworking

Satoru Noguchi, Nara Institute of Science and Technology; Manabu Tsukada, Ines Ben Jemaa, Thierry Ernst, INRIA

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## 8I: Network Architecture

### 1 Fair packet forwarding in opportunistic networks

Xiaoguang Fan, Kuang Xu, VICTOR.O.K.Li, The University of Hong Kong

### 2 Survey on Energy Consumption Entities on Smartphone Platform

Gian Paolo Perrucci, Nokia Research Center; Frank H.P. Fitzek, Aalborg University; Joerg Widmer, Institute IMDEA Networks

### 3 Wireless Grid: Enabling Ubiquitous Sensor Networks with Wireless Energy Supply

Ragil Putro Wicaksono, Khanh Tran Gia, Kei Sakaguchi, Kiyomichi Araki, Tokyo Institute of Technology

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## 8P: Poster 8

### 1 Adaptive AOA/TOA Localization Using Fuzzy Particle Filter for Mobile WSNs

Fu-Kai Chan, Chih-Yu Wen, National Chung Hsing University

### 2 LIFT: Layer Independent Fault Tolerance Mechanism for Wireless Sensor Networks

Julien Beaudaux, Antoine Gallais, Julien Montavont, Thomas Noël, LSIT CNRS UMR 7005 - University of Strasbourg

### 3 Double Zones MIMO Routing Protocol for Wireless Ad Hoc Networks

Min Sheng, Xidian University; Jiandong Li, Xidian University; Shi Yan, Xidian University

### 4 Hybrid Network Coding and Cooperative Relaying Schemes for Bi-directional Communication Systems

Lin Shan, Hidekazu Murata, Kyoto University; Sonia Aissa, INRS-EMT, University of Quebec; Susumu Yoshida, Kyoto University

### 5 An Asynchronous Multi-Channel MAC Protocol for Cooperative Networks

Yongtai Liu, Wang Xiaoxiang, Hongtao Zhang, Beijing University of Posts and Telecommunications

### 6 Effects of Mobility and Primary Appearance Probability on Spectrum Handoff

Uthman Baroudi, King Fahd University of Petroleum and Minerals; Abdullah, KFUPM

### 7 The Energy Efficiency Analysis of HARQ in Hybrid Relaying Systems

Yinan Qi, University of Surrey; Reza Hoshyar, National Semiconductor; Muhammad Ali Imran, Rahim Tafazolli, University of Surrey

### 8 A Simple Unevenness Detection System using a Monocular Camera To Ensure Safety of a Handle Type Electric Wheelchair

Jeyeon Kim, Takaaki Hasegawa, Saitama University

### 9 Geocache: Sharing and Exchanging Road Traffic Information Using Peer-to-peer Vehicular Communication

Abderrahmane Lakas, UAE University

### 10 Capacity criterion-based bit and power loading for shallow water acoustic OFDM system with limited feedback

Xiaopeng Huang, Stevens Institute of Technology

### 11 Combined BER Analysis for Time-Frequency Synchronization Schemes for MB-OFDM UWB

Debarati Sen, Chalmers University of Technology, Sweden

## 12 Doppler Spread Estimation and Channel Update Period Tuning in OFDM-based Vehicular Communication Systems

Massimiliano Siti, STMicroelectronics; Andrea Agnoletto, University of Padua; Antonio Assalini, University of Padova

## 13 Phase Rotation Sequence Selection Method for IFDMA with DDCE

Kazunori Yamamoto, Koichi Adachi, Tomoaki Ohtsuki, Keio University

## 14 An Improved Adaptive Receiver for OFDM Systems Using Conjugate Transmission

Chin-Liang Wang, Po-Chung Shen, Jia-Hong Huang, National Tsing Hua University

## 15 Optimization of Frame Length in OFDMA Systems Taking into Account the Control Signaling Cost

Yi Wu, Linköping University; Erik G. Larsson, Linköping University, Sweden; Zhiqiang Tang, Linköping University

## 16 On Improving the Radio Resource Control Signaling Reliability in LTE Uplink

Jani Puttonen, Magister Solutions Ltd; Janne Kurjenniemi, Magister Solutions Ltd.; Olli Alanen, Magister Solutions Ltd; Tero Henttonen, Nokia Research Center

## 17 A Mathematical Model for User Traffic in Coverage and Capacity Optimization of a Cellular Network

Ahmed Awada, Bernhard Wegmann, Nokia Siemens Networks; Ingo Viering, Nomor Research GmbH; Anja Klein, Darmstadt University of Technology

## 18 Calculating End-to-End Throughput Capacity in Wireless Networks with Consideration of Hidden Nodes and Multi-rate Terminals

Haitao Zhao, National University of Defense Technology, China; Emi Garcia, Queen's University Belfast

## 19 Performance Analysis of OFDM-Based Amplify and Forward Networks Under Adaptive M-QAM

Maryam Najmafshar, Iran University of science and technology; Moslem Noori, University of Alberta

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### 9A: Routing 2

#### 1 The Impact of Relay Selection Strategies on the Amount of Interference in ad Hoc Wireless Networks

Alberto Zanella, IEIIT-CNR; Barbara Masini, WiLab, IEIIT/CNR, University of Bologna

#### 2 Routing in Multi-radio Multi-channel Multi-hop Wireless Mesh Networks with Bandwidth Guarantees

Ronghui Hou, Xidian University; King-Shan Lui, University of Hong Kong; Jiandong Li, Xidian University

#### 3 Spatial Multiplexing for Heterogeneously Equipped Nodes in Wireless Ad Hoc Networks

Ulrike Korger, Technische Universität München; Christian Hartmann, Technische Universität München

#### 4 Node centrality on disjoint multipath routing

Yukiya Kato, Fumie Ono, Yokohama National University

#### 5 Towards the use of XOR-based Routing Protocols in Vehicular ad hoc Networks

Rodolfo Oliveira, André Garrido, Universidade Nova de Lisboa; Rafael Pasquini, University of Campinas; Miguel Luís, Luis Bernardo, Rui Dinis, Paulo Pinto, Universidade Nova de Lisboa

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### 9B: Transmission Techniques 1

Chair: Li Zhang

#### 1 A Discrete Queue-Based Model for Soft-Decision Demodulated Correlated Fading Channels

Cecilio Pimentel, UFPE (Federal University of Pernambuco); Fady Alajaji, Queen's University - Kingston, Ontario, Canada; Pedro Melo, Federal University of Pernambuco

#### 2 A Multi-layer Orthogonal Block Coded Transmission Scheme for Noncoherent Ultra-wideband Communications

Taotao Wang, Beijing University of Posts and Telecommunications; Tiejun Lv, Beijing University of Posts and Telecommunication; Hui Gao, Beijing University of Posts and Telecommunications; Yonghua Li, Beijing University of Posts Telecommunications

#### 3 MS-Assisted Receiver-Receiver Time Synchronization Strategy for Femtocells

Jinlin Peng, University of Leeds; Li Zhang, University Of Leeds; D. C. McLernon, The University of Leeds

#### 4 Unequal Error Protection for Quasi-synchronous BS-CDMA Systems

Yue Wang, Justin Coon, Mohamed Ismail, Toshiba Research Europe Ltd.

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### 9C: Spectrum Sensing

#### 1 Compressed Sensing Construction of Spectrum Map for Routing in Cognitive Radio Networks

Sung-Yin Shih, Kwang-Cheng Chen, National Taiwan University

#### 2 Efficient Spectrum Management among Spectrum Sharing UMTS Operators

Kamran Ashrad, Klaus Moessner, University of Surrey

#### 3 Frequency Domain Differential Energy Detection Based On Extreme Statistics For OFDM Source Sensing

Parisa Cheraghi, Yi Ma, Rahim Tafazolli, University of Surrey

#### 4 Maximum Flow-Segment Based Channel Assignment and Routing in Cognitive Radio Networks

Changliang Zheng, Beijing University of Posts and Telecommunications; Ren Ping Liu, CSIRO; Xun Yang, CSIRO ICT Centre; Iain B. Collings, CSIRO; Zheng Zhou, Beijing University of Posts and Telecommunications; Eryk Dutkiewicz, Macquarie University

#### 5 Multitaper Based Spectrum Sensing for Cognitive Radio: Design and Performance

Q.T. Zhang, City University of HK

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### 9D: Multiple Access System

Chair: Hani Elgebal

#### 1 A Fast Collision Detection Algorithm in IEEE 802.11 through Physical Layer SINR Monitoring

Tian Zhou, University of Western Ontario; Xianbin Wang, Weikun Hou, The University of Western Ontario

#### 2 Collision Resolution in Slotted ALOHA with Multi-User Physical-Layer Network Coding

Giuseppe Cocco, Christian Ibars, Deniz Gunduz, Centre Tecnològic de Telecommunicacions de Catalunya; Oscar del Rio Herrero, European Space Agency

#### 3 HARQ Control Scheme by Fuzzy Q-Learning for HSPA+

Wen-Ching Chung, National Chiao Tung University; Ying-Yu Chen, Chung-Ju Chang, National Chiao Tung University

#### 4 Mitigation of Macro-Femto Co-channel Interference by Spatial Channel Separation

Feng Seng Chu, Kwang-Cheng Chen, National Taiwan University

#### 5 Performance Improvement of Fractional Frequency Reuse in WiMAX Network

Ahmed Darwish, Ahmed Ibrahim, Ashraf Badawi, Hani Elgebal, Intel Corporation

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## 9E: Spectrum Detection and Multiple Access

Chair: Tharmalingam Ratnarajah

- 1 Applicability of Orthogonal Frequency Division Multiple Access in Satellite Communication**  
Hee Wook Kim, Tae Cheol Hong, Kun Seok Kang, Bonjun Gu, ETRI
- 2 Joint Spectrum Sensing in Distributed MIMO Systems**  
Shuyang Yu, Xiangyang Wang, Southeast University
- 3 MAC efficiency enhancement with prioritized access opportunity exchange protocol for 60 GHz short-range one-to-one communications**  
Tomoya Tandai, Ryoko Matsuo, Takeshi Tomizawa, Hideo Kasami, Takahiro Kobayashi, Toshiba Corporation
- 4 Optimal Soft Combination and Cooperative sensing in Distributed Antenna Systems**  
Wentao Yu, Shuyang Yu, Xiangyang Wang, Southeast University
- 5 Performance Analysis of Multiple-Access Channel in the Presence of Multiple Interferers**  
Md. Zahurul I. Sarkar, T. Ratnarajah, Queen's University, Belfast

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## 9F: Wireless Networks Modeling

Chair: Fulvio Babich

- 1 Fade Duration Distribution and Minimum Duration Outage in Weibull Fading Channels**  
Miao Wang, Qiuyan Liu, Zhangdui Zhong, Xia Chen, Beijing Jiaotong University
- 2 Information Capacity Comparisons Over Gaussian Communication Channels With ISI When Used With Single Carrier Transmission With MMSE-DFE Receiver, or Multicarrier and OFDM Receivers.**  
Titus I. Eneh, Predrag Rapajic, Kwashie Amartei Anang, Lawal Bello, University of Greenwich
- 3 Multihop Wireless Channel Models suitable for Stochastic Petri Nets and Markov State Analysis**  
Rainer Schoenen, RWTH Aachen University; Mohamed A. Rashad Salem, Akram Bin Sediq, Halim Yanikomeroglu, Carleton University
- 4 Outage Probability of Cooperative Relay Systems in Two-Wave with Diffuse Power Fading Environments**  
Yao Lu, Wang Xiaoxiang, Jihua Lu, Beijing Institute of Technology
- 5 Secrecy Rate of Time Switched Transmit Diversity System**  
Sinan Sinanovic, University of Edinburgh; Marco Di Renzo, French National Center for Scientific Research (CNRS); Harald Haas, University of Edinburgh

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## 9G: Antenna

- 1 Behavioral Power Amplifier Modeling and Digital Predistorter Design with a Chirp Excitation Signal**  
Leticia Aladren, Paloma Garcia-Ducar, Jesús de Mingo, Cesar Sanchez-Perez, Pedro Luis Carro, University of Zaragoza
- 2 Comparison of Antenna Arrays for MIMO System in High Speed Mobile Scenarios**  
Binghao Chen, Zhangdui Zhong, Bo Ai, Xia Chen, Beijing Jiaotong University
- 3 Improving Digital Predistortion Mismatch Sensitivity using Tunable Matching Networks**  
Cesar Sanchez-Perez, Jesús de Mingo, Paloma Garcia-Ducar, Pedro Luis Carro, Antonio Valdovinos, University of Zaragoza
- 4 Performance Evaluation of Cross-Polarized Antenna Selection over 2 GHz Measurement-Based Channel Models**  
Hiroshi Nishimoto, Akinori Taira, Hiroshi Kubo, Mitsubishi Electric Corporation; Man-On Pun, Ramesh Annavajjala, Mitsubishi Electric Research Labs; Andreas F. Molisch, University of Southern California

## 5 Printed Inverted-F Monopole Antenna for Internal Multi-band Mobile Phone Antenna

Pang-Chun Tsai, Ding-Bing Lin, National Taipei University of Technology; I-Tseng Tang, National University of Tainan; Hsin-Piao Lin, Peng-Su Chen, National Taipei University of Technology

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## 9H: Vehicle Networking

- 1 On the Performance of Sparse Vehicular Networks with Road Side Units**  
Andre B. Reis, University of Aveiro; Susana Sargento, IT - Universidade de Aveiro; Ozan Tonguz, Carnegie Mellon University
- 2 Effect of the Traffic-Load Dependent Vehicle Routing Algorithm on the Connectivity in VANETS**  
Abbas Kazerooni, Farid Ashtiani, Sharif University of Technology
- 3 TREBOL: Tree-Based Routing and Address Autoconfiguration for Vehicle-to-Internet Communications**  
Marco Gramaglia, Institute IMDEA Networks & Carlos III University of Madrid; Maria Calderon, Carlos J. Bernardos, Universidad Carlos III de Madrid

Wednesday, 18 May 14:00-15:00 Pest

## 9I: Traffic Management 2

- 1 Distributed Cooperative On-Demand Transportation**  
Markus Duchon, Corina Schindhelm, Robert Lasowski, Ludvig Maximilian University of Munich
- 2 Joint Pricing and ADME's Selection Strategy in Adaptation Management Framework**  
Merat Shahidi, Nika Naghavi, Hamid Aghvami, King's College London
- 3 OPSSA: A Media-Aware Scheduling Algorithm for Scalable Video Streaming over Simultaneous Paths in NEMO-Based Mobile Networks**  
James Nightingale, Qi Wang, University of the West of Scotland; Christos Grecos, University of West of Scotland

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## 9P: Poster 9

- 1 Effects of Delay Constraints on Multihop Networks using Rateless Codes**  
Ashish James, A.S. Madhukumar, Nanyang Technological University; Ernest Kurniawan, Institute for Infocomm Research; Surya Dharma Tio, Nanyang Technological University
- 2 Altruism for Energy Efficiency in Ad hoc Networks**  
Minh Tri Tran, Vilmos Simon, Budapest University of Technology and Economics
- 3 Optimum Topology in Clustered IEEE 802.15.4 Sensor Networks with Decentralized Detection**  
Marco Martalo, University of Parma; Chiara Buratti, University of Bologna; Gianluigi Ferrari, University of Parma; Roberto Verdone, University of Bologna
- 4 Multi-Carrier Based Cooperative Cognitive Network**  
Negin Golrezaei, Masoumeh Nasiri-Kenari, Sharif University of Technology; Parisa Mansourifard, Sharif university of technology
- 5 Cooperative Relaying Schemes for Narrow-band Frequency Hopping Wireless Ad Hoc Network**  
Güven Yenihayat, Furuzan Atay Onat, Ertu?rul Kola?as?o?lu, Aselsan Inc.; Ali Ozgur Yilmaz, Middle East Technical University
- 6 Joint Cell-Sites Selection and Power Control for Cognitive Radios with Outage Probability Requirement**  
Chin Choy Chai, Yong Huat Chew, Institute for Infocomm Research
- 7 Mobile peer-to-peer spreading of content**  
Csaba Varga, László Blázovics, Hassan Charaf, Budapest University of Technology and Economics; Frank H.P. Fitzek, Aalborg University
- 8 Data Protection and Crypto Algorithms' Performance in RSMAD**  
Slawomir Gajewski, Marcin Sokol, Malgorzata Gajewska, Gdansk University of Technology

**9 H.264/SVC Multiple Description Coded Video Transmission over MIMO System with Power Control Based Antenna Selection**

Daniela Radakovic, Rashid Ansari, Yingwei Yao, University of Illinois at Chicago

**10 Capacity of TDD MISO Beamforming Systems with Channel Estimation Error and Delay**

ZhouBaolong, Shanghai Jiaotong University, Alcatel-Lucent Shanghai Sbell; Zhang Lei, Shengjie Zhao, Zhao Kun, Jiang Zhining, Alcatel-Lucent Shanghai Sbell

**11 Prediction Model for Turbo-Coded OFDMA-Systems Employing Rate Matching and HARQ**

Alexey Davydov, Intel; Apostolos Papanthassiou, Intel Corporation

**12 Energy Efficiency Analysis of Idealized Coordinated Multi-Point Communication System**

Fabien Heliot, Muhammad Ali Imran, Rahim Tafazolli, University of Surrey

**13 An Unscented Kalman Filter for ICI Cancellation in High-Mobility OFDM Systems**

Xinming Zhang, Bo Yang, Shan Li, Beijing University of Posts and Telecommunications

**14 Low PAPR White LED Communication System Using SC-FDM Techniques**

Xun Li, Youngju Kim, Noeyoon Park, Chungbuk National University

**15 Capacity Improvement for Cell-edge Primary User with the Cooperation of the Secondary User in DAS**

Liping Huang, Dongming Wang, Xiangyang Wang, Southeast University

**16 On the Impact of Explicit Uplink Information on Autonomous Component Carrier Selection for LTE-A Femtocells**

Fernando Sanchez-Moya, Juan Villalba-Espinosa, University of Granada; Luis Guilherme Uzeda Garcia, Aalborg University; Klaus I. Pedersen, Nokia Siemens Networks; Preben E. Mogensen, Nokia Networks, Aalborg, Denmark

**17 A New ACK Packet Transmission Scheme for Wireless Network Coding Systems Based on IEEE802.11a**

Nobuaki Otsuki, Takatoshi Sugiyama, NTT Access Network Service Systems Laboratories

**18 Radio-Efficient Adaptive Modulation and Coding: Green Communication Perspective**

Liqiang Zhao, Xidian University

**19 Capacity and energy efficiency of picocell deployment in LTE networks**

Louai Saker, Salah Eddine Elayoubi, Orange Labs; Letian Rong, Orange Labs, Tokyo; Tijani Chahed, Telecom SudParis

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**10A: MAC 2**

**1 One shot Slot TDMA-based Reservation MAC Protocol for Wireless Ad hoc Networks**

Sayadi Afef, Bachar Wehbi, Montimage; Anis Laouti, Télécom and Management SudParis

**2 Performance Evaluation of Two Slot Assignment Strategies under Distributed TDMA MAC protocol over Mobile Ad Hoc Networks**

Floriano De Rango, Annalisa Perrotta, University of Calabria

**3 Predictive-TDMA: A Markov Chain Based MAC Protocol for Mesh Networks**

Ziqi Fan, Lei Wang, Xiaohui Wang, Dalian University of Technology

**4 Quantitative Analysis of the VANET Connectivity: Theory and Application**

Xin Jin, Weijie Su, Yan Wei, Peking University

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**10B: Transmission Techniques 2**

Chair: Li Zhang

**1 An Improved Constellation Extension Scheme for PAPR Reduction in OFDM Systems**

Chin-Liang Wang, Shun-Sheng Wang, Yi-Ching Huang, National Tsing Hua University

**2 Design and Performance Assessment of Fixed Complexity Spectrally Efficient FDM Receivers**

Safa Isam, Izzat Darwazeh, University College London

**3 Generalized Phase Spatial Shift Keying Modulation for MIMO Channels**

Raymundo Ramirez Gutierrez, Li Zhang, Jaafar M. H. Elmirghani, University of Leeds; Rui Fa, University of Liverpool

**4 Joint-Over-Transmissions Project and Forward Relaying for Single Carrier Broadband MIMO ARQ Systems**

Hatim Chergui, Huawei Technologies; Tarik Ait-Idir, INPT; Mustapha Benjillali, KAUST; Samir Saoudi, Telecom Bretagne

**5 Time-Domain Low-Complexity Symbol Combining PAPR Mitigation Scheme for OFDM Systems**

Lin Yang, University of Manchester; Tao Yang, Bell Labs; Wei Fang, R&I, Alcatel-Lucent Shanghai Bell

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**10C: PHY Performance Analysis**

Chair: She Xiaoming

**1 Group Interactions in Wireless Cooperative Networks**

Leonardo Militano, University of Reggio Calabria; Frank H.P. Fitzek, Aalborg University; Antonio Iera, Antonella Molinaro, University 'Mediterranea' of Reggio Calabria

**2 Transmitting UWB-OFDM using 16-QAM over Hybrid Flat Fading Channels**

Saqib Chaudhry, H S Al Raweshidy, Brunel University

**3 Investigation of Control Signaling and Reference Signal Design for Downlink MU-MIMO in LTE-Advanced**

Xiaoming She, DoCoMo Beijing Comms, Hidekazu Taoka, DoCoMo Comms Labs Europe; Jianchi Zhu, Lan Chen, DoCoMo Beijing Comms

**4 Performance Analysis of Relays in LTE for a Realistic Suburban Deployment Scenario**

Claudio Coletti, Aalborg University; P. E. Mogensen, Nokia Siemens Networks, Aalborg; Ralf Irmer, Vodafone

**5 Practical Adaptive Transmission with Respect to Rational Decision Theory**

Marko Höyhtyä, Adrian Kotelba, Aarne Mämmelä, VTT Technical Research Centre of Finland

**6 The Symbol Error Performance and Diversity Gain of Two Wireless Relay Networks**

Shengbo Zhang, Southeast University, China; Xiang-Gen Xia, University of Delaware

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**10D: Simulation and Performance Evaluation**

Chair: Dongming Wang

**1 Dual Cell HSDPA Application Performance**

Siddharth Mohan, Rohit Kapoor, Bibhu Mohanty, Qualcomm Inc.

**2 Performance Analysis of a Live Mobile Broadband - HSDPA Network**

Fourat Haider, Erol Hepsaydir, Nicola Binucci, Hutchison3G

**3 Supporting High Speed on WiMAX: from Theory to Practice**

Alan Rottinghaus, Raghunath Hariharan, Motorola; Xingang Guo, Anand Rangarajan, Rotem Avivi, Intel Corporation; Alexander Busch, Brian Conner, BMW Group

**4 System Level Evaluation of Interference in Vehicular Mobile Broadband Networks**

David Halls, Andrew Nix, Mark Beach, University of Bristol

**5 System-level simulation of LTE/LTE-A for IMT-Advanced Systems**

Jung-Hoon Noh, Seong-Jun Oh, Korea University

**6 The Analysis and Evaluation of Uplink Transmit Diversity Schemes in Multi-user HSUPA System**

Chi Zhang, Yongyu Chang, Shuhui Liu, Dacheng Yang, Beijing University of Posts and Telecommunications

*Wednesday, 18 May 15:30-17:00 Corso A*

**10E: Multicasting and Broadcasting**

*Chair: Yiqing Zhou*

**1 A Reliable Broadcast and Unicast MAC Protocol for ad hoc Networks**

Miguel Luís, Rodolfo Oliveira, Luis Bernardo, Rui Dinis, Universidade Nova de Lisboa

**2 Cell Throughput of Multicast Services in OFDM-Based Distributed Antenna Systems**

Yiqing Zhou, Institute of Computing Technology, Chinese Academy of Science; Zhengang Pan, Hong Kong Applied Science and Technology Institute Corp.; Lin Tian, Gang Sun, Jinglin Shi, Institute of Computing Technology, Chinese Academy of Sciences

**3 Cooperative Multicast based on Data Sharing in Integrated Cellular and Short-range Networks**

Jung-Min Moon, Dong-Ho Cho, KAIST

**4 Macrodiversity Antenna Combining for MIMO-OFDM Cellular Mobile Networks in Supporting Multicast Traffic**

Hsien-Wen Chang, Industrial Technology Research Institute; Li-Chun Wang, Zhe-Hua Chou, National Chiao Tung University

**5 Minimizing the Number of IGMP Report Messages for Receiver-driven Layered Video Multicasting**

S.H.Shah Newaz, Youngin Bae, Jongmin Lee, JunKyunChoi, KAIST

**6 Reliable Broadcast Transmission in Vehicular Networks Based on Fountain Codes**

Robert Budde, Stefan Nowak, Ruediger Kays, Dortmund University of Technology

*Wednesday, 18 May 15:30-17:00 Corso B*

**10F: Traffic Management and Network Planning**

*Chair: Satoshi Nagata*

**1 A Markov Model for HSDPA TNL Flow Control and Congestion Control Performance Analysis**

Carmelita Görg, Thushara Lanka Weerawardane, University of Bremen; Ranjit Perera, University of Moratuwa, Sri Lanka

**2 A Novel Initial Cell Search Scheme in TD-LTE**

YAN Zhi, Fujitsu R&D Center Co., Ltd

**3 An Effective Cooperative Load Balancing Scheme for Heterogeneous Network**

li Bo, BUPT; Dacheng Yang, Yafeng Wang, Beijing University of Posts and Telecommunications; Dun Luo, BUPT

**4 Cell Search Time Performances Using Multipath Signals in LTE Downlink**

Mamoru Sawahashi, Tokyo City University; Satoshi Nagata, NTT DOCOMO, INC.; Yuki Tsuchida, Tokyo City University

**5 Congestion Control in Evolved HSPA Systems**

Balazs Heder, Csaba Vulkan, Nokia Siemens Networks

**6 Performance Comparison of Loading Algorithms for 80 MHz IEEE 802.11 WLANs**

Oscar Punal, Humberto Escudero, James Gross, RWTH Aachen University

*Wednesday, 18 May 15:30-17:00 Istvan*

**10G: Network Performance Optimization**

**1 A Joint Optimization of Antenna Parameters in a Cellular Network Using Taguchi's Method**

Ahmed Awada, Bernhard Wegmann, Nokia Siemens Networks; Ingo Viering, Nomor Research GmbH; Anja Klein, Darmstadt University of Technology

**2 Coding Aware Routing in Wireless Networks with Bandwidth Guarantees**

Ronghui Hou, Xidian University; King-Shan Lui, University of Hong Kong; Jiandong Li, Xidian University

**3 Direct Derivation of the Gradient Method for Network Utility Maximization in Broadcast Channels and its Application**

Heejin Joung, Yonsei University; Cheol Mun, Chungju National University; Jae-Yun Ko, Samsung Electronics; Jong-Gwan Yook, Yonsei University

**4 Performance of LTE Self-Optimizing Networks Uplink Load Balancing**

Timo Nihtilä, Magister Solutions Ltd; Jussi Turkka, Tampere University of Technology; Ingo Viering, Nomor Research GmbH

**5 Self-Organizing Adaptive Clustering for Cooperative Multipoint Transmission**

Ralf Weber, Andrea Garavaglia, Matthias Schulist.; Stefan Brueck, Qualcomm CDMA Tech., Germany; Armin Dekorsy, University of Bremen

**6 Utility Maximization in LTE-Advanced Systems with Carrier Aggregation**

Yuanye Wang, Aalborg University; Klaus I. Pedersen, Nokia Siemens Networks; Troels B. Sørensen, Preben Mogensen, Aalborg University

*Wednesday, 18 May 15:30-17:00 Buda*

**10H: Signal Processing for Sensor Networks**

**1 An Improved Wyner-Ziv Video Coding for Sensor Network**

Feng Ye, Aidong Men, Beijing University of Posts and Telecommunications

**2 Blind Reduced-rank Receiver with Column Adaptation for DS-UWB Systems Based on Joint Iterative Optimization and CCM Criterion**

Sheng Li, Ilmenau University of Technology; Rodrigo de Lamare, University of York

**3 Closed-Form Expression for the Exact Cramér-Rao Bound of Timing Recovery Estimators from MSK Transmissions**

Ahmed Masmoudi, Faouzi Bellili, Sofiene Affes, INRS-EMT; Alex Stephenne, Huawei Technologies Co.,Ltd. and INRS-EMT

**4 Power-Efficient Distributed Estimation in Hybrid MAC Wireless Sensor Networks**

Ju Chieh Liu, Char-Dir Chung, National Taiwan University

*Wednesday, 18 May 15:30-17:00 Pest*

**10I: Localization and Tracking 2**

**1 On the Application of a Novel Hybrid Harmony Search Algorithm to the Radar Polyphase Code Design Problem**

Sergio Gil-Lopez, Javier Del Ser, TECNALIA-TELECOM; Angel Perez-Bellido, Sancho Salcedo-Sanz, Jose A. Portilla-Figueras, Universidad de Alcalá de Henares

**2 Order-Based Localization Scheme for Ad Hoc Sensor Networks**

Yen-Hsu Chen, National Taiwan University; Wei-Ho Chung, Academia Sinica; Shih-Yi Yuan, Feng Chia University; Sy-Yen Kuo, National Taiwan University

**3 Pairwise Error Probability Analysis for Power Delay Profile Fingerprinting based Localization**

Turgut Oktem, Dirk T.M. Slock, Eurecom

**4 Positioning Based on 2-D Angle of Arrival Estimation**

Daniele Inserra, Andrea Tonello, Nicola Moret, University of Udine

**5 Unsupervised learning of propagation time for indoor localization**

Andrei Szabo, Siemens AG; Tobias Weiherer, Technische Universitaet Muenchen; Joachim Bamberger, Siemens AG, CT IC 4

# W1: International Workshop on Self-Organizing Networks, IWSO

## Workshop Chairs:

Fredrik Gunnarsson, Ericsson Research, Linköping, Sweden

Thomas Kürner, TU Braunschweig, Braunschweig, Germany

Lars Christoph Schmelz, Nokia Siemens Networks Research, Munich, Germany

Sunday, 15 May 9:15-11:45 Buda

## IWSO1: Mobility Robustness Optimization

Chair: Fredrik Gunnarsson, Ericsson Research

### 1 LTE handover optimisation using uplink ICIC

Gao Hui, Huawei; Peter Legg, Huawei Technologies Sweden AB

### 2 Weighted performance based handover parameter optimization in LTE

Thomas Jansen, TU Braunschweig; Irina Balan, IBBT, Gent; Szymon Stefanski, Nokia Siemens Networks; Ingrid Moerman, Ghent University; Thomas Kürner, Technische Universitaet Braunschweig

### 3 Coordinating Handover Parameter Optimization and Load Balancing in LTE Self-Optimizing Networks

Andreas Lobinger, Szymon Stefanski, Nokia Siemens Networks; Thomas Jansen, TU Braunschweig; Irina Balan, IBBT, Gent

### 4 Optimization of Handover Parameters in a Realistic Urban Scenario for LTE Networks

Jaime Rodríguez Membrive, Isabel de la Bandera, Pablo Muñoz, Raquel Barco, University of Málaga

Posters & Demos and break for lunch (11.45 – 13.30)

Sunday, 15 May 13:30-15:00 Buda

## IWSO2: Self-configuration

Chair: Lars Christoph Schmelz, Nokia Siemens Networks

### 1 Automatic Site Identification and Hardware-to-Site Mapping for Base Station Self Configuration

Tobias Bandh, TU München; Henning Sanneck, Nokia Siemens Networks GmbH & Co.KG

### 2 Evaluation of the Automatic Neighbor Relation Function in a Dense Urban Scenario

Christian M. Mueller, Universität Stuttgart; Hajo Bakker, Alcatel-Lucent Bell Labs Stuttgart; Lutz Ewe, Alcatel-Lucent Bell Labs Germany

### 3 Evaluations of LTE Automatic Neighbor Relations

Anders Dahlén, Arne Johansson, TeliaSonera; Fredrik Gunnarsson, Johan Moe, Thomas Rimhagen, Harald Kallin, Ericsson Research

Posters & Demos with Coffee Break in Foyer (15.00 – 16.00)

Sunday, 15 May 16:00-17:00 Buda

## IWSO3: Coverage and Capacity Optimisation

Chair: Thomas Kürner, TU Braunschweig

### 1 Potential of intra-LTE, intra-frequency load balancing

Siegfried Klein, Alcatel-Lucent Bell Labs; Ingo Karla, Bell Labs Germany; Edgar Kuehn, Alcatel-Lucent Bell Labs

### 2 Cell Outage Compensation in LTE Networks: Algorithms and Performance Assessment

Mehdi Amirijoo, Ericsson Research, Ericsson AB, Sweden; Ljupco Jorgueski, Remco Litjens, TNO ICT; Lars C. Schmelz, Nokia Siemens Networks GmbH & Co. KG, Munich, Germany

### 3 Joint Optimization of Radio Resources in Small and Macro Cell Networks

Chung Shue Chen, Francois Baccelli, INRIA-ENS; Rouillet Laurent, Alcatel Lucent Bell Labs France

Sunday, 15 May 11:45-13:30 & 15:00-16:00

## IWSO demos

### 1 An Experimental System for SON Function Coordination

Tobias Bandh, TU München; Henning Sanneck, Nokia Siemens Networks GmbH & Co.KG; Raphael Romeikat, University of Augsburg

### 2 Radio Channel Degradation Detection and Diagnosis Based on Statistical Analysis

Szabolcs Nováczki, Péter Szilágyi, Nokia Siemens Networks

### 3 Self-Configuration in LTE Radio Networks: Automatic generation of eNodeB parameters

Andreas Eisenblätter, Atesio GmbH; Ulrich Türke, Atesio, Berlin, Germany; Lars Christoph Schmelz, Nokia Siemens Networks

Sunday, 15 May 11:45-13:30 & 15:00-16:00

## IWSO posters

### 1 Detection of Sleeping Cells in LTE Networks Using Diffusion Maps

Fedor Chernogorov, University of Jyväskylä; Jussi Turkka, Tampere University of Technology; Tapani Ristaniemi, University of Jyväskylä; Amir Averbuch, Tel-Aviv University

### 2 Influence of Different Factors on X-Map Estimation in LTE

Michaela Neuland, TU Braunschweig; Mehdi Amirijoo, Ericsson Research, Ericsson AB, Sweden; Thomas Kürner, Technische Universitaet Braunschweig

### 3 Optimization of a Fuzzy Logic Controller for Handover-based Load Balancing

Pablo Muñoz, university of Malaga; Raquel Barco, University of Málaga; Isabel de la Bandera, University of Malaga; Matías Toril, University of Málaga; Salvador Luna Ramírez, University of Málaga.

### 4 Self-optimisation of admission control and handover parameters in LTE

Bart Sas, Kathleen Spaey, IBBT - University of Antwerp; Irina Balan, IBBT, Gent, Belgium; Kristina Zetterberg, Ericsson Research, Ericsson AB; Remco Litjens, TNO ICT

### 5 Self-X Evaluation Model for Wireless Mesh Networks

Martin Kasparick, Alexander Gladisch, Robil Daher, Martin Krohn, Djanshid Tavangarian, University of Rostock

### 6 Towards Self-Organizing Mobility Robustness Optimization in Inter-RAT Scenario

Ahmed Awada, Bernhard Wegmann, Dirk Rose, Nokia Siemens Networks; Ingo Viering, Nomor Research GmbH; Anja Klein, Darmstadt University of Technology

### 7 Vertical antenna tilt optimization for LTE base stations

Harald Eckhardt, Siegfried Klein, Alcatel-Lucent Bell Labs; Markus Gruber, Alcatel-Lucent Bell Labs Germany

# W2: 2<sup>nd</sup> Green Wireless Communications and Networks Workshop (GreeNet)

Chair:

John Thompson, University of Edinburgh

Sunday 15 May 2011 9:00-10:10 Pest

## Session 1

Chair: John Thompson, University of Edinburgh

### 1 Opening Remarks

John Thompson, University of Edinburgh

### 2 An Operator's Perspective on Data Growth and Energy Consumption (Plenary Talk)

David Lister, Vodafone

### 3 Progress in Green Radio Research and Fundamental Framework (Plenary Talk)

Shugong Xu, Huawei

Coffee Break in Foyer (10.10 – 10.30)

Sunday 15 May 2011 10:30-12:10 Pest

## Session 2: Energy Efficient Networks

Chair: Tim O'Farrell, Sheffield University

### 1 Cellular Energy Efficiency Evaluation Framework (Invited Paper)

Gunther Auer, DOCOMO Euro-Labs; Vito Giannini, IMEC, Leuven, Belgium; Istvan Godor, Per Skillermark, Magnus Olsson, Ericsson Research; Muhammad Ali Imran, University of Surrey; Dario Sabella, Telecom Italia; Manuel J. Gonzalez, TTI, Santander, Spain; Claude Desset, IMEC; Oliver Blume, Alcatel-Lucent

### 2 Handover mechanisms for planned cell outage in twin state green wireless networks

Mythri Hunukumbure, Rajni Agarwal, Sunil Vadgama, Fujitsu Laboratories of Europe Ltd.

### 3 Total Network Base Station Energy Cost vs. Deployment

Mårten Ericson, Ericsson Research

### 4 Energy-Efficient Cellular Network Planning under Insufficient Cell Zooming

Xiangnan Weng, Dongxu Cao, Zhisheng Niu, Tsinghua University

### 5 Vodafone Single RANTM Active Antenna – Efficient Mobile Broadband Networks

Clara Serrano, María Díaz, Alberto Gómez, Miguel Arranz, Santiago Tenorio, Vodafone

Sunday 15 May 2011 13:30-15:10 Pest

## Session 3: Energy Efficient Techniques

Chair: David Lister, Vodafone

### 1 GREENET – An Early Stage Training Network in Enabling Technologies for Green Radio (Invited Paper)

Marco Di Renzo, French National Center for Scientific Research (CNRS); Luis Alonso, UPC; Frank H.P. Fitzek, Aalborg University; Andreas Foglar, Innoroute; Fabrizio Granelli, University of Trento; Fabio Graziosi, WEST; Christophe Gruet, CASSIDIAN; Harald Haas, University of Edinburgh; George Kormentzas, University of Aegean; Ana I. Pérez-Neira, Technical University of Catalonia; Jonathan Rodriguez, Instituto de Telecomunicações-Aveiro; John Thompson, University of Edinburgh; Christos Verikoukis, CTTC

### 2 Reducing Energy Consumption Through Adaptation of Number of Active Radio Units

Mozghan Hedayati, Mehdi Amirijoo, Pål Frenger, Johan Moe, Ericsson Research, Ericsson AB

### 3 An energy-efficiency comparison of RLNC and ARQ in the presence of FEC

Anna Pantelidou, Kalle Lähtekangas, Centre for Wireless Communications, University of Oulu, Finland; Matti Latva-aho, University of Oulu, Finland

### 4 Practical Network Coding for Two Way Relay Channels in LTE Networks

Hassan Hamdoun, Pavel Loskot, Timothy O'Farrell, Jianhua He, Swansea University;

### 5 Impact of Non-ideal Efficiency on Bits per Joule Performance of Base Station Transmissions

Yan Chen, Shunqing Zhang, Shugong Xu, Huawei Technologies Co. Ltd.

Coffee Break & Poster Session (15.10 – 16.10)

Sunday 15 May 2011 15:10-16:10 Pest

## 12C: Greenet Posters

### 1 Base Station Location Optimization for Minimal Energy Consumption in Wireless Networks

Pablo Gonzalez-Brevis, Jacek Gondzio, University of Edinburgh; Yijia Fan, H. Vincent Poor, Princeton University; John Thompson, Ioannis Krikidis, Pei-Jung Chung, University of Edinburgh

### 2 Energy-Efficient Link Adaptation with Shadow Fading

Christian Isheden, Gerhard Fettweis, Technische Universität Dresden

### 3 Resource Allocation Optimization for Device-to-Device Communication Underlying Cellular Networks

Bin Wang, Li Chen, Xiaohang Chen, Xin Zhang, Dacheng Yang, Beijing University of Posts and Telecommunications

### 4 Energy Efficiency by Cell Reconfiguration; MIMO to non-MIMO and 3-Cell Sites to Omni

Jan Christofferson, Ericsson Research

### 5 A ZigBee Smart Energy Implementation for Energy Efficient Buildings

Cengiz Gezer, Chiara Buratti, University of Bologna

### 6 Energy Efficiency and Optimal Resource Allocation in Cooperative Wireless Relay Networks

Xiuxian Lao, Laurie Cuthbert, Queen Mary University of London; Tiankui Zhang, Lin Xiao, Beijing University of Posts and Telecommunications

### 7 Purpose-driven, Self-growing Networks: a framework for enabling cognition in systems of systems

Bernd Bochow, Marc Emmelmann, Fraunhofer FOKUS

### 8 Wireless Broadband Architecture Supporting Advanced Metering Infrastructure

Ronald Mao, Vibhor Julka, Huawei

Sunday 15 May 2011 16:10-17:30 Pest

## Session 4

Chair: John Thompson, University of Edinburgh

### 1 Energy and Cost Efficient Ultra-High Capacity Wireless Access (Plenary Talk)

Jens Zander, KTH Stockholm

### 2 GreeNet Panel Session

### 3 Closing Remarks

John Thompson, University of Edinburgh

## W3: C2POWER

Chairs: Jonathan Rodriguez, I. Telecomunicações; Kandeepan Sithampanathan, CREATE-NET; Klaus Mössner (U. Surrey)  
TPC Chair – Ayman Radwan, I. Telecomunicações

Sunday, 15 May 9:15-10:15 Margit A

### C2POWER Keynote

#### 1 Green Mobile Clouds

Frank Fitzek, University of Aalborg

Sunday, 15 May 10:30-12:00 Margit A

### C2POWER Technical Session 1

#### 1 Novel cluster formation framework for energy efficient short-range cooperative strategies

Jacek Kibilda, Wrocławskie Centrum Badań EIT+; Sithampanathan Kandeepan, Create-Net; Radoslaw Piesiewicz, WCB - EIT+

#### 2 A Novel Relay Selection Game in Cooperative Wireless Networks based on Combinatorial Optimization

Firooz Bashashi Saghezchi, Alberto Nascimento, Michele Albano, Ayman Radwan, Jonathan Rodriguez, Instituto de Telecomunicações

#### 3 Multi-Hop versus Overlay Networks: A Realistic Comparison Based on Energy Requirements and Latency

Marcos Katz, University of Oulu; Frank H.P. Fitzek, Janus Heide, Morten V. Pedersen, Aalborg University; Gregó Ertli, Budapest University of Technology and Economics

#### 4 Enablers for Energy-Aware Cooperative Decision and Control in Wireless Networks

Georgios P. Koudouridis, Gunnar Hedby, Huawei Technologies Sweden AB; Woon Hau Chin, Toshiba Research Europe Limited; Andreas Merentitis, Makis Stamatelatos, Nancy Alonistioti, University of Athens; Opher Yaron, Interdisciplinary Institute for Broadband Technology

#### 5 A Context-Aware Vertical Handover Framework Towards Energy-Efficiency

Dionysis Xenakis, Nikos Passas, University of Athens; Lorenzo Di Gregorio, Lantiq Deutschland GmbH; Christos Verikoukis, CTTC

#### 6 A Study of Energy Efficient Transparent Relay using Cooperative Strategy

Haesik Kim, Tao Chen, VTT Technical Research Centre of Finland

Sunday, 15 May 13:30-15:00 Margit A

### C2POWER Panel

#### Energy Efficiency in Future Telecommunications: Technical Issues, Standardization Activities & Business Requirements

Raffaele Bola, CNIT – representing EU-FP7 ECONET  
Nancy Alonistioti [Univ. Athens] – representing EU-FP7 CONSERN  
István Gódor, Ericsson – representing EU-FP7 EARTH  
Ayman Radwan, Instituto de Telecomunicações – representing the EU-FP7 C2POWER project

Sunday, 15 May 15:15-16:45 Margit A

### C2POWER Technical Session 2

#### 1 Energy-Efficient Spectrum Sensing Using Cyclostationarity

Quang Thai, Sam Reisenfeld, Macquarie University; Sithampanathan Kandeepan, Gian Mario Maggio, Create-Net

#### 2 An Efficient Flexible Common Operator for FFT and Viterbi Algorithms

Malek Naoues, CEA; Dominique Noguét, CEA-LETI; Yves Louët, SUPELEC; Adel Ghazel, SUP'COM; Khaled grati, Cirta'Com Laboratory

#### 3 Dual-hop Spatial Modulation (Dh-SM)

Nikola Serafimovski, Sinan Sinanovic, University of Edinburgh; Marco Di Renzo, French National Center for Scientific Research (CNRS); Harald Haas, University of Edinburgh

#### 4 Robust Cooperative Relaying in an Amplify-and-Forward Network

Gubong Lim, Leonard J. Cimini, Jr., University of Delaware

## W4: Broadband evolved Femtocell Technologies (BeFEMTO)

Chair:

Thierry Lestable, Sagemcom SAS

Sunday, 15 May 9:30-11:10 Margit B

### BeFEMTO Session 1

Chair: Thierry Lestable, Sagemcom SAS

#### 1 Welcome & Introduction

Thierry Lestable, Sagemcom SAS

#### 2 Keynote

Mérouane Debbah, Head of Alcatel-Lucent Flexible Radio Chair in Supélec

#### 3 Use Cases, Enablers and Requirements for Evolved Femtocells

Alexander Tyrrell, DoCoMo Euro-Labs; Frank A. Zdarsky, NEC Europe Ltd.; Emilio Mino, Telefonica ID; Mariano Lopez, TTI, Spain

#### 4 LTE Femtocells: System Design and Performance Analysis

Alan Barbieri, Aleksandar Damnjanovic, Tingfang Ji, Juan Montojo, Yongbin Wei, Durga Malladi, Qualcomm

#### 5 Localization of Data and Control Plane Traffic in Enterprise Femtocell Networks

Frank A. Zdarsky, Andreas Maeder, Stefan Schmidt, NEC Europe

Sunday, 15 May 11:30-12:50 Margit B

### BeFEMTO Session 2

Chair: Thierry Lestable, Sagemcom SAS

#### 1 Experimental Characterization of UMTS Femtocell Propagation

Alessandro Bazzi, WiLab, IEIIT-BO/CNR, University of Bologna; Gianni Pasolini, Giovanni Chirco, Oreste Andrisano, University of Bologna; Piergiorgio Faraon, Telecom Italia

#### 2 Graph-Based Dynamic Frequency Reuse in Femtocell Networks

Serkan Uygungelen, Gunther Auer, Zubin Bharucha, DOCOMO Euro-Labs

#### 3 Distributed Learning in Multiuser OFDMA Femtocell Networks

Ana Maria Galindo-Serrano, Lorenza Giupponi, Centre Tecnologic de Telecomunicacions de Catalunya, Gunther Auer, DOCOMO Euro-Labs.

#### 4 Opportunistic Spectrum Reuse for Femtocell Networks

Mehrdad Shariat, Atta Qudus, Rahim Tafazolli, University of Surrey

Sunday, 15 May 12:50-14:00 Margit B

### BeFEMTO posters

#### 1 Interference Management in Femtocell Networks Using Distributed Opportunistic Cooperation

Francesco Pantisano, University of Bologna; Mehdi Bennis, University of Oulu; Roberto Verdone, University of Bologna; Matti Latva-aho, University of Oulu

#### 2 Flexible Soft Frequency Reuse schemes for heterogeneous networks (macrocell and femtocell)

Chrysovalantis Kosta, Ali Imran, Atta Qudus, Rahim Tafazolli, University of Surrey

#### 3 Alamouti Transmit Diversity for Energy Efficient Femtocells

David Stuart Muirhead, Muhammad Ali Imran, University of Surrey

#### 4 Zero-Forcing Coordinated Base Station Transmission for Femtocell Systems

Máximo Morales Céspedes, Ana García-Armada, Universidad Carlos III de Madrid

## 5 Measurement-Based Small-Cell Coverage Analysis for Urban Macro-Offload Scenarios

Paul Fuxjäger, Ivan Gojmerac, Hans Ronald Fischer, Peter Reichl, Telecommunications Research Center Vienna

## 6 Modeling of Femto Cells – Simulation of Interference and Handovers in LTE Networks

Dennis M. Rose, Thomas Jansen, Thomas Kürner, Technische Universität Braunschweig

## 7 New Coordination and Resource Allocation Schemes for Uniform Rate in Femtocell Networks

Slim Ben Halima, Orange Labs; Maryline Helard, INSA (rennes); Dinh Thuy Phan Huy, France Telecom R&D

## 8 Performance Evaluation of Spectrum Sharing Algorithms in Single and Multi Operator Scenarios

Franco Mazzenga, Marco Petracca, Remo Pomposini, Francesco Vatalaro, Romeo Giuliano, University of Rome Tor Vergata

Sunday, 15 May 15:30-18:00 Margit B

### BeFEMTO Panel

Chair: *Thierry Lestable, Sagemcom SAS*

#### 1 Keynote

Frédéric Pujol, Head of Radio Technologies & Spectrum practice in IDATE

#### 2 Panel: Femtocells as Keystone of Heterogeneous Networks, driving the Offload revolution:

**New features and capabilities of Next Generation (LTE-A and Beyond)**

Femtocells Frédéric Pujol, IDATE

#### Femtocells Market forecast, business model trends

Mérouane Debbah, Supélec

#### Multi-mode Femtocells: benefits for existing Network upgrade & role of Flexible Radio

Serkan Uygungelen, DOCOMO Eurolabs

#### Femtocells and WiFi: Complementary approach towards true ubiquitous and quality broadband solution

Thierry Lestable, Sagemcom SAS

Sunday, 15 May 15:30-18:00 Margit B

### BeFEMTO Session 5

Chair: *Thierry Lestable, Sagemcom SAS*

#### 1 Optimization of Dynamic Frame Offset in Time Division Duplex System

Shahrukh Bin Ali, Aalto University School of Science and Technology; Chia-Hao Yu, Helsinki University of Technology; Olav Tirkkonen, Aalto University; Cássio Ribeiro, Nokia Research Center

#### 2 A Distributed Resource Allocation Scheme in Femtocell Networks

Yuyu Wang, Kan Zheng, Wenbo Wang, Beijing Univer. of Posts & Telecommunications

#### 3 On Uplink Power Control Optimization and Distributed Resource Allocation in Femtocell Networks

Zhong Zheng, Jyri Hämäläinen, Ying Yang, Aalto University

#### 4 On Stateless Routing for an All-wireless Network of Femtocells. Implications in the 3GPP Architecture.

José Nuñez-Martínez, Jaime Ferragut, Josep Mangués-Bafalluy, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

## W5: First International Workshop on Cross-Layer Operation

Chair:

*Roberta Fracchia, Thales Communications*

Sunday, 15 May 9:00-10:10 Lanchid A

### Keynote

**Joint source/protocol/channel decoding : a fully cross layer view of robust reception of multimedia**

P. Duhamel, Michel Kieffer, Supélec

Sunday, 15 May 10:40-12:40 Lanchid A

### Technical Session

#### 1 Application of FASTAR Code in Multimedia Broadcast Multicast Service

Ernest Kurniawan, K. F. E. Chong, Sumei Sun, Institute for Infocomm Research; Yen Kai, I2R

#### 2 Geometric Cross-Layer QoS Parameters Based Seamless Vertical Handover Procedures in Presence of Adaptive Modulation and Coding

Mauro Biagi, Gabriele Tamea, Roberto Cusani, University of Rome 'La Sapienza'

#### 3 Joint Error Concealment Method for Backward Compatible 3D Video Transmission

Chaminda T.E.R. Hewage, Maria G. Martini, Kingston University

#### 4 Multimedia content adaptation to wireless network conditions

Roberta Fracchia, Thales Communications

#### 5 R-RoHC: a single adaptive solution for header compression

Roberta Fracchia, Cecile Gomez, Thales Communications; Alessandra Tripodi, Orange Labs

## Context Awareness for Proactive Systems (CAPS2011)

Chair:

*Klaus David, University of Kassel*

Sunday, 15 May 13:00-14:00 Corso B

### CAPS Opening Keynote

#### 1 Context Aware Spaces

Hedda R. Schmidtke, Karlsruhe Institute of Technology

Sunday, 15 May 14:00-15:00 Corso B

### CAPS Session 1

#### 1 Dynamic Quantification of Activity Recognition Capabilities in opportunistic Systems

Marc Kurz, Gerold Hölzl, Alois Ferscha, Department of Pervasive Computing, JKU Linz; Hesam Sagha, Ricardo Chavarriaga, Jose del R. Millan, EPFL

#### 2 A Collaborative Context Prediction Technique

Christian Voigtmann, Sian Lun Lau, University of Kassel

Sunday, 15 May 15:30-18:00 Corso B

### CAPS Session 2

#### 1 Nodobo: Mobile Phone as a Software Sensor for Social Network Research

Stephen Bell, Alisdair McDiarmid, James Irvine, University of Strathclyde

#### 2 Situation awareness based on channel measurements

Johannes Starosta, Markus Reschke, Sebastian Schwarzl, Stephan Sigg, TU Braunschweig

#### 3 ID management strategies for Interactive Systems in Multi-Camera Scenarios

Benedikt Gollan, Bernhard Wally, Research Studios Austria; Alois Ferscha, Department of Pervasive Computing, JKU Linz

#### 4 Personalization Enablers by Telecom Operators

Jean-Pierre Le Rouzic, France Telecom R&D

#### 5 SIP/SIMPLE Resource List Server: Optimization or Burden for Presence Systems?

Victoria Beltran, Technical University of Catalonia; Josep Paradells, Wireless Network Group, Technical University of Catalonia

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