The 83rd IEEE
Vehicular Technology Conference

Final Programme

VTC2016-Spring

NANJING

Green City and Wireless Future

15 – 18 May 2016

Nanjing, China

Welcome from the General Co-chairs

Welcome to VTC2016-Spring in the vibrant city of Nanjing! Located in the Yangtze River Delta area and the center of East China, Nanjing is one of the nation's most important cities for over a thousand years, and is recognized as one of the Four Great Ancient Capitals of China, which has enjoyed peace and prosperity, and borne wars and disasters. Today, with a long cultural tradition and strong local educational institutions, Nanjing is commonly viewed as a 'city of culture' and one of the most pleasant cities to live in China.

For the first time, this flagship conference of the IEEE Vehicular Technology Society is held in mainland China. VTC2016-Spring in Nanjing will bring together individuals from academia, government, and industry to discuss and exchange ideals in the fields of wireless, mobile, and vehicular technology. During the conference, you will enjoy the rich technical blend of plenaries and panels presented by distinguished industrial and academic leaders converging on Nanjing from all over the world. These will also be complemented by tutorials, workshops and of course the regular technical sessions.

We are indebted to the entire organizing and technical program committees, especially to the TPC Chairs Fu-Chun Zheng, Geoffrey Li and Zhisheng Niu for their excellent and professional service, as well as to all the Track Chairs, Workshop Chairs, Tutorials and Panels Chairs, for their dedication. Our committees have also been consistently assisted by the VTS board members and VTS staff. Besides, our sincere appreciation also goes to generous donors, patrons and supporters, especially Qualcomm, Huawei, National Instruments, Ericsson, and Southeast University, for their participation and support.

Finally, we hope that you will enjoy the technical discussions, meeting old friends, making new professional linkages, and experiencing dynamic Nanjing and the great China!

Xiaohu You, Pingzhi Fan and Shaoqian Li
General Co-chairs, IEEE VTC2016-Spring



Welcome from the TPC Co-chairs

It is with great pleasure that we welcome you to Nanjing and VTC2016-Spring!

We are living in an exciting age. The near universal adoption of smart phones is transforming every aspect of human life. This has in turn raised huge challenges for the wireless industry: much higher data rates in much wider areas, much lower latency for massive networks of things, and much higher energy efficiency. As such, this conference has fittingly been themed "Green City and Wireless Future".

VTC2016-Spring will serve as an ideal forum for this fast evolving field at such an exciting time. Nearly all the hottest issues and many of latest R&D results will be reflected in the 73 technical sessions, 2 plenary sessions, 3 panel sessions, 7 workshops, and 6 tutorials at this conference.

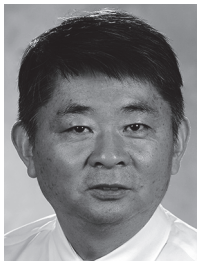
The 492 papers in the conference cover the full range of wireless and vehicular communications technology. Reflecting the current research directions, the "LTE" track has attracted the largest number of paper submissions, closely followed by the "Multiple Antenna Systems" track and the "Signal Transmission" track.

We must thank all the authors who submitted their work to VTC2016-Spring. Each submitted paper has been independently reviewed by at least 3 reviewers. We would also like to express our sincere gratitude to all our Technical Programme Committee (TPC) members and reviewers. It is these colleagues who have spent their valuable time in providing their own reviews and in soliciting external reviews. Without these efforts from the authors and reviewers, the high quality technical programme that we see now would not have been possible.

We cannot finish this message without mentioning our track chairs and co-chairs. They have always completed their tasks with flying colours – often against very tight deadlines. Due to the space, we are not able to name them here, but it has been a truly humbling experience to work with them all.

We look forward to your company at VTC2016-Spring in Nanjing.

Fu-Chun Zheng, Geoffrey Li, and Zhisheng Niu
TPC Co-chairs, IEEE VTC2016-Spring


Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society, it is with great pleasure that I welcome you to the IEEE 83rd Vehicular Technology Conference in Nanjing.

This edition of VTC will mark a historic moment with our visit to China. The selection of Nanjing as host city is not fortuitous. In addition to its historical, cultural and natural beauty, Nanjing is an industrial technology research and development hub, and is home to high-quality universities and research institutes.

VTC2016-Spring happens at a key time for the wireless and vehicular industries as 5G systems are being designed and we prepare for the deployment of connected vehicles using V2X. The conference is hence a perfect venue for industry and academia to share and discuss ideas that can have a profound impact in the development of 5G and connected vehicles.

An event like VTC cannot take place without the efforts of a dedicated team. I would like to thank and recognize the remarkable work of General Co-chairs Professors Xiaohu You, Pingzhi Fan and Shaoqian Li, whose leadership has been instrumental to create the conference program that you will enjoy. I would also like to express my gratitude to the Technical Program co-Chairs Professors Fu-Chun Zheng, Geoffrey Li, and Zhisheng Niu. Their dedicated work has helped shape an outstanding technical program. My personal gratitude goes also to all the conference team and our VTS conference administrators for their continued support.

VTC is an excellent occasion for our members to meet with our Board of Governors, so don't hesitate to approach us if you would like to provide any feedback on the Society or to participate in its management. If you are a VTS member, join us in the VTS members' reception!

I hope that you will enjoy the conference and the city of Nanjing.

Javier Gozalvez, *President*
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Jiang Zhu
Xu Zhu
Yu Zhu
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Registration

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

- Sunday 15 May 2016 07:30 - 17:30*
- Monday 16 May 2016 07:30 - 17:30
- Tuesday 17 May 2016 07:30 – 17:30
- Wednesday 18 May 2016 08:00 – 16:00

* After 18:00 on Sunday, you may pick up your badge and tickets at the reception – bags can be picked up on Monday.
(**Your registration receipt is required to pick up your registration at the reception.**)

Breaks

Coffee breaks will take place in the Ballroom foyer.

Social Events

Lunches are included as part of the full registration and will be served in Ballroom 2+3. The welcome reception will be conducted on Sunday evening, also in Ballroom 2+3. The banquet on the evening of Monday 16 May 2016 will begin at 18:30, again in Ballroom 2+3.

Lunches, the reception and banquet require admission tickets and these are included in your registration packet to gain entry. Be sure to present the correct day's lunch ticket or you will not be served. You also may purchase tickets for these events at the registration desk.

VTS members are invited to a VTS member reception 17:30 to 19:30 on Tuesday 17 May 2016 in Ballroom 2+3. There are no tickets to this event. Rather, entry will be limited to those delegates with the VTS member ribbon on your delegate badge, so ensure you wear your badge when you come to the event.

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Plenaries

Monday 16 May 2016, 9:00–9:45 (Ballroom 2-3)

Steps Towards 5G: Challenges and Enabling Technologies for New Applications

Wanshi Chen, *Vice Chairman, 3GPP TSG RAN1, Qualcomm*

This keynote will cover new cellular technologies beyond LTE Advanced leading up to and including the smooth introduction of 5G. These technologies build on the tremendous scale and success of the LTE platform, enabling new use cases and improving existing ones..

Wanshi Chen has over 15 years of experience in telecommunications with leading telecom companies including operators, infrastructure vendors, and user equipment vendors. From 1996 to 1997 he worked at China Mobile focusing on wireless network installation, maintenance, field test and debugging, and performance characterization and optimization. From 2000 to 2006 he worked for Ericsson Wireless Communications, San Diego, and was responsible for 3GPP2 related system design, integration and performance optimization for commercial products, and 3GPP2 standardization.

In May 2006 Wanshi Chen joined Qualcomm, San Diego, where, as one of the key team members, he has been contributing to the design, development and specification of LTE standardization through active participation in 3GPP RAN1.

Wanshi Chen received his Ph.D. degree in electrical engineering from the University of Southern California, Los Angeles, CA, USA, and has been a 3GPP TSG RAN1 Vice Chairman since August 2013.

Monday 16 May 2016, 9:45–10:30 (Ballroom 2-3)

Enabling 5G Technologies for a Unified Adaptive Software Defined Air Interface

Ganghua Yang, *Vice Director, Communication Technology Lab & Director, Algorithm Lab, Huawei*

This presentation first introduces the common 5G technology requirements. Then the speaker will introduce the enabling 5G technologies such as massive-MIMO, non-orthogonal waveforms, and millimeter wave communications. In particular, this talk will point out the major challenges in the baseband algorithms for 5G systems.

Ganghua Yang received his BSc degree from the Department of Information Science and Electronic Engineering of Zhejiang University, China in 1991. He received his MSc degree from China Academy of Telecommunications Technology (CATT) in 1994.

He was a researcher focusing on the physical layer of TDMA mobile communications systems in the First Research Institute of CATT from 1992 to 1995. He has worked for Huawei since April 1996. From 1996 to 2002, he led the research and development of the first commercial GSM system in China at Huawei Technologies Ltd. Co. He was conferred the Second Prize of the National Science and Technology Progress Award in 2000.

He was the chief scientist for Radio Access Networks, Wireless Networks Product Line from 2003 through 2008, where he focused on key features and platforms of 3G. He was also one of the founders and inventors of CPRI (Common Public Radio Interface). He was a senior technology strategy expert for wireless communications from 2008 to 2012 in Huawei's Department of Corporate Technology Planning.

Currently he is the Vice Director of the Communications Technology Lab and the Director of the Algorithm Lab of Huawei Central Research Institute. His current research area is algorithms in 5G.

Monday 16 May 2016, 13:00–13:15 (Ballroom 2-3)

Real-time mmWave Prototyping: 28 GHz and Beyond

Sarah Yost, *SDR Product Marketing Manager, National Instruments*

As the IMT's 2020 deadline approaches for 5G standardization, mmWave frequencies have come into the spotlight as a technology that will be used to realize the technology demands of 5G. The largely uninvestigated mmWave spectrum poses many questions for communications researchers ranging from defining the propagation environment with new channel sounding measurements to evaluating new coding strategies and physical layer schemes. Real-time prototyping has become an essential step in validating new 5G technology candidates. New advances in RF, ADC and DAC, and FGPA technologies provide the building blocks necessary to fully exercise prototyping in this new spectrum.

Sarah Yost is a product marketing manager at National Instruments for the software defined radio team. She started her time at NI working as an applications engineering where she focused on NI's RF product line. She then spent time working as the test engineer for Ettus Research creating manufacturing test code for a large variety of USRPs. After spending time getting to know the USRP hardware and software, she moved into a marketing role to continue working with SDRs and interact with customers doing cutting edge research. Prior to her time at NI, Sarah worked as a system test engineer at Raytheon working on aircraft RADAR systems. Sarah has her B.S. in electrical engineering from Texas Tech University.

Panels

Tuesday 17 May 2016, 9:00–10:30 (Ballroom 1-2-3)

WWRF and IEEE VTS Executive Forum on Connected/Autonomous Cars—From DSRC to LTE-V to 5G

Moderators:	**Chih-Lin I**	*Chief Scientist, Wireless Technologies, China Mobile*
	Javier Gozálvez	*President, IEEE Vehicular Technology Society*
Panelists:	**Nigel Jefferies**	*Chair, WWRF*
	James Kimery	*Marketing Director for RF Communications and SDR, National Instruments*
	Xiaojing Wang	*Director, Research Institute of Ministry of Transportation, China*
	John Du	*Managing Director, GM R&D, China*
	Xiaohong Zhang	*VP Wireless, ZTE*
	Jiansong Gan	*Head, Connected Car Research and Standardization, Huawei*
	Danya Yao	*ITS and Connected Cars, Tsinghua University*

Connected vehicles will utilize V2X communications to improve traffic safety and management. V2X communications will also facilitate the development of cooperative driving and sensing applications, and will hence have a significant impact on the development of automated vehicles. First generation of fully connected vehicles will initially rely on the IEEE802.11p/DSRC standard for V2V communications, and on cellular networks and IEEE802.11p/DSRC for V2I communications. However, the cellular industry has started the evolution of 4G LTE standards to integrate V2X communications. The solutions under development could provide complementary features to those of 802.11p, and enhance the reliability and dependability of V2X communications. Ensuring reliable, dependable, and low-latency V2X communications is also critical for automated vehicles, and is one of the key objectives sought for by future 5G standards. Connected and automated vehicles will hence be able to utilize in the future a variety of wireless technologies with distinct features and challenges. This panel will discuss the potential and role that such wireless technologies will play in the successful development and deployment of connected and automated vehicles, and the opportunities that heterogeneous V2X communications could offer to the automotive industry.

Chih-Lin I received her Ph.D. degree in electrical engineering from Stanford University. She has been working at multiple world-class companies and research institutes leading the R&D, including AT&T Bell Labs; Director of AT&T HQ, Director of ITRI Taiwan, and VPGD of ASTRI Hong Kong. She received the IEEE Trans. COM Stephen Rice Best Paper Award, is a winner of the CCCP National 1000 Talent Program, and has won the 2015 Industrial Innovation Award of IEEE Communication Society for Leadership and Innovation in Next-Generation Cellular Wireless Networks. In 2011, she joined China Mobile as its Chief Scientist of wireless technologies, established the Green Communications Research Center, and launched the 5G Key Technologies R&D. She is spearheading major initiatives including 5G, C-RAN, high energy efficiency system architectures, technologies and devices; and green energy. She is the Chair of FuTURE 5G SIG, an Executive Board Member of GreenTouch, a Network Operator Council Founding Member of ETSI NFV, a Steering Board Member of WWRF, a member of IEEE ComSoc SDB, SPC, and CSCN-SC, and a Scientific Advisory Board Member of Singapore NRF.

Javier Gozalvez received a PhD in mobile communications from the University of Strathclyde in Glasgow. At the Universidad Miguel Hernández de Elche (UMH), he leads research activities in the areas of vehicular networks, multi-hop cellular networks and D2D, and wireless industrial networks. He has published over 125 papers in international conferences and journals, and has received several awards including the best research paper award from the Journal of Network and Computer Applications, and the Runner-up prize for the "Juan López de Peñalver" award of the Royal Academy of Engineering in Spain that recognizes the most notable Spanish engineers aged below 40. He is the 2016 President of the IEEE Vehicular Technology Society (IEEE VTS). He served as IEEE Distinguished Lecturer for VTS, and currently serves as Distinguished Speaker. He serves as Chair of the IEEE Connected Vehicles initiative and as Mobile Radio Senior Editor of the IEEE VT Magazine.

Nigel Jefferies is a senior standards manager with Huawei Technologies and Chairman of the Wireless World Research Forum, a global partnership between industry and academia to develop a research agenda for mobile communications. Previously he was Head of Academic Relationships within Vodafone Group Research & Development and a Principal Mathematician at Racal Research Ltd. In the past he led the European-funded IST project SHAMAN, which studied the security of future mobile systems, and ran the Secure Applications Steering Group for Mobile VCE. Other collaborative research projects on various aspects of security for mobile communications include 3GS3 in the UK-funded LINK programme, and ASPeCT and USECA in the European ACTS programme. His research interests include cryptography, security of systems and applications of mathematics to telecommunications. He received a PhD in functional analysis from Goldsmith's College, London, and an MA in mathematics from the Queen's College, Oxford. He is a Senior Member of the IEEE, a Fellow of the Institute of Mathematics and its Applications and a Chartered Mathematician.

James Kimery is the Director of Marketing for National Instruments RF / Communications and SDR initiatives. In this role, James is responsible for the company's communication system design and software defined radio strategies. He also manages NI's advanced research RF and Communications Lead User programs. Prior to joining NI, James was the Director of Marketing for Silicon Laboratories' wireless division which is now a subsidiary of ST-Ericsson. As Director, the wireless division grew revenues exceeding

$250M (from $5M) and produced several industry innovations including the first integrated CMOS RF synthesizer and transceiver for cellular communications, the first digitally controlled crystal oscillator, and the first integrated single chip phone (AeroFONE). AeroFONE was voted by the IEEE as one of the top 40 innovative ICs ever developed. James also worked at National Instruments before transitioning to Silicon Labs and led many successful programs including the concept and launch of the PCI eXtensions for Instrumentation (PXI) platform. James was a founding member of the VXIplug&play Systems Alliance, VISA working group, and PXI System Alliance. He has authored over 26 technical papers and articles covering a variety of wireless and test and measurement related topics. James holds degrees from the University of Texas at Austin (MBA) and Texas A&M University (BSEE).

Xiaojing Wang is the Chief Engineer of China Research Institute of Highway, the director of China National Intelligent Transport System Center, the chairman of China ITS Industry Alliance, and vice chairman of ITS China. His research and work areas are traffic data collecting and processing, transport management, intelligent transport system (ITS), etc.

At the beginning of this century, he presided over national ITS development projects, including the China national ITS development strategy, China national ITS architecture and China ITS standard system. He was appointed as the chief expert of the national electronic toll collection (ETC) project by the Ministry of Transport in 2006. Now there are 29 provinces that have established ETC systems. ETC users have exceeded 29 million. From 2008 to 2010, he and his team developed China National Highway Network Monitoring and Management System, and the system has already covered 22 provinces. He served as a consultant to guide the development of ITS used in Beijing Olympic Games, 2010 Shanghai Expo and 2010 Guangzhou Asia Games. Now he is the leader of cooperative ITS technique framework and standard research project.

He has been the BOD member of ITS world congress since 2005, and also taken the BOD chair of ITS Asia-Pacific during 2014 to 2015. He was awarded gold medal in the World Exhibition of Young Inventors, issued by World Intellectual Property Organization in 1991, and China National Science and Technology Awards. He is recognized in the World ITS Hall of Fame at the ITS World Congress of 2012.

John Du currently is the Director of China Science Lab, GM China. The lab is part of GM's Global Research and Development organization. He is responsible for the research and technology development in a wide range of areas related to the automotive industry, including advanced clean internal combustion engine and transmission system technology, battery cell materials and fabrication, next-generation lightweight materials, advanced manufacturing processes, connected vehicle and driving experience. He also leads the strategic technology collaboration with the Chinese government, top Chinese universities, national laboratories and suppliers.

He has over 20 years of technology development and innovation management experience in computing, wireless communications and automotive areas. Dr. Du joined GM in 2009. Before he joined GM, he was general manager of Intel's China Research Center. Dr. Du has a Ph.D. degree in electrical engineering from Beijing Institute of Technology and EMBA from CEIBS.

Xiaohong Zhang is the general manager assistant of wireless business for the ZTE corporation. She has keen insight not only in M-ICT industry changes but technologies innovation and she also has tremendous management experience in M-ICT field.

From 1989 to 1997, she worked as the project lead for National project "75" and "95" plans in the Forth Research Institute of telecommunication technology MIIT. And she won Second Class Prizes of The State Scientific and Technological Progress Award and First Class Prizes of The MII Scientific and Technological Progress Award.

She has worked in ZTE corporation for more than 18 years. From 1997 to 2009, she worked as the director of the wireless product R&D and won Second Class Prizes of The State Scientific and Technological Progress Award again. From 2010 to 2014, she worked as the vice general manager of terminal business and in charge of global marketing. From 2015 to now, she works as the general manager assistant of wireless business and is in charge of wireless product and technology plan especially for vertical industries.

Jiasong Gan is a Principal Engineer at Huawei technologies CO., LTD, responsible for connected car research and standardization. Jiansong Gan received the B.S. degree from Beijing University of Posts and Telecommunications in 2002 and received the Ph.D. degree from Tsinghua University in 2007. His research area is mobile broadband communication and he holds more than 20 patents in this area.

Danya Yao is a Professor of Systems Engineering, and obtained his BS., MS., and Ph.D respectively in 1988, 1990 and 1994 in control theory and control engineering, in Tsinghua University, China. His research interests are driving safety and active traffic control via V2X communication, systems engineering and advanced detection technology. He is secretary general of Innovation Industry Alliance for Intelligent Vehicle Infrastructure Cooperation Systems (i-VICS) and the chief expert of the National High-Tech Research and Development Program Project (863 Project) "Research on Key Technology of Intelligent Vehicle-Infrastructure Cooperation".

Tuesday 17 May 2016, 11:00–12:30 (Ballroom 1)

High Mobility Communications

Moderator:	**Qi Bi**	*China Telecom*
Panelists:	**Chih-Lin I**	*China Mobile*
	Li Yan	*Qualcomm*
	Jun Lei	*Beijing Nufront Mobile Multimedia Technology*
	Mike Fitch	*British Telecom*

This panel of leading figures from industry will address the issues of will address the challenges of the physical layer highly mobile systems

Qi Bi joined China Telecom in 2010 as the president of the Technology Innovation Center and the CTO of the China Telecom Research Institute. He got his MS. Degree from the Shanghai Jiao Tong University in 1981 and the Ph.D. from the Penn. State University in 1986.

Prior to his current position, Dr Qi Bi worked at AT&T Bell Labs, Lucent Technologies and Alcatel-Lucent for 20+ years. There he received Awards of Excellence from the Advanced Technology Lab of AT&T in 1996 and 1997, Bell Labs President's Gold Awards in 2000 & 2002. and the Bell Labs Innovation Team Award in 2003. Dr. Bi was appointed Bell

Laboratories Fellow in 2002 and awarded the Asian American Engineer of the Year in 2005. He is also an IEEE Fellow

While in China, he submitted 54 Chinese patent applications. His team is given the principal investigator role for 5 National Projects with a total value of 104 million Chinese Yuan. In addition, his team collaborated with others institutes on 19 important national projects including 863 and 973 projects with a total value of 13 million Yuan. His China Telecom project "Blue Net" won the "Global Telecoms Business Innovation Awards", by GTC Media, London in 2014.

Chih-Lin I's bio appears on Page 14.

Li Yan is the Director for Technical Standards in Qualcomm Wireless Communication Technologies (China) Ltd. Li Yan has been leading Qualcomm China Standard team and responsible for standardization works in China since he joined Qualcomm in 2002. He is well connected with China mobile operators, wireless communication standard body, wireless industry and academy, and has deep understanding on China wireless communication status quo, regulation and policy. Li Yan was the technical lead of CMCC engineering team in Qualcomm in 2011-2013. He led the team to support CMCC TD-LTE service launch and promote first TD-LTE multi-mode smartphones rolling out in CMCC market.

Dr Li graduated from National Mobile Communication Research Lab of Southeast University and received Ph.D degree of Communication and Information system in 1998. Prior to joining Qualcomm, Dr. LI Yan served as standard engineer in Nokia (China) R&D Center, and a director for Datang Group (CATT). He led the development of IS-95 and cdma2000 commercial system from 1999 to 2002. In this period, Yan undertook and successfully accomplished 863 cdma2000 RNC project.

Dr Li's research interests include CDMA mobile communication system, modulation and coding techniques, synchronization techniques and mobile applications. He had published more than 10 papers on key domestic and international publications. He also owned 11 granted US patent and filed the other 7 PCT patents.

Jun Lei received his PhD degree in Electronics & Communication Engineering in 2009 from Tsinghua University, Beijing. He is currently the general manager of Beijing Nufront Mobile Multimedia Technology Co. ,Ltd.

Dr Lei has over 10 years of experience in design of wireless communication system and SoC. He is one of the main contributors of T-MMB(Mobile TV)、EUHT and ITS standard in China. As the team leader, he successfully designed the EUHT SoC, WiFi Soc and 2G/3G RF SoC.

Michael Fitch works in BT Research and Innovation, providing technical leadership to a research team specialising in physical and systems aspects of wireless communications. He is currently working on a number of projects on emerging wireless technologies such as small cells, radio resource management and 5G. In addition he provides engineering consultancy to other parts of BT on LTE, WiFi and other wireless topics. Previous experience is with modelling, trials and deployments of Satellite, WiMAX, 3G and LTE systems. Michael holds a first degree in maths and physics, a PhD in satellite communications, and he is a member of the IET.

Tuesday 17 May 2016, 14:00–15:30 (Ballroom 1)

Millimeter Wave Communications

Moderator:	**Haiming Wang**	*ZTE Wavetone Corporation*
Panelists:	**Guangyi Liu**	*China Mobile*
	Yue Wang	*Samsung UK*
	Jianwu Dou	*ZTE*
	Hongwei Kong	*Keysight*
	Sarah Yost	*National Instruments*

To achieve ultra-high data rate user experience, the fifth generation mobile communications (5G) are expected to explore millimeter-wave (mmW) bands. For 5G mmWave systems, several new challenges need to be addressed, including, but not limited to, channel modelling, antenna and array design, mmW transceiver ICs, massive MIMO signal processing, physical layer design, wireless networking, as well as test and measurement methods. In this panel, the panelists will discuss these challenges, answer questions, and try to point out the research and development directions from industry point of view.

Haiming Wang is the CTO of ZTE Wavetone Corporation where he is in charge of R&D. He was born in Jiangyin, Jiangsu Province, China, in 1975. He received the M.S. and Ph.D. degrees in electrical engineering from Southeast University, Nanjing, China, in 2002 and 2009, respectively. He joined the School of Information Science and Engineering and the State Key Laboratory of Millimeter Waves, Southeast University, in Nanjing, China, in April 2002. Now he is an Associate Professor. His current research interests include 5G millimeter-wave wireless communications, radio propagation measurement and channel modelling, and antennas for wireless communications and Radar. He has authored and co-authored more than 20 peer-reviewed journal papers and more than 50 patents in wireless communications, microwave circuits, and antennas. Dr. Wang received the first-class Science and Technology Progress Award of Jiangsu Province of China in 2009. He is currently serving as the vice chair of IEEE 802.11aj task group.

Guangyi Liu is the CTO of the Wireless department in the China Mobile Research Institute (R&D of China Mobile), where he is in charge of the wireless technology's R&D, including LTE/LTE-Advanced and 5G. He is very active in global industrialization activities, e.g. acting as the chair of spectrum working group of GTI (Global TD-LTE Initiative), vice chair of the CCSA TC5 WG6. Before he joined China Mobile in 2006, he had worked in Siemens and Shanghai Bell (Now ALU) on 3G R&D for few years. He has authored and co-authored several books and more than 100 papers.

Yue Wang is a senior 5G researcher at Samsung Electronics R&D Institute UK, where she actively leads and conducts research in the Horizon 2020 5G-PPP projects including mmMAGIC (where she is the Associate Coordinator) and FANTASTIC-5G. Prior to joining Samsung, she has taken several roles in wireless communication research and industry, including at Philips in New York, US, and Toshiba and NVidia in Bristol and Cambridge, UK, respectively. Yue obtained her Ph.D. from University of Victoria, BC, Canada, in 2006, where her thesis was nominated for the Canadian Governor's Gold Medal. She was also the recipient of Toshiba's research award in 2009, and an MSc project she supervised won the IEEE UKRI Chapter Award for 'best communication related project' in 2011. She is the (co)author of over 30 refereed journal and

conference papers, one book, and has filed over 20 patents. Her past research includes various aspects of wireless communications technologies, including ultra-wideband, 60GHz, LTE and advanced, cognitive radios, small cells, relaying network, and M2M communications. Her current research interest includes advanced multi-node coordination in 5G, SDN and NFV. Yue is a senior member of IEEE.

Jianwu Dou is the Vice Director of ZTE Algorithm Department. He received the Ph.D. degree from the Beijing University of Technology in 2001, China. He is currently in charge of a National Science and Technology Major Project and participates in 5G project supported by the National Science and Technology Ministry of China. His current research interests are in the field of 5G channel modeling, new air-interface, and high-layer design. He received the first-class Science and Technology Award from the China Institute of Communications in 2014 and the Award for Chinese Outstanding Patented Invention from WIPO-SIPO in 2011.

Hongwei Kong is the Lab manager of Keysight Labs China. He is leading the wireless test and measurement research. The research focus is on wireless test and measurement methodology, system and key instrument capabilities etc. Among them, 5G test and measurement is now the key focus. Some representative research results of his group are: 1) two-stage MIMO OTA test method invention and standardization 2) PA modeling and DPD 3) 5G mmWave MIMO channel sounding solutions, etc. His group has also a lot collaborations with the industry partners like CMCC, and the collaborations with leading universities like Tsinghua, Southeast universities etc. The research results of his group have been commercialized in multiple products. He joined Agilent Labs in 2003, which later becomes the Keysight Labs in 2014. He received B.S.EE degree from the electronic engineering department of Tsinghua University in 1998, and PhD degree from the electronic engineer department of Tsinghua University in 2003 respectively.

Sarah Yost is a product marketing manager at National Instruments for the software defined radio team. She started her time at NI working as an applications engineering where she focused on NI's RF product line. She then spent time working as the test engineer for Ettus Research creating manufacturing test code for a large variety of USRPs. After spending time getting to know the USRP hardware and software, she moved into a marketing role to continue working with SDRs and interact with customers doing cutting edge research. Prior to her time at NI, Sarah worked as a system test engineer at Raytheon working on aircraft RADAR systems. Sarah has her B.S. in electrical engineering from Texas Tech University.

Tuesday 17 May 2016, 16:00–17:30 (Ballroom 1)

Vehicle to Vehicle (V2V) Communications

Moderator:	**Wanshi Chen**	*Qualcomm*
Panelists:	**James Kimery**	*National Instruments*
	Yue Wang	*Samsung UK*
	Qianxi Lu	*Ericsson*
	Guan Hao	*Nokia*

Recently there has been an increasing expectation that future vehicles will safely, efficiently and comfortably deliver personal mobility, and this will at the same time provide significant -- perhaps even revolutionary -- societal and economic benefits. Such expectations demand new levels of connectivity and intelligence, up to and including autonomous operation. V2X technologies can deliver on the connectivity part of this future vehicle proposition. While a primary focus of V2X is collision avoidance, other use cases that address the gamut of transportation needs have been developed by the transportation community. Nowadays, these use cases are motivated the evolution in technologies. The Wireless Access for Vehicular Environments standards based on IEEE 802.11 have established a good basis for V2X. Cellular V2X (LTE-based and 5G-based) technologies are expected to provide increasingly capable V2X connectivity for the vehicle of the future. Moreover, a key requirement for the success of V2X is a unified and dedicated spectrum that is globally, at least regionally, harmonized. This panel will focus the challenges and the enabling technologies for V2V in light of the ever-growing use cases, their communications requirements and the solutions that are becoming available to make the future vehicle a reality.

Wanshi Chen has been a 3GPP TSG RAN1 Vice Chairman since August 2013. He has over 15 years' experience in telecommunications in leading telecom companies including operators, infrastructure vendors, and user equipment vendors. From 1996 to 1997, he worked at China Mobile focusing on wireless network installation, maintenance, field test and debugging, performance characterization and optimization. From 2000 to 2006, he worked for Ericsson Wireless Communications, San Diego, responsible for 3GPP2 related system design, integration and performance optimization for commercial products, and 3GPP2 standardization.

In May 2006, Dr Chen joined Qualcomm, San Diego, where, as one of the key team members, he has been contributing to the design, development and specification of LTE standardization through active participation in 3GPP RAN1.

The highest degree that Wanshi Chen has received is a Ph.D. degree in electrical engineering from the University of Southern California, Los Angeles, CA, USA.

James Kimery's bio appears on Page 14.

Yue Wang's bio appears above on Page 16.

Qianxi Lu is a senior researcher at Ericsson (China) research, China radio research lab. The research interests include many aspects of wireless communications with a special emphasis on Device-to-Device (D2D) communications and vehicle communication. He received his Ph.D. from the Beijing University of Posts and Telecommunications (BUPT), Beijing China in 2011, and Bachelor degree in BUPT as well, in 2006. During 2010, he was involved in Joint Nokia-BUPT D2D system research project in Finland. Since 2011 he has been with Ericsson, China. During 2011-2012, he was involved in 3GPP RAN2 relate work, focusing on LTE RAN enhancement for diverse data application. During 2012-2016 he was involved in 5G related work, focusing on Device-to-Device (D2D) topic, and also support the SI/WI of D2D and V2x in 3GPP. Dr. Lu has published over 20 technical papers in international journals and conferences, and has over 100 patent applications.

Guan Hao started her telecom industry career in 1999 after receiving her M.S.(1996) and Ph.D. (1999) in Electrical Engineering from Northern Jiaotong University.

Dr Guan is currently leading the Mobile End to End Research in Nokia Bell Labs (Beijing). She is responsible for developing new radio technology to ensure Nokia innovation leadership in the future. Hao leads Nokia's Asia's 5G activities from internal research to external collaboration with operators, partners and universities.

She is also Future Forum's 5G SIG deputy chair and RRM WG chair. She is a member of China's "National 863 5G technology experts group'. Her technical focus areas include 5G radio, 3GPP/LTE network evolution, and interference management.

Monday 16 May 2016, 16:00–17:30 (Ballroom 2-3)

How to publish your papers in IEEE journals?

Moderator:	**Wei Zhang**	*University of New South Wales, & EiC, Wireless Communications Letters*
Panelists:	**James Irvine**	*University of Strathclyde, & former VP Publications, IEEE VTS*
	Yuguang Fang	*University of Florida, & EiC Transactions on Vehicular Technology*
	Klaus David	*University of Kassel, & EiC Vehicular Technology Magazine*

This panel will discuss publication routes within IEEE, and in particular, the IEEE Vehicular Technology Society, VTS. As well as running VTC, VTS has a transactions, a magazine, and co-sponsors the letters journal, the IEEE Wireless Communications Letters. Topics covered will include how publications (conference/letter/transactions) support research; How to get your work published (What makes a good paper, Ethics & etiquette, and Practices to avoid); The IEEE publications workflow (The role of the editors, Review & revision, What makes a good review). There will be short introductions to the Transactions on Vehicular Technology, Vehicular Technology Magazine and Wireless Communications Letters by their respective Editors in Chief.

Wei Zhang received the Ph.D. degree in Electronic Engineering from the Chinese University of Hong Kong in 2005. He was a Research Fellow at Hong Kong University of Science & Technology in 2006-2007. He joined the University of New South Wales in 2008 and is currently an Associate Professor at School of Electrical Engineering and Telecommunications. His research interests include cognitive radio, energy harvesting communications, heterogeneous networks and massive MIMO. Dr. Zhang is the Editor-in-Chief of IEEE Wireless Communications Letters. He is also the Editor for IEEE Transactions on Communications and for IEEE Transactions on Cognitive Communications and Networking. Previously, he served as Editor for IEEE Transactions on Wireless Communications in 2010-2015 and Editor for IEEE Journal on Selected Areas in Communications (Cognitive Radio Series) in 2012-2014. Dr. Zhang participates actively in committees and conference organization for the IEEE Communications Society and IEEE Signal Processing Society. He is Vice Director of IEEE Communications Society Asia Pacific Board. He has served as Secretary for IEEE Wireless Communications Technical Committee. He is an elected member of SPCOM Technical Committee of IEEE Signal Processing Society. He is a Fellow of the IEEE and the IET, and IEEE Communications Society Distinguished Lecturer.

James Irvine is a Reader in the EEE Department at Strathclyde University in Glasgow, where his research interests include resource management and security for wireless systems. Dr Irvine has extensive publications experience as an author, editor and manager. As a researcher, he has co-authored two books, seven patents, and over 150 technical papers. He was Editor in Chief of the IEEE Vehicular Technology Magazine, and before that the Journal of Graduate Education. VP Publications for IEEE VTS from 2010 until last year, he has been Publications Chair for 8 conferences, and chaired the IEEE Conference Publications Committee for three years. Last year he served of the IEEE Publication Services and Products Board, where he was active in the author education initiative.

Yuguang "Michael" Fang received an MS degree from Qufu Normal University, Shandong, China in 1987, a PhD degree from Case Western Reserve University in 1994 and a PhD degree from Boston University in 1997. He was an assistant professor in Department of Electrical and Computer Engineering at New Jersey Institute of Technology from 1998 to 2000. He then joined the Department of Electrical and Computer Engineering at University of Florida in 2000 and has been a full professor since 2005. He held a University of Florida Research Foundation (UFRF) Professorship from 2006 to 2009, a Changjiang Scholar Chair Professorship with Xidian University, China, from 2008 to 2011 and with Dalian Maritime University, China, from 2015-2018, and a Guest Chair Professorship with Tsinghua University, China, from 2009 to 2012. Dr. Fang received the US National Science Foundation Career Award in 2001 and the Office of Naval Research Young Investigator Award in 2002, 2015 IEEE Communications Society CISTC Technical Recognition Award, 2014 IEEE Communications Society WTC Recognition Award, and the Best Paper Award from IEEE ICNP (2006). He has also received a 2010-2011 UF Doctoral Dissertation Advisor/Mentoring Award, 2011 Florida Blue Key/UF Homecoming Distinguished Faculty Award, and the 2009 UF College of Engineering Faculty Mentoring Award. He is the Editor-in-Chief of IEEE Transactions on Vehicular Technology, was the Editor-in-Chief of IEEE Wireless Communications (2009-2012), and serves/served on several editorial boards of journals including IEEE Transactions on Mobile Computing, IEEE Transactions on Communications, and IEEE Transactions on Wireless Communications. He has been actively participating in conference organizations such as serving as the Technical Program Co-Chair for IEEE INOFOCOM'2014 and the Technical Program Vice-Chair for IEEE INFOCOM'2005. He is a fellow of IEEE and AAAS.

Klaus David is a full University Professor since 1998 and since 2000 head of the chair of communication technology (ComTec) at Kassel University, Germany. His research interests include mobile networks, applications and context awareness, and as well as being a Board member for IEEE VTS, is currently Editor in Chief of the IEEE VT Magazine.

He has 12 years of industrial experience in major companies like HP, Bell Northern Research, IMEC, T-Mobile (as Head of Group and UMTS project leader) and IHP (as Head of Department), with five years of international experience in the UK, Belgium, USA, and Japan.

Professor David has published over 200 scientific articles, including 3 books, and has registered over 10 patents. He is active in ngmn (next generation mobile networks) as advisor,

WWRF (Wireless World Research Forum) as publication manager and he is involved in many conferences, such as IST Future Network & Mobile Summit 2012 Berlin as TPC chair or 2013, 14 and 15 in IEEE PerCom as TPC member. Also he is a regular technology and strategy consultant to industry as well as co-founder of two start up companies.

Tutorials

A range of tutorials will be held on Sunday 15 May given by experts from industry and academia.

TUTORIALS					
		Jin Ling + Mo Ling	Jian Kang + Ye Cheng	Krabi	Pattya
SUNDAY 15 May					
7:30-17:30		Registration (Ballroom lobby)			
8:30-10:00		T5: Low-Cost Massive MIMO：From Theory to Practice	T9: Security for Next Generation Mobile Wireless Networks	T1: Polar Code for 5G Wireless: Algorithms and Implementations	T7: On System-Level Analysis & Design of Cellular Networks: The Magic of Stochastic Geometry
10:00-10:30		Coffee and Refreshments (Ballroom foyer)			
10:30-12:00		T5: Low-Cost Massive MIMO：From Theory to Practice	T9: Security for Next Generation Mobile Wireless Networks	T1: Polar Code for 5G Wireless: Algorithms and Implementations	T7: On System-Level Analysis & Design of Cellular Networks: The Magic of Stochastic Geometry
12:00-13:30		Lunch on your own			
13:30-15:00		T4: Physical and Network Layers of 5G: Requirements, Challenges and Enabling Technologies		T2: Socially Enabled Wireless Networks	T6: MIMO Beamforming in 4G/5G Cellular Systems
15:00-15:30		Coffee and Refreshments (Ballroom foyer)			
15:30-17:00		T4: Physical and Network Layers of 5G: Requirements, Challenges and Enabling Technologies		T2: Socially Enabled Wireless Networks	T6: MIMO Beamforming in 4G/5G Cellular Systems
18:00-20:00		Welcome Reception (Ballroom 2+3)			

Sunday 15 May 2016 8:30–12:00 Krabi

T1: Polar Code for 5G Wireless: Algorithms and Implementations

Kai Niu (Beijing University of Posts and Telecommunications) and Chuan Zhang (Southeast University)

Polar code, the first capacity achieving code, has ranked in the key FEC candidates for 5G wireless. Despite of its remarkable properties of absence of error floor and fine-grained rate-adaptation, low parallelism and finite length performance have limited its applications. This tutorial will present cutting-edge techniques of making polar code a good trade-off between the overall communication performance and a number of implementation metrics such as complexity and energy efficiency. In order to match the two main research categories of polar codes, the proposed tutorial will be divided into two parts: Part I: Principles and Methodologies of Polar Codes given by Professor Kai Niu; Part II: Efficient Implementations of Polar Codes given by Professor Chuan Zhang. Indicated by its title, this proposed tutorial of "Polar Code for 5G Wireless: Algorithms and Implementations" commits itself to introducing the emerging techniques and recent progress mentioned above. We mean to bring a synthesized source and wide view of recent progress and existing challenges in this particular but very important research area of wireless communication.

Dr. Kai Niu received a B.S. in information engineering and a Ph.D in signal and information processing from Beijing University of Posts and Telecommunications (BUPT) in 1998 and 2003 respectively. Then he joined the Information Theory and Technique Center, BUPT. Currently he is a professor in School of Information and Communication Engineering, BUPT. He is a senior member of Chinese Institute of Electronics. Professor Niu's research areas of interests include: polar code, iterative signal processing, MIMO signal processing. Published 26 SCI papers, 200+ EI papers, holding 36 China patents in the fields of 3G/LTE, MIMO detection, iterative decoding.

Dr. Chuan Zhang is now an associate professor of National Mobile Communications Re-search Laboratory, School of Information Science and Engineering, Southeast University, Nanjing, China. He received B.E. degree in microelectronics and M.E. degree in VLSI design from Nanjing University, Nanjing, China, in 2006 and 2009, respectively. He received both M.S.E.E. degree and Ph.D. degree in Department of Electrical and Computer Engineering, University of Minnesota, Twin Cities (UMN), USA, in 2012. His current research interests include 5G communication system designs, low-power high-speed VLSI design, specifically VLSI design for digital signal processing, digital communications (with emphasis on error-control coding and cryptography), quantum information theory, and bio-chemical synthesis implementation. As the first author, Dr. Zhang has published papers in journals such as IEEE Transactions on Circuits and Systems I and II, IEEE Transactions on Signal Processing, and refereed proceedings such as ISCAS, ICC, Asilomar, APCCAS, SOCC, and so on.

Sunday 15 May 2016 13:30–17:00 Krabi

T2: Socially Enabled Wireless Networks

KC Chen (National Taiwan Univ)

Emerging online social networks significantly change the way of content distribution and information dissemination, while the traffic of social networks has dominated Internet traffic in the mobile communication networks. Therefore, it is vital to design future wireless networks and 5G mobile communications by properly leveraging the properties of social networks. In light of the interplay between social network and technological networks, we shall further look into the fundamentals of network science and subsequent social network analysis, and the abstract ways to utilize the nature of social networks to design wireless networks, while supplying with successful engineering examples. Various aspects from analysis and system applications, particularly IoT/CPS and cellular networks will be presented in this tutorial. It shall open a new scenario and subsequently paradigm shift in the technology development of wireless networks and wireless communications to better meet the expectation from users.

Kwang-Cheng (K.C.) Chen received the B.S. from the National Taiwan University in 1983, and the M.S. and Ph.D from the University of Maryland, College Park, United States, in 1987 and 1989, all in electrical engineering. From 1987 to 1998, Dr. Chen worked with SSE, COMSAT, IBM Thomas J. Watson Research Center, and National Tsing Hua University, in mobile communications and networks. Since 1998, Dr. Chen has been with National Taiwan University, Taipei, Taiwan, ROC, and is the Distinguished Professor in the College of Electrical Engineering and Computer Science, National Taiwan University. He is visiting the Research Laboratory of Electronics at the Massachusetts Institute of Technology, 2012-2013 and 2015-2016. Dr. Chen was with the STAG, Executive Yuan, to engineering Taiwan's telecommunication deregulation and to plan nation's regulator (today's NCC) in 1990's. He founded a wireless IC design company in 2001, which was acquired by MediaTek Inc. in 2004. He has been actively involving in the organization of various IEEE conferences as General/TPC chair/co-chair, serving editorships with a few IEEE journals, and various IEEE volunteer services with IEEE Fellow Committee, IEEE VTS Fellow Evaluation Committee, IEEE VTS Distinguished Lecturer, etc. Most recently, he founds and chairs the Technical Committee on Social Networks in the IEEE Communications Society. Dr. Chen also has contributed essential technology to various international standards like IEEE 802 wireless LANs, Bluetooth, LTE (4G wireless communications) and LTE-A. He has authored and co-

authored 250 IEEE papers and more than 20 granted US patents. He co-edited (with R. DeMarca) the book Mobile WiMAX published by Wiley in 2008, and authored the book Principles of Communications published by River in 2009, and co-authored (with R. Prasad) another book Cognitive Radio Networks published by Wiley in 2009. Dr. Chen is an IEEE Fellow and has received a number of awards including the 2014 IEEE Jack Neubauer Memorial Award. Dr. Chen's current research interests include wireless communications, network science, and data science.

T3: TV White Spaces: A Detailed Summary, Implementation Specifics, and Performance Assessment by Oliver Holland (King's College London), Przemysław Pawełczak (TU Delft), Yue Gao (Queen Mary Univ) has been cancelled

Sunday 15 May 2016 13:30–17:00 Jin Ling + Mo Ling

T4: Physical and Network Layers of 5G: Requirements, Challenges and Enabling Technologies

Xianbin Wang (Western Univ., Canada), Tadilo Bogale (Western Univ.), Fumiyuki Adachi (Tohoku Univ.)

The dramatic increase of mobile traffic due to the widespread use of smart devices, further combined with the complexity of future wireless infrastructures in supporting more diverse applications through the use of spatially distributed radio resources, directly necessitates intensive research efforts on the 5th Generation (5G) wireless networks worldwide.

In supporting the stringent requirements of 5G particularly the anticipated 1,000 times increase of the network capacity, advanced physical and network layer techniques are essential to enable new air interface, spatial transmission schemes with extremely high utilization rates of 3-D distributed radio resources, tight collaboration among heterogeneous networks, and extremely cost-effective network operations. It is expected that the future 5G network is not only the evolution of the current 4G system, but a dramatic revolution and convergence of the broad area of information and communication technologies (ICT) which enables highly efficient, ultra-reliable, secure and delay critical services to interconnect everyone and everything.

This tutorial aims analyzing key technical aspects of the physical and network layers of 5G networks, and sharing insights on 5G requirements, enabling technologies and research opportunities. Advanced physical and network layer techniques for 5G including 3-D spatial transmission schemes, heterogeneous networks, and effective 5G operations will be presented. The tutorial will be focused on massive MIMO, distributed antenna, physical layer waveform design, millimeter wave, and software defined networking in 5G. Our target audience encompasses researchers from academia, industry and standard development bodies.

Dr. Xianbin Wang (S'98-M'99-SM'06) is a Professor and Canada Research Chair at Western University, Canada. Dr. Wang has over 250 peer-reviewed journal and conference papers on various communication system design issues, in addition to 24 granted and pending patents and several standard contributions. Dr. Wang is a Senior Member of IEEE and an IEEE Distinguished Lecturer of Vehicular Technology Society. He was involved in a number of IEEE conferences in different roles such as symposium chair, tutorial instructor, session chair, track chair, and TPC chair. His current research interests include adaptive wireless systems, 5G networks, communications security, and distributed ICT systems.

Dr. Tadilo Endeshaw Bogale (S'09-M'14) is a joint postdoctoral researcher at Western University and INRS, Canada. Currently, he is working on assessing the potential technologies to enable the future 5G network. Specifically, his research focuses on the exploitation of massive MIMO and millimeter wave (mmWave) techniques for 5G network. His research interests include hybrid Beamforming for massive MIMO and mmWave systems and pilot contamination reduction for multicell massive MIMO systems. He has organized a workshop in CROWNCOM 2015 and participated in tutorial presentation at PIMRC 2015 conferences.

Dr. Fumiyuki Adachi is an IEEE Fellow and IEICE Fellow and a Professor at Tohoku University, Japan. Dr. Adachi is a pioneer in wireless communications since 1973 and has largely contributed to the design of wireless networks from 1 generation (1G) to 4G. He is listed in Highly Cited Researchers 2001 and is an IEEE Vehicular Technology Society Distinguished Lecturer since 2012. He was a recipient of the IEEE Vehicular Technology Society 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 Award 2010, and KDDI Foundation Excellent Research Award 2012. His recent research interests include 5G mobile communications with a focus on small-cell network using distributed antennas.

Sunday 15 May 2016 8:30–12:00 Jin Ling + Mo Ling

T5: Low-Cost Massive MIMO：From Theory to Practice

Shi Jin (Southeast Univ, Nanjing), Feifei Gao (Tsinghua)

One of the most promising physical layer techniques for 5G wireless communications is the massive MIMO that can deeply exploit the spatial dimension of wireless resources via large amount of the antennas equipped at base station and thereby significantly improve frequency/power efficiencies. Nevertheless, the high dimensionality of such systems increases overhead of the transmission considerably. Hence, a successful deployment of a massive MIMO relies heavily on the availability of the low-cost transceivers. This tutorial will provide the audience with a systematically design from a low-cost point of view, including transmission schemes, power consumption, computational complexity, and even hardware cost. Then the framework of low-cost massive MIMO will be described based on recent research findings. This tutorial will also introduce key components of low-cost massive MIMO which include hybrid precoding schemes, quantized OFDM, low resolution receiver, low-rank spatial basis expansion modeling, UL/DL channel estimation for TDD/FDD system based on DFT and angle reciprocity, etc.

Dr. Jin received the Ph.D. degree in communications and information systems from the Southeast University, Nanjing, in 2007. From June 2007 to October 2009, he was a Research Fellow with the Adastral Park Research Campus, University College London, London, U.K. He is currently with the faculty of the National Mobile Communications Research Laboratory, Southeast University. His research interests include space time wireless communications, random matrix theory, and information theory. He serves as an Associate Editor for the IEEE Transactions on Wireless Communications, and IEEE Communications Letters, IET Communications, and a member in SPCOM-TC. Dr. Jin and his co-authors have been awarded the 2011 IEEE Communications Society Stephen O. Rice Prize Paper Award in the field of communication theory and a 2010 Young Author Best Paper Award by the IEEE Signal Processing Society.

*Dr. Gao received the Ph.D. degree from National University of Singapore, Singapore in 2007. He was a Research Fellow with the Institute for Infocomm Research (I2R), A*STAR, Singapore in 2008 and an Assistant Professor with the School of Engineering and Science, Jacobs University, Bremen, Germany from 2009 to 2010. In 2011, he joined the Department of Automation, Tsinghua University, Beijing, China, where he is currently an Associate Professor. Prof. Gao's research areas include signal processing for communications, array signal processing, and convex optimizations. Prof. Gao has served as a member in SPCOM-TC, as an Editor of IEEE Transactions on Wireless Communications, IEEE Wireless Communications Letters, International Journal on Antennas and Propagations, and China Communications. He has received the IEEE ComSoc Asia Pacific Outstanding Young Researcher Award in 2013.*

Sunday 15 May 2016 13:30–17:00 Pattya

T6: MIMO Beamforming in 4G/5G Cellular Systems

Jose Vargas (Qualcomm)

The tutorial deals with cellular multi-antenna beam forming systems. After an initial Matlab-based digital MIMO beam forming fundamentals review; the tutorial dives into cellular 3GPP standardized beamforming techniques from R8 all the way to R13 4G/LTE. We explore codebook and non-codebook based beamforming; LTE evolution towards beamforming with spatial multiplexing combined; we contrast beam forming techniques from a single cell and multiple coordinated cells and we present LTE 3GPP evolution towards 3D beamforming and Large-Scale Antenna Systems. We close the tutorial showing that beamforming techniques are a must in 5G mmWave bands and present the challenges and tradeoffs of implementing hybrid (analog/digital) beam forming techniques in such high frequency bands.

Jose Edson Vargas Bautista holds a Ph.D. degree from the State University of Campinas (UNICAMP/Brazil) and a M.Sc. degree from the Aeronautics Institute of Technology at the Brazilian Aerospace Technical Center (ITA/CTA/Brazil) both in Electrical Engineering. Dr.

Vargas Bautista has been recipient of full Federal M.Sc. and Ph.D. program founding from the Brazilian Federal Bureau for the Academic Excellence of Graduate Students (CAPES). He has over 15 years of work experience in various capacities related to wireless research and development. He spent time in the academy as an assistant professor member of the faculty staff at the Sao Paulo State University where he lectured Wireless Communications and Microprocessors. In 1999 Dr. Vargas Bautista joined the wireless unit of Ericsson communications working in Radio Resource and Mobility Management algorithm design for Base Station Controllers. In 2002, Dr. Vargas Bautista joined Huawei's core R&D team in Dallas/TX working on 3G RRM algorithm design. Since 2004, Dr. Vargas Bautista is with Qualcomm Technologies in San Diego/CA working on multiple aspects of 4G wireless packet data access. Areas of expertise range from the end-to-end system architecture conceptualization and algorithm design of UE and Small Cell chip sets, to performance tuning of 3G/4G systems in commercial networks. Dr. Vargas Bautista is a recipient of QCT's "Upendra Patel" achievement award for his active leadership rolls in Qualcomm's LTE technology and contributions to the success of the first world multi-mode modem UE chipset. Most recently, he is working on Qualcomm's Small Cell's chipset development for heterogeneous networks supporting multiple antenna transmission modes, multi-RAT co-existence, self-optimizing algorithms and cognitive radio for LTE operation in unlicensed bands. Dr. Vargas Bautista has conducted a large number of international technology workshops, technology trainings, and live network performance optimization for different Qualcomm's OEM customers and Network Operators around the globe. Dr. Vargas Bautista holds a number of patent applications and a number of IEEE published research technical papers.

Sunday 15 May 2016 8:30–12:00 Pattya

T7: On System-Level Analysis & Design of Cellular Networks: The Magic of Stochastic Geometry

Marco Di Renzo (Paris-Saclay University / CNRS)

This tutorial is aimed to provide a comprehensive crash course on the critical and essential importance of spatial models for an accurate system-level analysis and optimization of emerging 5G ultra-dense and heterogeneous cellular networks. Due to the increased heterogeneity and deployment density, new flexible and scalable approaches for modeling, simulating, analyzing and optimizing cellular networks are needed. Recently, a new approach has been proposed: it is based on the theory of point processes and it leverages tools from stochastic geometry for tractable system-level modeling, performance evaluation and optimization. The potential of stochastic geometry for modeling and analyzing cellular networks will be investigated for application to several emerging case studies, including massive MIMO, mmWave communication, and wireless power transfer. In addition, the accuracy of this emerging abstraction for modeling cellular networks will be experimentally validated by using base station locations and building footprints from two publicly available databases in the United Kingdom (OFCOM and Ordnance Survey). This topic is highly relevant to the attendees of IEEE VTC, who are highly interested in understanding the potential of a variety of candidate communication technologies for 5G networks.

Marco Di Renzo received the Laurea (cum laude) and the Ph.D. degrees in Electrical and Information Engineering from the Department of Electrical and Information Engineering, University of L'Aquila, Italy, in April 2003 and in January 2007, respectively. In October 2013, he received the Habilitation à Diriger des Recherches from the University Paris-Sud XI, Paris, France.

Since January 2010, he has been a Tenured Associate Professor ("Chargé de Recherche Titulaire CNRS") with Paris-Saclay University in the Laboratory of Signals and Systems, a joint academic and research laboratory of CNRS, CentraleSupelec and University Paris-Sud XI, Paris, France. His main research interests are in the field of wireless communications theory. He is a Principal Investigator of seven European-funded research projects (Marie Curie ITN-GREENET, Marie Curie IAPP-WSN4QoL, Marie Curie ITN-CROSSFIRE, Marie Curie IAPP-SmartNRG, Marie Curie ITN-5Gwireless Marie Curie ITN-5Gaura and Marie Curie RISE-CASPER). He is a co-founder and the Chief Scientific Officer for Wireless Communications Research of the university spinoff company WEST Aquila s.r.l..

Dr. Di Renzo is the recipient of several awards, including the 2012 IEEE CAMAD Best Paper Award; the 2013 IEEE VTC-Fall Best Student Paper Award; the 2013 Network of Excellence NEWCOM# Best Paper Award; the 2013 IEEE-COMSOC Best Young Researcher Award for Europe, Middle East and Africa; the 2014 Royal Academy of Engineering Distinguished Visiting Fellowship, United Kingdom; the 2014 IEEE ATC Best Paper Award; the 2014 IEEE CAMAD Best Paper Award; the 2015 IEEE ComManTel Best Paper Award, the 2015 IEEE Jack Neubauer Memorial Award; and the CNRS PEDR prize for excellence in research and doctoral students supervision.

Currently, he serves as an Editor of the IEEE Communications Letters and of the IEEE Transactions on Communications. He is a Senior Member of the IEEE and COMSOC, and a Member of the European Association for Communications and Networking (EURACON.

T8: Breaking the RF Spectrum Crunch: Recent Advances in Optical Wireless by Lajos Hanzo (University of Southampton, UK) has been cancelled

Sunday 15 May 2016 8:30–12:00 Jian Kang + Ye Cheng

T9: Security for Next Generation Mobile Wireless Networks

Yi Qian (University of Nebraska-Lincoln)

Wireless communication technologies are ubiquitous nowadays. Most of the smart devices have Cellular, Wi-Fi, Bluetooth connections. These technologies have been developed for many years, nonetheless they are still being enhanced. More development can be expected in the next 5 years, such as faster transmission data rate, more efficient spectrum usage, lower power consumption, etc. Similarly, cellular networks have been evolved for several generations. For example, GSM as part of 2G family, UMTS as part of the 3G family, and LTE as part of 4G family. In the next few years, cellular networks will continue the evolution to keep up with the fast-growing needs of customers. Secure wireless communications will certainly be part of other advances in the industry such as multimedia streaming, data storage and sharing in clouds, mobile cloud computing services, etc. This tutorial covers the topics on security for next generation mobile wireless networks, with focusing on 4G (LTE and LTE-A) and 5G mobile wireless networks, followed by a discussion on the challenges and open research issues in the area.

Yi Qian is an associate professor in the Department of Electrical and Computer Engineering, University of Nebraska-Lincoln (UNL). Prior to joining UNL, he worked in the telecommunications industry, academia, and the government. Some of his previous professional positions include serving as a senior member of scientific staff and a technical advisor at Nortel Networks, a senior systems engineer and a technical advisor at several start-up companies, an assistant professor at University of Puerto Rico at Mayaguez, and a senior researcher at National Institute of Standards and Technology. His research interests include information assurance and network security, network design, network modeling, simulation and performance analysis for next generation wireless networks, wireless ad-hoc and sensor networks, vehicular networks, smart grid communication networks, broadband satellite networks, optical networks, high-speed networks and the Internet. Dr. Yi Qian is a member of ACM and a senior member of IEEE. He is serving on the editorial board for several international journals and magazines, including serving as the Associate Editor-in-Chief for IEEE Wireless Communications Magazine. He is the Chair of IEEE Communications Society Technical Committee for Communications and Information Security. He is a Distinguished Lecturer for IEEE Vehicular Technology Society.

Dr. Qian has been teaching "Network Security" every fall semester, and "Wireless Security" every spring semester after he joined University of Nebraska-Lincoln in 2009. He received two best teaching awards from the College of Engineering at UNL in the last few years. After teaching "Wireless Security" at UNL for the last six years, Dr. Qian is writing a comprehensive textbook on the topic, "Security in Wireless Communication Networks", to be published by Wiley/IEEE Press in 2016.

T10: Full-Duplex Communications and Networks by Linyang Song (Peking Univ), Zhu Han (Univ. of Houston) has been cancelled

Workshops

Sunday, 15 May 2016 13:00-17:30 Wan Da

W1: 5th International Workshop on High Mobility Wireless Communications (HMWC) 2016

The purpose of the workshop is to gather researchers and industry to share views on requirements and technical enablers for High Mobility Wireless Communications (HMWC), covering specifically: Rapidly time-varying channel modeling, estimation and equalization; Fast synchronization; Doppler shift estimation & compensation; Doppler diversity and anti-Doppler techniques; Efficient modulation and detection techniques employed in high speed vehicles; Fast power control; Fast handover and group handover; Fast location update; Highly dynamic radio resource allocation; Theoretical performance limits of HMWC systems; Coding and network capacity for HMWC systems; Interference utilization and capacity approaching techniques; Multiple access schemes for very high speed radio systems; Relay, distributive multi-antenna and cooperative techniques for HMWC systems; High-speed vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) radio systems; and Dedicated high speed radio network architecture.

Organisers:
Xiao Ma, Sun Yat-sen University, China
Li Chen, Sun Yat-sen University, China

Technical Program Committee:
B. Bai, Xidian University
Caijun Zhong, Zhejiang University
Cheng-Xiang Wang, Heriot-Watt University
Jianping Zheng, Xidian University
Ke Xiong, Beijing Jiaotong University
Li Chen, Sun Yat-sen University
Li Ping, City University of Hong Kong
Pingyi Fan, Tsinghua University
Wen Chen, Shanghai Jiao Tong Univ.
Yunquan Dong, Seoul National University
Zhaoyang Zhang, Zhejiang University
Zhengchuan Chen, Singapore University of Technology and Design

Papers

1 **Analysis of the Uplink Capacity in the High-speed Train Wireless Communication with Full-duplex Mobile Relay**
Nina Lin, Sun Yat-sen University, China; Xiujie Huang, Jinan University, China; Xiao Ma, Sun Yat-sen University, China

2 **Location-Aided Umbrella-shaped Massive MIMO Beamforming Scheme with Transmit Diversity for High Speed Railway Communications**
Xuhong Chen, Jiaxun Lu, Shanyun Liu, Pingyi Fan, Tsinghua University, China

3 **Coded Index Modulation with Block Markov Superposition Transmission for Highly Mobile OFDM Systems**
Leijun Wang, Xiao Ma, Sun Yat-sen University, China

4 **Design of LDPC Coded CPM over Burst-Error Channels**
Chunhui Shen, Li Bing, Baoming Bai, Xidian University, China

5 **Joint Subcarrier and Power Allocation for DownlinkTransmission in OFDMA Heterogeneous Networks**
Feng Wang, Wen Chen, Shanghai Jiaotong University, China

6 **Location-aware Low Complexity ICI Reduction in OFDM Downlinks for High-speed Railway Communication Systems with Distributed Antennas**
Jiaxun Lu, Xuhong Chen, Shanyun Liu, Pingyi Fan, Tsinghua University, China

7 **MAP Estimation Based on Doppler Characterization in Broadband Mobile LEO Satellite Communications**
Jiangnan Lin, Institute of Computing Technology, Chinese Academy of Sciences, China; Zhanwei Hou, University of Sydney, China; Yiqing Zhou, Lin Tian, Jinglin Shi, Institute of Computing Technology, Chinese Academy of Sciences, China

8 **MIMO OFDM Index Modulation with Circular-Shift-based Activation Pattern for Rapidly Time-Varying Channels**
Fangchao Yao, Jianping Zheng, Zhenzhou Li, Xidian University, China

9 **On the joint carrier frequency offset estimation andchannel tracking limits for MIMO-OFDM systemover high-mobility scenarios**
Bingpeng Zhou, Qingchun Chen, Feifei Shen, Qing Yu Ci, Southwest Jiaotong University, China

10 **Optimal Repair for Distributed Storage Codes in Vehicular Networks**
Yaning Xu, Qiyuan He, Shanghai Jiao Tong University, China

11 **Tradeoff of Capacity and Handover Performance in High Speed Railway Wireless Communications**
Ziyue Liu, Enzhi Zhou, Pingzhi Fan, Li Hao, Southwest Jiaotong University, China

12 **A Network Assisted Fast Handover Scheme for High Speed Rail Wireless Networks**
Tao Deng, Zhengquan Zhang, Xian Wang, Pingzhi Fan, Institute of Mobile Communications, China

13 **An mmWave Wireless Communication and Radar Detection Integrated Network for Railways**
Li Yan, Xuming Fang, Hengchao Li, Chao Li, Southwest Jiaotong University, China

14 **I/O Optimized Recovery Algorithm in Vehicular Network Using PM-RBT Codes**
Qiyuan He, Yaning Xu, Yuan Luo, Shanghai Jiao Tong University, China

15 **Remote Antenna Unit Selection Assisted SeamlessHandover in Distributed Antenna System forHigh-Speed Railway Communications**
Yang Lu, Ke Xiong, Beijing Jiaotong University, China; Zhuyan Zhao, Nokia SolutionsNetworks, China; Pingyi Fan, Tsinghua University, China; Zhangdui Zhong, Beijing Jiaotong University, China

16 **End-to-End Performance Optimization of Tandem Queuing for High-Speed Train Networks**
Yu Wu, Yuxin Zheng, Yaxiong Feng, Yawei Zhao, Xuming Fang, School of Information Science and Technology, China

17 **Channel Modeling and Estimation in High-Speed Mobile Environment**
Huiling Zuo, Hengguo Song, Tianpeng Yuan, Xiaofeng Tao, Beijing University of Posts and Telecommunications, China

Sunday, 15 May 2016 13:00-17:30 Liu He

W2: 2nd International Workshop on Wireless Communications for High Speed Railways (HSRCom2016)

Recent advances in High Speed Rail (HSR) have led to requirements for improvements and enhancements to systems used for wireless communications. To meet the demands, a system that broadens the use of current and future wireless technologies is needed. Fundamentally new concepts and design approaches are needed, and these must be integrated into HSR communication systems that provide the necessary reliability,availability, maintainability, and safety. This workshop presents a forum for exchange of ideas between all stakeholders.The focus of HSRCom2016 is to showcase a unified vision for the future HSR communications, with an emphasis on wireless communications and other relevant technologies. HSRCom2016 will bring together individuals from academia, government, and industry to discuss and exchange ideas in the fields of wireless communications for HSRs.

General chairs:
Zhangdui Zhong, Beijing Jiaotong University, China
Bo Ai, Beijing Jiaotong University, China
Organization and publicity chair:
Ruisi He, Beijing Jiaotong University, China

Technical Program Committee:
Cesar Briso, Universidad Politecnica de Madrid
Wei Chen, Beijing Jiaotong University
Simon L. Cotton, Queen's University Belfast
Wei Fan, Aalborg University
Mingming Gan, AIT Austrian Institute of Technology
Ke Guan, Beijing Jiaotong University
Katsuyuki Haneda, Aalto University
Ruisi He, Beijing Jiaotong University
Buon Kiong Lau, Lund University
Tian Lei, Beijing University of Posts and Telecommunication
Claude Oestges, Université catholique de Louvain
Olivier Renaudin, University of Southern California
Sana Salous, Durham University
Zhengguo Sheng, University of Sussex
Wei Wang, German Aerospace Center
Miaowen Wen, South China University of Technology
Thomas Zemen, AIT Austrian Institute of Technology
Yiqing Zhou, Chinese Academy of Sciences

Program

Sunday, 15 May 2016 13:00-13:50 Liu He

Keynote

Wireless communications with unmanned aerial vehicles: opportunities and challenges
Rui Zhang, National University of Singapore

Sunday, 15 May 2016 13:50-14:45 Liu He

Oral Session 1

Chair: Bo Ai, Beijing Jiaotong University, China

1 **Channnel Estimation with New Basis Expansion Model for Wireless Communications on High Speed Railways**
Xiyu Wang, Gongpu Wang, Beijing Key Lab of Transportation Data Analysis and Mining, Beijing Jiaotong University, Beijing, China; Jingyuan Sun, Technology & Innovation/ Research/ Radio system Beijing, Nokia Company, China; Yulong Zou, Institute of Signal Processing and Transmission, Nanjing University of Posts and Telecommunications, China

2 **Propagation Characteristics of Mobile Channel in Urban Micro-cells at 3.5 GHz and 6 GHz**
Fusheng Huang, Lei Tian, Beijing University of Posts and Telecommunications, China; Yi Zheng, China Mobile Research Institute, China; Runquan Miao, Jianhua Zhang, Beijing University of Posts and Telecommunications, China

3 **Channel Characterization for Mobile Hotspot Network in Subway Tunnels at 30 GHz Band**
Guangkai Li, Bo Ai, Ke Guan, Ruisi He, Zhangdui Zhong, Beijing Jiaotong University, China; Bing Hui, Junhyeong Kim, Electronics and Telecommunications Research Institute, Korea

Sunday, 15 May 2016 15:00-16:45 Liu He

Oral Session 2

Chair: Bo Ai, Beijing Jiaotong University, China

4 **Channel Characteristics for High-speed-train in Non-tunnel and Tunnel Scenarios under LTE-A Network**
Xiaokang Ye, Xuesong Cai, Tongji University, China; Haowen Wang, Shanghai Research Center for Wireless Communications, China; Xuefeng Yin, Tongji University, China

5 **Measurement and Analysis of the Broadband Radio Propagation in a High-speed Railway Station**
Lei Zhang, Technical University of Madrid, Spain; Jianwen Ding, Bei Zhang, Beijing Jiaotong University, China; Cesar Briso, Technical University of Madrid, Spain; Ke Guan, Beijing Jiaotong University, China

6 **Impact of Mutual Coupling on LTE-R MIMO Capacity for Antenna Array Configurations in High Speed Railway Scenario**
Yiru Liu, Bo Ai, Binghao Chen, Beijing Jiaotong University, China

7 **Modeling Link Quality for High-Speed Railway Networks Based on Hidden Markov Chain**
Jiayang Song, Huachun Zhou, Wei Quan, Tao Zheng, Ping Dong, Beijing Jiaotong University, China

8 **TD-LTE Downlink Performance Assessment in High Speed Scenarios**
Dan Fei, State Key Laboratory of Rail Traffic ControlSafety, Beijing Jiaotong University, China; José Rodríguez-Piñeiro, José A. García-Naya, Luis Castedo, GTEC, Univ. A Coruña, Spain; Ke Guan, Lei Xiong, State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, China

9 **Research on Duplex Mode of Railway Next Generation Wireless Communication**
Wei Wang, ZTE Corporation; Jianlin Guo, ZTE Corporation

Sunday, 15 May 2016 16:45-17:30 Liu He

Posters

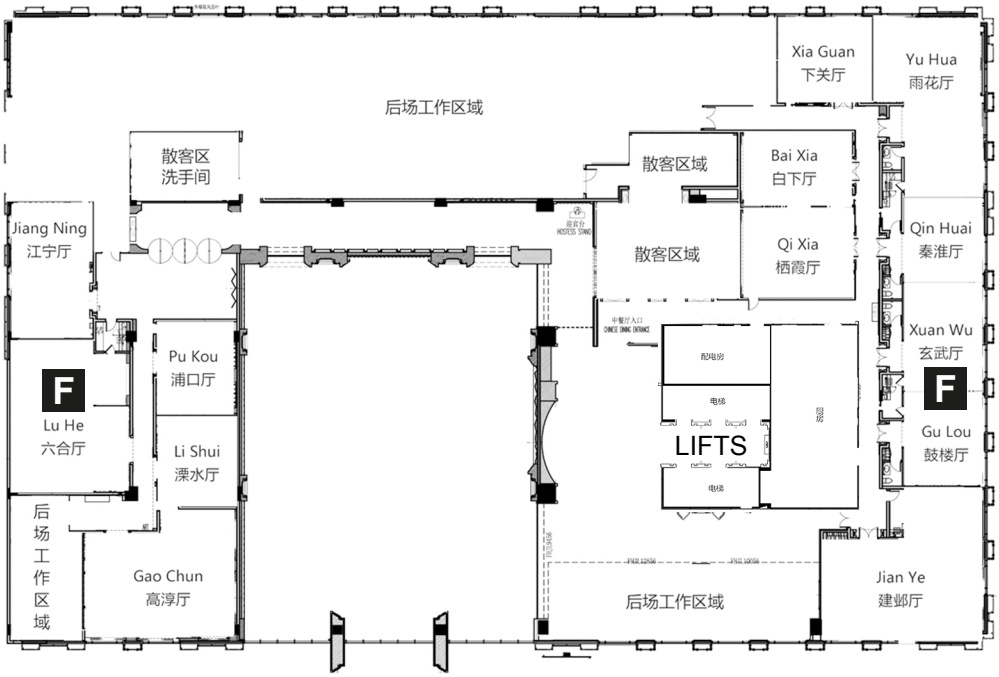
1 **Compressive Sensing based Multi-User Detection in High Mobility Scenario**
Guoyu Ma, China; Bo Ai, Fanggang Wang, Xianan Hu, Beijing Jiaotong University, China

2 **Delay-Aware Dynamic Resource Allocation in High-Speed Railway Networks**
Yan Lei, Gang Zhu, Chao Shen, Xia Chen, Jingjing Xu, Yanqing Xu, Xiaozhou Zhang, Beijing Jiaotong University, China

3 **Delay-Aware Dynamic Resource Management for High-Speed Railway Wireless Communications**
Shengfeng Xu, Gang Zhu, Chao Shen, Shichao Li, Zhangdui Zhong, Beijing Jiaotong University, China

4 **Doppler Shift Estimation for High-Speed Railway Scenario**
Tianfu Liu, CRRC Industrial Institute Co. Ltd of China, China; Xiaoping Ma, Ruhao Zhao, Honghui Dong, Limin Jia, Beijing Jiaotong University, China

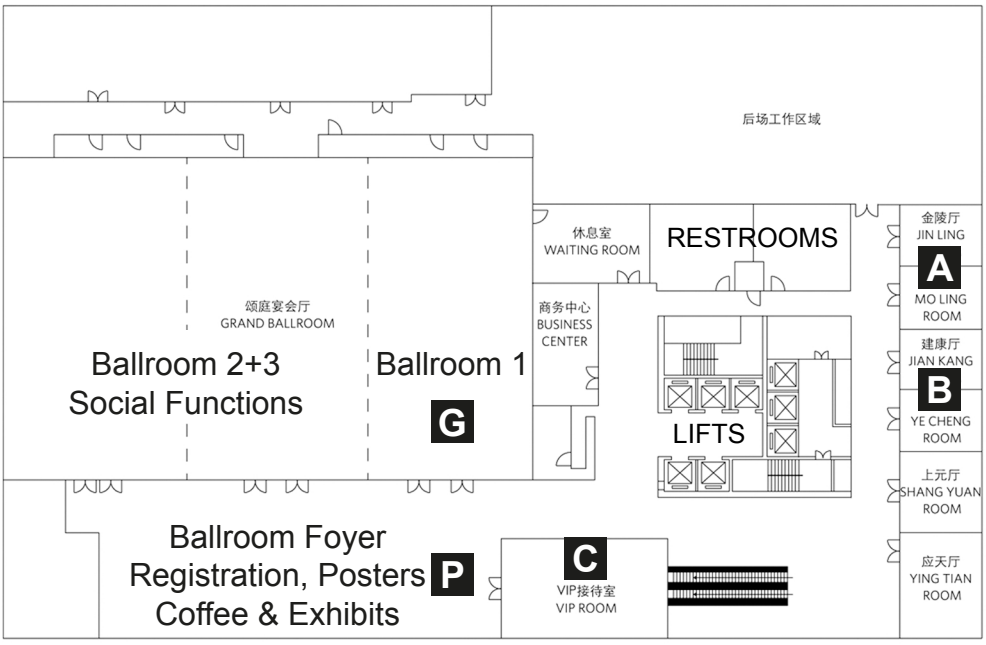
		Jin Ling + Mo Ling (A)	Jian Kang + Ye Cheng (B)	VIP (C)	Wan Da (D)	Krabi + Pattya (E)	Liu He (F)	Ballroom 1 (G)	Ballroom Foyer (Posters)
SUNDAY 15 May									
7:30-17:30		Registration (Ballroom Foyer)							
8:30-17:30		Tutorials, Workshops and other events: See separate program (to follow)							
18:00-20:00		Welcome Reception (Ballroom 2-3)							
MONDAY 16 May									
7:30-17:30		Registration (Ballroom Foyer)							
8:30-10:30		Opening Plenary (Ballroom 2-3)							
10:30-11:00		Refreshments and Exhibits (Ballroom Foyer)							
11:00-12:30	(1)	Sensor Networks I	D2D Communcations I	Relay I: Performance Analysis	Millimeter Wave Communications	Channel Measurements and Modeling I	Data Dissemination in Vehicular Networks	5G Architecture	Transmission and Detection
12:30-14:00		Lunch (Ballroom 2-3)							
14:00-15:30	(2)	Sensor Networks II	D2D Communcations II	Relay II: Detection, Estimation, and Relay Selection	MIMO and OFDM Techniques	Channel Measurements and Modeling II	Mobility, Connectivity, and Positioning in Vehicular Networks	5G Air Interface	Spectrum Allocation and Wireless Networking
15:30-16:00		Refreshments and Exhibits (Ballroom Foyer)							
16:00-17:30	(3)	Cellular & Cooperative Networks	Multi-carrier Communications	Relay III: Compute-&-Fwd, Full-Dupl & 2-Way Relay	MIMO Precoding	Channel Measurements and Modeling III	Advanced Topics in Vehicular Networks	LTE-U	
		Panel: How to publish your papers in IEEE journals? (Ballroom 2-3)							
18:20-21:30		VTC2016-Spring Banquet (Ballroom 2-3)							
TUESDAY 17 May									
7:30-17:30		Registration (Ballroom Foyer)							
9:00-10:30		Plenary Panel: WWRF and IEEE VTS Executive Forum on Connected/Autonomous Cars—From DSRC to LTE-V to 5G (Ballroom 1-2-3)							
10:30-11:00		Refreshments and Exhibits (Ballroom Foyer)							
11:00-12:30	(4)	IoT & Ad Hoc Networks	Cognitive Radio and Spectrum Management I	Relay IV: Coverage and Security	Resource Allocation I	Channel Modeling, Estimation, and Performance Analysis	**Xuan Wu + Gu Lou (F)** Massive MIMO I	Panel (HMC)	Wireless Networking and Energy Efficiency
12:30-14:00		IEEE VTS Awards Lunch (Ballroom 2-3)							
14:00-15:30	(5)	Network Security I	Cognitive Radio and Spectrum Management II	MIMO System Design and Analysis I	Resource Allocation II	Antenna Systems and Propagation	**Xuan Wu + Gu Lou (F)** Massive MIMO II	Panel (mmW)	Localization, C-RAN, and VLC
15:30-16:00		Refreshments and Exhibits (Ballroom Foyer)							
16:00-17:30	(6)	Network Security II	Filtering and Equalization	MIMO System Design and Analysis II	MIMO-OFDM	Millimeter-Wave Channels	**Xuan Wu + Gu Lou (F)** Massive MIMO III	Panel (V2X)	
17:30-19:30		Exclusive Reception for VTS Members (Ballroom 2-3)							
WEDNESDAY 18 May									
8:00-16:00		Registration (Ballroom Foyer)							
9:00-10:30	(7)	Energy Harvesting and Energy Efficient Wireless Networks	Multiple Access Techniques	Coding I	Test-Bed and Field Experiments	Satellite Communications Networks and Systems I	Vehicle Controls	NOMA and Massive MIMO	Recent Results in Wireless Networking I
10:30-11:00		Refreshments and Exhibits (Ballroom Foyer)							
11:00-12:30	(8)	Vehicular Networks	Green Cellular Networks	Coding II	WiFi / WiGig, LTE / LTE-A	Satellite Communications Networks and Systems II	Traffic Safety	Small Cell Networks	RR in Wireless Netw II; Vehic Elecs & Intel Transp
12:30-14:00		Lunch (Ballroom 2-3)							
14:00-15:30	(9)	Vehicular Communications	Green Wireless Communications I	Modulation I	Scheduling, Load Balancing and Content Delivery Network	Navigation and Positioning I	Physical Layer Techniques	Heterogeneous Networks I	
15:30-16:00		Refreshments and Exhibits (Ballroom Foyer)							
16:00-17:30	(10)	MAC in Vehicular Networks	Green Wireless Communications II	Modulation II	Cooperative Communications	Navigation and Positioning II	Emerging Communications Systems	Heterogeneous Networks II	



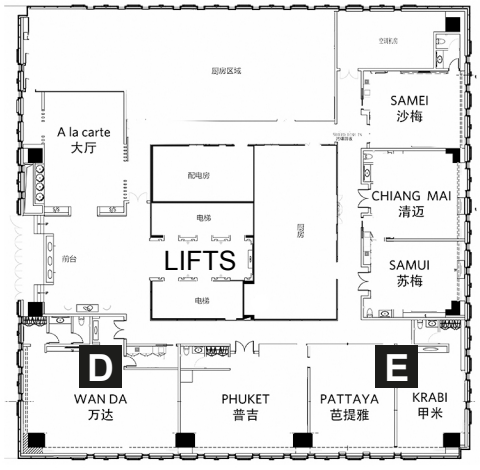
Track F Monday & Wednesday

Track F Tuesday only

Floor 2



Floor 3



Floor 6

Hotel Layout

5 **Local Mean Power Estimation over Fading Channels**
Ting Wang, Bo Ai, Ruisi He, Zhangdui Zhong, Beijing Jiaotong University, China

6 **Inter-Vehicle Cooperative Channel Estimation for IEEE802.11p Systems**
Yan Yang, Beijing Jiaotong University, China

7 **Wireless Communication for Heavy Haul Railway Tunnels based on Distributed Antenna Systems**
Tianluan Shuo, Ke Zhao, Hao Wu, State Key Laboratory of Rail Traffic Control and Safety, China

Sunday, 15 May 2016 13:00-17:30 Jian Kang + Ye Cheng

W3: International Workshop on Connecting All Things for Enabling Smart Cities (CONTEST)

As a key initiative for promoting the quality of living and resource efficient economy, the smart city concept has attracted much attention in both academia and industry. Information and communication technologies (ICT), particularly advanced communication techniques, play a critical role in facilitating intelligent collection and utilization of heterogeneous data from deployed equipment throughout cities. The major challenges in this area have included: low energy consumption requirement, limited radio frequency bandwidth, low-latency requirement and cost-effective requirement. To address these challenges, it is of vital importance to sustainably develop a set of new concepts and theories for improving the energy efficiency, the spectral efficiency and the network design, such as cognitive radio, interference alignment, energy harvesting communications and ultra-dense network technologies. This workshop aims to facilitate this sustained effort and enhance international collaborations by disseminating cutting-edge research results. Participants will be able to share perspectives and newest research findings, and further identify collaboration opportunities in the emerging research areas of smart cities.

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Nan Zhao, Dalian University of Technology, China
Richard F. Yu, Carleton University, Canada

TPC Co-Chairs
Yi Qian, University of Nebraska - Lincoln, USA
Shengrong Bu, University of Glasgow, UK
Huiqin Du, Jinan University, China

Panel Co-Chairs
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Jie Ding, Yangzhou University, China
Stephen Wang, Toshiba Research Europe Limited, UK

Publicity Co-Chairs
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Yan Zhang, Simula Research Laboratory, Norway
Melike Erol Kantarci, Clarkson University, USA
Kai Yang, Beijing Institute of Technology, China

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A. Nallanathan, King's College London, UK
Jinsong Wu, University of Chile, Chile
Yiwei Fang, Fujitsu Laboratories of Europe Limited, UK
Wei-Yu Chiu, Yuan Ze University, Taiwan

Sponsor Committees:
IEEE Technical Committee on Green Communications & Computing (TCGCC)
IEEE SIG on Green Smart Grid Communications

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Bo Rong, Communications Research Centre Canada
Changqing Luo, Huazhong University of Science and Technology
Chao Wang, Tongji University
Chau Yuen, Singapore University of Technology and Design
Chengchao Liang, Carleton University
Dongfeng Fang, University of Nebraska-Lincoln
Feng Ye, University of Nebraska - Lincoln
Gang Liu, Southwest Jiaotong University
Hongjian Sun, Durham University
Huiqin Du, JiNan University
Jian Zhao, Nanjing University
Jie Ding, Yangzhou University
Jie Tang, South China University of Technology
Jing Jiang, Durham University
Luca Chiaraviglio, University of Rome Sapienza
quansheng Guan, South China University of Technology
Renchao Xie, Beijing University of Posts and Telecommunications
Rongrong Qian, Heriot-Watt University
Shengjie Xu, University of Nebraska-Lincoln
Shengrong Bu, University of Glasgow
Wei Li, University of Victoria
Yi Qian, University of Nebraska-Lincoln
Yun Ye, City University of New York
Zhengguo Sheng, University of Sussex
Zhiguo Shi, Zhejiang University

Papers

1 **A Novel Dimming Scheme for Indoor MIMO Visible Light Communication Based on Antenna Selection**
Zhipei Wang, Caili Guo, Yang Yang, Beijing University of Posts and Telecommunications, China; Qiang Li, Huawei Technologies Co., Ltd, China

2 **A Receiver-based Routing Protocol for Cognitive Radio Enabled AMI Networks**
Zhutian Yang, Harbin Institute of Technology, China; Shuyu Ping, Arumugam Nallanathan, King's College London, United Kingdom; Lixian Zhang, Harbin Institute of Technology, China

3 **Enable Close Proximity Services for Smart Cities with Information Centric LTE System**
Lijun Dong, Guoqiang Wang, Futurewei Technologies Inc, United States

4 **Energy Efficient and Adaptive Design for Wireless Power Transfer in Electric Vehicles**
Xiaolin Mou, Oliver Groling, Andrew Gallant, Hongjian Sun, Durham University, United Kingdom

5 **Implementation and Evaluation of a Cooperative MAC Protocol for Smart Data Acquisition**
Saad Amin, Sohaib Ashraf, Mohammad Shahzeb Faisal, Muhammad Shahmeer Omar, Syed Ahsan Raza Naqvi, Syed Ali Hassan, Muhammad Usman Ilyas, National University of Sciences and Technology (NUST), Pakistan

6 **Novel Frequency Domain Cyclic Prefix Autocorrelation based Compressive Spectrum Sensing for Cognitive Radio**
Sener Dikmese, Zobia Ilyas, Paschalis Sofotasios, Markku Renfors, Mikko Valkama, Tampere University of Technology, Finland

7 **Performance Analysis of Cooperative Spectrum Sensing in Cognitive Vehicular Networks with Dense Traffic**
Siting Zhu, Caili Guo, Chunyan Feng, Xia Liu, Beijing University of Posts and Telecommunications, China

8 **Performance Assessment of Distributed Communication Architectures in Smart Grid**
Jing Jiang, Hongjian Sun, Durham University, United Kingdom

9 **Rank-constrained Beamforming Design for Underlay Cognitive Radio Network**
Yao Zhang, Duoying Zhang, Huiqin Du, Jinan University, China

10 **Secrecy Outage Probability of Minimum Relay Selection in Multiple Eavesdroppers DF Cognitive Radio Networks**
Jie Ding, Yangzhou University, China; Qiqing Yang, Yangzhou University, China; Jing Yang, Yangzhou University, China

11 **Transmission Opportunity of Spectrum Sharing with Cellular Uplink Spectrum in Cognitive VANET**
Hang Zhang, Xinxin He, Tao Luo, Weisen Shi, Beijing University of Posts and Telecommunications, China

12 **Optimal Time Allocation for Wireless Powered Relay Systems with Joint S-D Energy Transfer**
Yawei Chen, Chao Zhang, Xi'an Jiaotong University, China

Sunday, 15 May 2016 08:30-12:00 VIP

W4: The Second International Workshop on Advances in Industrial Networks and Intelligent Systems (AINIS 2016)

With the development of wireless communication technologies, e.g., wireless sensor networks, wireless mesh networks, large scale industrial plants slowly get the opportunities to adapt their advantages. Traditional industrial fieldbus can be replaced by wireless networks, which give more flexibility with lower cost and risk of single point of failure. Thousands of industrial equipment can also be monitored by using wireless sensors to detect their health status and even diagnose the type/location of fault based on extracted features. We see a huge potential of applying wireless technologies and artificial intelligences to make the existing large scale industrial plants smarter. We also see a huge amount of effort should be made to realize this beautiful computing vision. Thus, in this workshop, we are interested in exploring recent emerging technologies and research developments on industrial networks and intelligent systems to advance the step towards the smarter plants in conjugation with this semi-annual flagship conference of IEEE VTS.

Technical Program Committee:
Yuanfang Chen, Dalian University of Technology
Der-Jiunn Deng, CHUE
Han Guangjie, Hohai Unviersity
Leandros Maglaras, De Montfort University
Constandinos Mavromoustakis, University of Nicosia
Al-Sakib Khan Pathan, Bangladesh/ Islamic University in Madinah
Lei Shu, Osaka University
Prabhat Kumar Upadhyay, Indian Institute of Technology Indore
Liangtian Wan, Nanyang Technological University
Xiaoling Wu, Guangdong University of Technology
Qingqing Xie, Anhui University
Chau Yuen, Singapore University of Technology and Design
Deze Zeng, University of Aizu
Chunsheng Zhu, The University of British Columbia

Papers

1 **SDN Control Model for Intelligent Task Execution in Wireless Sensor and Actor Networks**
Wenxiang Li, Dongsheng Liu, Bowen Zhu, Xia Wei, Weidong Xiao, Liangkang Yang, Wuhan University of Science and Technology, China

2 **Selective AP-sequence Based Indoor Localization without Site Survey**
Ran Liu, Chau Yuen, Singapore University of Technology and Design, Singapore; Jun Zhao, Jindong Guo, Peking University, China; Ronghong Mo, Singapore University of Technology and Design, Singapore; Vishesh N Pamadi, Vellore Institute of Technology, India; Xiang Liu, Peking University, China

3 **Optimal Design of Compact Receive Array in Industrial Wireless Sensor Networks**
Liangtian Wan, Guangjie Han, Jinfang Jiang, Hohai University, China; Lei Shu, Guangdong University of Petrochemical Technology, China

4 **Joint Physical Network Coding and Destination Aided Cooperative Jamming for Secure Wireless Sensor Networks**
Li Dehuai, Shang Yong, Zhang Xiguang, Peking University, China

5 **eMAP: Efficient User Selection for Mobile Advertisement Popularization**
Wanru Xu, Ruiqi Liu, Panlong Yang, Xiaoming Chen, Maotian Zhang, Yiwei Xu, PLA University of ScienceTechnology, Nanjing, China; Pengkun Sheng, Xi'an Communications Institute, China

6 **Improving Energy Efficiency in Industrial Wireless Sensor Networks Using SDN and NFV**
Shibo Luo, Shanghai Jiao Tong University, China; Hongkai Wang, InformationTelecommunication Branch of State Grid Zhejiang electric power company, China; Jun Wu, Jianhua Li, Longhua Guo, Shanghai Jiao Tong University, China; Bei Pei, Ministry of Public Security, China

7 **How to Defend against Sophisticated Intrusions in Home Networks Using SDN and NFV**
Shibo Luo, Shanghai Jiao Tong University, China; Hongkai Wang, InformationTelecommunication Branch of State Grid Zhejiang electric power company, China; Jun Wu, Jianhua Li, Longhua Guo, Shanghai Jiao Tong University, China; Bei Pei, Ministry of Public Security, China

8 **A Crowd Simulation based UAV Control Architecture for Industrial Disaster Evacuation**
Muzhou Xiong, Deze Zeng, Hong Yao, Yong Li, China University of Geosciences, China

Sunday, 15 May 2016 13:00-17:30 VIP

W6: FANTASTIC-5G International Workshop on 5G New Air Interface

The next generation (5G) cellular technology is expected to arrive in 2020. There are four trends indicating the need for a new generation of cellular technology including new air interface:

- The demand for wireless data is predicted to increase significantly, resulting in 1000x higher mobile data volumes and 10-100x higher end user data rates.
- The number of connected devices is predicted to increase by a factor of 10-100, which means that up to 300,000 devices need to be served per access point.

- Wireless connectivity will be applied to new use cases that require very reliable connections and mission-critical communication, such as vehicle-to-vehicle coordination, critical control of the power grid, etc.
- Remote presence and tactile Internet that impose stringent latency constraints on the overall connection, including the wireless part of it. Forecasts imply that the latency should be decreased for a factor of 5 in order to enable such services.

The air interfaces for 2G, 3G, and 4G were all designed for specific use cases (limited only to voice and data communications) with a certain number of limited KPIs in mind (throughput, capacity, dropped/blocked call rates, etc.). However, as outlined above, 5G requires the support of a much broader class of services and consequently a very diverse family of devices and traffic characteristics. The scope of the workshop is to contribute to the design of a new 5G air interface taking specifically the above application constraints into account. An important subject of the workshop is the feasibility of a single golden air interface able to support these requirements in a highly flexible manner.

Organising Committee:
Musbah Shaat, Centre Tecnològic de Telecomunicacions de Catalunya
Berna Sayrac, Orange
Franck Schaich, Alcatel-Lucent
Martin Schubert, Huawei
Klaus I. Pedersen, Nokia Networks
Hao Lin, Orange Labs
Gerhard Wunder, Fraunhofer HHI
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Hao Lin, France Telecom
Honglei Miao, Intel
Juha Karjalainen, Nokia
Klaus I. Pedersen, Nokia - Bell Labs
Leonardo Gomes Baltar, Intel Deutschland GmbH
Malte Schellmann, Huawei Technologies Duesseldorf GmbH
Marco Caretti, Telecom Italia
Martin Schubert, HUAWEI
Mohammed Al-Imari, Samsung R&D Institute UK
Musbah Shaat, (CTTC) Centre Tecnològic de Telecomunicacions de Catalunya
Nuno Pratas, Aalborg University
Gerhard Wunder, FU Berlin
Saeed Afrasiabi Gorgani, TU Berlin
Stephan Pfletschinger, DLR
Stephan Saur, Bell Labs Alcatel-Lucent
Thorsten Wild, Nokia Bell Labs

Program

Sunday, 15 May 2016 13:00-15:00 VIP

Session 1

1 5G Cellular Networks with Relaxed Synchronization:Waveform Comparison and New Results
Jean-Baptiste Dore, Rogin Gerzaguet, Dimitri Ktenas, CEA Leti, France

2 A Preliminary Study on Waveform Candidates for 5G Mobile Radio Communications Above 6 GHz
Ali A. Zaidi, Ericsson Research, Sweden; Jian Luo, Huawei Technologies Duesseldorf GmbH, Germany; Robin Gerzaguet, CEA Leti, France; Andreas Wolfgang, Qamcom Research & Technology, Sweden; Richard J. Weiler, Fraunhofer Heinrich Hertz Institute, Germany; Jaakko Vihriälä, Nokia, Finland; Tommy Svensson, Chalmers University of Technology, Sweden; Yinan Qi, Samsung Electronics (UK) Ltd, United Kingdom; Hardy Halbauer, Alcatel-Lucent Deutschland AG, Germany; Zhao Zhao, Huawei Technologies Duesseldorf GmbH, Germany; Per Zetterberg, Qamcom Research & Technology, Sweden; Honglei Miao, Intel Deutschland GmbH, Germany

3 Cyclic Prefix Adaptation with Constant Overall Symbol Time for DFT-spread-OFDM and OFDM
Liangping Ma, Tao Deng, Alpaslan Demir, InterDigital Communications, Inc., United States

4 Enhancing OFDM by Pulse Shaping for Self-Contained TDD Transmission in 5G
Qi Wang, Zhao Zhao, Yan Guo, Xitao Gong, Martin Schubert, Malte Schellmann, Wen Xu, Huawei Technologies Duesseldorf GmbH, Germany

5 Subcarrier Spacing - how to make use of this degree of freedom
Frank Schaich, Thorsten Wild, Rana Ahmed, Nokia, Germany

6 A Reduced Complexity Time-Domain Transmitter for UF-OFDM
Maximilian Matthe, Technical University Dresden, Germany; Dan Zhang, Technical University Dresden, Germany; Frank Schaich, Nokia Bell Labs, Germany; Thorsten Wild, Nokia Bell Labs, Germany; Rana Ahmed, Nokia Bell Labs, Germany; Gerhard Fettweis, Technical University Dresden, Germany

Sunday, 15 May 2016 15:15-17:30 VIP

Session 2

7 A Mapping Scheme of Users to SCMA Layers for D2D Communications
Yanping Liu, Xuming Fang, Huali Yang, Xi Li, Southwest Jiaotong University, China; Qi Xiao, Shuangshuang An, Yan Luo, Southwest Jiaotong University, China; Dageng Chen, Huawei Technologies, Co. Ltd., China

8 An Efficient Data Exchange and Detection Scheme for Two-Way Relay Based D2D Communications
Yejian Chen, Bell Labs, Nokia, Germany

9 A Two-stage Interference Alignment Scheme for Two-Cell Downlink MIMO Cellular Network with Delayed CSIT
Liyu Xu, Xuewen Liao, Zhenzhen Gao, Jingke Wan, Xi'an Jiaotong University, China

10 Weighted Sum Rate Maximization of Correlated MISO Interference Broadcast Channels under Linear Precoding: A Large System Analysis
Wassim Tabikh, Orange Labs/ EURECOM, France; Dirk Slock, EURECOM, France; Yi Yuan-Wu, Orange Labs, France

11 Enhanced HARQ design for 5G wide area technology
Saeed Reza Khosravirad, Nokia - Bell Labs, Poland; Gilberto Berardinelli, Aalborg University, Denmark; Klaus I. Pedersen, Frank Frederiksen, Nokia - Bell Labs, Denmark

12 Coexistence of UF-OFDM and CP-OFDM
Rana Ahmed, Thorsten Wild, Frank Schaich, Bell Labs Nokia, Germany

13 Flexible 5G below 6GHz mobile broadband radio air interface
Wolfgang Zirwas, Nokia Networks, Germany; Gerhard Wunder, Lars Thiele, Martin Kurras, Fraunhofer Heinrich Hertz Institute, Germany

Sunday, 15 May 2016 08:30-12:00 Wan Da

W8: The First IEEE Intl Workshop on User-Centric Networking for 5G and Beyond

The 5G Mobile Systems and Networks, planned to be launched in 2020, have drawn the major attention from academia, industry, and governments all over the world. Recent research and development efforts mainly concentrate on diverse air-interface techniques for cellular networks, such as massive MIMO, high-frequency band communications, filter-bank based OFDM and the variants, non-orthogonal multiple access, etc. However, the networking perspective issues towards 5G systems and beyond, which face the explosive growth of applications over mobile Internet, have not received sufficient research efforts despite their vital importance. In the meantime, it is critical to understand that user-centricity would be one of the core features of 5G networks. Particularly, towards 5G and future networks, the concept of user-centric networking has evolved for years and has gained multi-fold characteristics. First, with the rapid development of smart phones, in 5G networks the mobile users would not just function as consumers, but also as contributors to facilitate the network infrastructure in service provisioning. Second, the satisfaction of mobile users' quality-of-experience (QoE) would have become a much more crucial task for operators than ever. More importantly, given the great flexibility of air-interfaces, growing networking capability, and drastically increasing network scale, the network controller does not necessarily manage everything for mobile users. Mixed centralized control and autonomous networking would be the major networking style beyond 2020, which completely differs from current cellular systems and networks. Unfortunately, although the concept of user-centricity is evolving, the user-centric networking solution has been neither well developed nor thoroughly studied.

This workshop seeks to address this covering, for5G and beyond: User-centric protocol stack design; Cross-layer design for user-centric networking; User-centric QoE/QoS provisioning; Mixed centralized and autonomous networking; User-centric D2D networking; Game-theoretical approach for user-centric design; User-centric design for security assurance; User-centric network selection and interference management; User-centric design for Machine Type Communications; Joint optimization of SE-EE over user-centric networks; and Simulations, evaluation and testing for user-centric networking technologies

General Co-chairs:
Pinyi Ren, Xi'an Jiaotong University
Bijan Jabbari, George Mason University
Technical Program Co-chairs:
John S. Thompson, University of Edinburgh
Yichen Wang, Xi'an Jiaotong University
Technical Program Committee:
Al-Sakib Khan Pathan, Bangladesh/ Islamic University in Madinah
Aniruddha Bhattacharjya, Guru Nanak Institute of Technology
Chao Zhang, Xi'an Jiaotong University
Chuanhe Huang, Wuhan University
Chunxiao Jiang, Tsinghua University
Danda B Rawat, Georgia Southern University
Deli Qiao, East China Normal University
Amjad Mehmood, Kohat Univerisity of Science & Technology
Guobing Li, Xi'an Jiaotong University
Hao Lu, USTC EEIS
Hao Niu, The University of Tokyo
Huarui Yin, University of Science and Technology of China
Jing Yang, University of Arkansas
Kun Wang, Nanjing University of Posts & Telecommunications
Li Sun, Xi'an Jiaotong University
Lusheng Wang, Hefei University of Technology
Lu Zhang, Alcatel-Lucent
Mianxiong Dong, Muroran Institute of Technology
Peng Shang, Alcatel-Lucent Bell Labs
Periklis Chatzimisios, Alexander TEI of Thessaloniki
Rui Zhang, University of Hawaii
Qiang Duan, The Pennsylvania State University
Qinghe Du, Xi'an Jiaotong University
Teng Li, The George Washington University
Wanbin Tang, University of Electronic Science and Technology of China
Weiwei Fang, Beijing Jiaotong University
Wei Xu, Southeast University
Wenjia Li, New York Institute of Technology
Xiao Tang, University of Houston
Yanxiang Jiang, Southeast University
Yichen Wang, Xi'an Jiaotong University
Yi Jiang, Northwestern Polytechnical University
Zhaohui Wang, Michigan Technological University
Zhenzhen Gao, Xi'an Jiaotong University
Zhongshan Zhang, University of Science and Technology Beijing

Papers

1 **A Game Theoretical Network-Assisted User-Centric Design for Resource Allocation in 5G Heterogeneous Networks**
Hamnah Munir, Syed Ali Hassan, National University of Sciences & Technology (NUST), Pakistan; Haris Pervaiz, Qiang Ni, Lancaster University, United Kingdom

2 **Channel Characteristic and Capacity Analysis of Millimeter Wave MIMO Beamforming System**
Yuanwen Li, Shiwen He, Chunli Ma, Shimin Ma, Chunguo Li, Luxi Yang, Southeast University, China

3 **Device-to-Device Communication Underlaying MU-MIMO in Multi-cell Networks with Interference Alignment**
Xin Hu, Qiang Wang, Wei Wei, Lina Yang, Beijing University of Posts and Telecommunications, China

4 **Energy-efficient User Association and Downlink Power Allocation in Software Defined HetNet**
Chongyi Bao, Zhifeng Zhao, Xianzhong Sui, Honggang Zhang, Zhejiang University, China

5 **Multi-Carrier CDMA for Network Assisted Device-to-Device Communications for an Integrated OFDMA Cellular System**
Hongnian Xing, Markku Renfors, Tampere University of Technology, Finland

6 **Power Control in D2D Underlay Massive MIMO Systems with Pilot Reuse**
Hao Xu, Zhaohui Yang, Bingyang Wu, Jianfeng Shi, Ming Chen, Southeast University, China

7 **Securing Image Transmissions via Fountain Coding and Adaptive Resource Allocation**
Caihong Han, Li Sun, Qinghe Du, Xi'an Jiaotong University, China

8 **Uplink Resource Allocation in Interference Limited Area for D2D-Based Underlaying Cellular Networks**
Jian Sun, Tianyu Zhang, Xiaoyu Liang, Zhongshan Zhang, Yueyun Chen, University of Science and Technology Beijing, China

9 **User-Centric QoE-Driven Power and Rate Allocation for Multimedia Rebroadcasting in 5G Wireless Systems**
Shuan He, Wei Wang, San Diego State University, United States

Sunday, 15 May 2016 08:30-12:00 Liu He

W9: International Workshop on Emerging Technology on Massive MIMO System (E-MIMO 2016)

The exponential growth of mobile broadband communication is expected to result in a spectral efficiency requirement in the range of hundreds of bits per second in future 5G wireless systems. To meet such high data rate requirement, massive MIMO with a very large number of active antennas is expected to play a critical role. As opposed to traditional passive MIMO system where antenna components are arranged as a 1-D array that can only steer the beam direction in the horizontal domain, massive MIMO arrays are often designed as a 2-D planar array, which can flexibly adjust the beam waveform and steering angles in both horizontal and vertical domains. This extra degree of beam steering capability, together with increased array gain, opens a new horizon for advanced beamforming technologies in future 5G systems. For future 5G scenarios with data bandwidth of several GHz and carrier frequency in the range of millimeter wave range, massive MIMO system is expected to be even more promising due to the reduced wavelength and antenna array size. It is widely acknowledged that massive MIMO will be an essential driver for satisfying the spectral efficiency requirement of future 5G communication systems, especially in the 6 – 100GHz spectrum.

The performance potential of massive MIMO, however, comes at the expense of increased system design challenges including reference signal, channel quantization and feedback, power consumption, as well as hardware complexity. To address these challenges, the goal of this workshop is to bring together leading researchers to share their views on these issues, discuss recent progress in both theoretical and implementation aspects, and identify promising concepts and technologies that enable successful rollout of massive MIMO as a path toward the future 5G society.

Organising Committee:
General Chair: ***Yingmin Wang,*** China Academy of Telecommunications Technology
General Co-Chair: ***David J. Love,*** Purdue University, USA
TPC Chair: ***Runhua Chen,*** China Academy of Telecommunications Technology
TPC Co-Chair: ***Lingjia Liu,*** University of Kansas

Technical Program Committee:
Andrew Marcum, Purdue University
Bishwarup Mondal, Nokia
Dawei Ying, Purdue University
Chuanjun Li, China Academy of Telecommunications Technology
Il Han Kim, Texas Instruments
Junil Choi, The University of Texas at Austin
Lingjia Liu, University of Kansas
Mattias Frenne, Ericsson System & Technologies
Min Zhang, Nokia
Qiubin Gao, State Key Laboratory of Wireless Mobile Communications
Shaoshi Yang, Univ. of Southampton
Simon Pun, Chinese University of Hong Kong
Susanna Mosleh, University of Kansas
Tarkesh Pande, Texas Instruments
Wan Choi, KAIST
Wenhong Chen, State Key Laboratory of Wireless Mobile Communications
Xiaoyi Wang, Nokia
Yang Song, China Academy of Telecommunications Technology
Young Han Nam, Samsung
Yu-Ngok Ruyue Li, ZTE Corporation

Papers

1 **A Codebook-Based Concept for Hybrid CSI Feedback in FDD Massive MIMO Systems**
Sebastian Faxér, Svante Bergman, Niklas Wernersson, Ericsson AB, Sweden

2 **A Hybrid Channel State Information Feedback Mechanism for Massive MIMO system**
Qiubin Gao, Fangchao Zhang, Runhua Chen, Wenhong Chen, Hui Li, Rakesh Tamrakar, Shaohui Sun, State Key Laboratory of Wireless Mobile Communications, China Academy of Telecommunications Technology (CATT), China

3 **High-Rank MIMO Precoding for Future LTE-Advanced Pro**
Hao Wu, Jianxing Cai, Huahua Xiao, Yijian Chen, Yu-Ngok Li, Zhaohua Lu, ZTE Corporation, China

4 **Reciprocity Calibration for Massive MIMO Systems by Mutual Coupling between Adjacent Antennas**
Hao Wei, Dongming Wang, National Mobile Comm. Research Lab., Southeast Univ., China; Jingyu Hua, Zhejiang University of Technology, China; Xiaohu You, National Mobile Comm. Research Lab., Southeast Univ., China

5 **Energy Efficient Downlink Transmission Schemes for Multi-cell Massive Distributed Antenna Systems**
Jun Zuo, Peking University, China; Jun Zhang, Nanjing University of Posts and Telecommunications, China; Chau Yuen, Singapore University of Technology and Design, Singapore; Wei Jiang, Wu Luo, Peking University, China

6 **Codebook Design for Massive MIMO Systems in LTE**
Hui Li, Qiubin Gao, Runhua Chen, Rakesh Tamrakar, Shaohui Sun, Wenhong Chen, China Academy of Telecommunications Technology, China

7 **Structured Sparse Channel Estimation for 3D-MIMO Systems**
Kai Liu, Hui Feng, Tao Yang, Bo Hu, Fudan University, China

8 **Spectral Efficiency of the Uplink Channel in the Shared-Antenna Full-Duplex Massive MU-MIMO System**
Pengbo Xing, Ju Liu, Chao Zhai, Shandong University, China

9 **Channel Reconstruction for SVD-ZF Precoding in Massive 3D-MIMO Systems: Low-Complexity Algorithm**
Yuwei Ren, Beijing University of Posts and Telecommunications, China; Xin Su, China Academy of Telecommunications Technology, China; Can Qi, Langfang Power Supply Company, jibei Electric Power Company Limited, China

10 **Bayesian Block-Sparse Channel Estimation for Large-Scale MISO-OFDM Systems**
Hailin Li, Feng Li, Shuyuan Li, Xi'an Jiaotong University, China

VTC2016-Spring Technical Program

Monday 16 May 2016

Monday, 16 May 2016 11:00-12:30 Jin Ling + Mo Ling

1A: Sensor Networks I

Chair: Qian Dong, Zhongshan University, China

1 A Correlation-based Energy Balanced Probabilistic Flooding Algorithm in Wireless Sensor Network
Qiyue Li, Huihui Rong, Jianping Wang, Wei Sun, Jie Li, Hefei University of Technology, China

2 An Accurate and Energy-efficient Localization Algorithm for Wireless Sensor Networks
ThiOanh Bui, Pingping Xu, NhuQuan Phan, Wenxiang Zhu, Guilu Wu, National Mobile Communications Research Laboratory of Southeast University, China

3 Cluster-based Maximum Consensus Time Synchronization in IWSNs
Zhaowei Wang, Peng Zeng, Mingtuo Zhou, Dong Li, Key Laboratory of Networked Control System, Chinese Academy of Sciences, China

4 Data Gathering in Wireless Sensor Networks with Uncontrolled Sink Mobility
Chien-Fu Cheng, Heng Lee, Tamkang University, Taiwan

5 Deterministic Allocation by Oriented Edge Coloring for Wireless Sensor Networks
Lilia Lassouaoui, Conservatoire National des Arts et Métiers, France; Stephane Rovedakis, Conservatoire National des Arts et Métiers, France; Linqing Gui, Nanjing University of Science and Technology, China; Anne Wei, Conservatoire National des Arts et Métiers, France

Monday, 16 May 2016 11:00-12:30 Jian Kang + Ye Cheng

1B: D2D Communcations I

Chair: Frank Y. Li, University of Agder, Norway

1 Fast and agile lossless mode switching for D2D communications in LTE-Advanced networks
Giovanni Nardini, University of Pisa, Italy; Giovanni Stea, University of Pisa, Italy; Antonio Virdis, University of Pisa, Italy; Dario Sabella, Telecom Italia Lab, Turin, Italy; Marco Caretti, Telecom Italia Lab, Turin, Italy

2 A Hybrid Communication Model of Millimeter Wave and Microwave in D2D Network
Fan Wang, Beijing Jiaotong University, China

3 Interference-Aware Decoupled Cell Association in Device-to-Device based 5G Networks
Hisham Elshaer, Vodafone Group R&D - King's College London, United Kingdom; Christoforos Vlachos, King's College London, United Kingdom; Vasilis Friderikos, King's College London, United Kingdom; Mischa Dohler, King's College London, United Kingdom

4 Encouraging Device-to-Device Communications to Improve Energy Efficiency in Cellular Systems
Jorge F. Schmidt, Mahin K. Atiq, Udo Schilcher, Christian Bettstetter, University of Klagenfurt, Austria

5 Energy Harvesting-aware Backoff Algorithms for Distributed Device-to-Device Communication
Geeth P. Wijesiri N.B.A., A.S.M. Samiul Saki Chowdhury, Frank Y. Li, University of Agder, Norway

Monday, 16 May 2016 11:00-12:30 VIP

1C: Relay I - Performance Analysis

Chair: Feifei Gao, Tsinghua University, China

1 Capacity Analysis of Cooperative Relaying Systems for Broadband Low-Voltage PLC Using Fountain Codes
Liping Jin, Youming Li, Jiong Shi, Zhejiang Wanli University, China

2 Effect of Bursty Impulsive Noise on the Performance of Multi-relay DF Cooperative Relaying Scheme
Md. Sahabul Alam, McGill University, Canada; Fabrice Labeau, McGill University, Canada

3 Information Theoretic Analysis of a Dual-Hop DF Based FSO Communication System
Sanya Anees, Manav Bhatnagar, Indian Institute of Technology, Delhi, India

4 On the Simultaneous Exploitation of Multiple Source-to-Relay Channels in Buffer-Aided Two-Hop Cooperative Networks
Shinya Sugiura, Miharu Oiwa, Tokyo University of Agriculture and Technology, Japan

5 Outage Analysis of Cluster-Based Multi-Hop Cognitive Radio Networks
Hari Krishna Boddapati, Shankar Prakriya, Manav R Bhatnagar, Indian Institute of Technology, Delhi, India

Monday, 16 May 2016 11:00-12:30 Wan Da

1D: Millimeter Wave Communications

Chair: Zhenyu Xiao, BUAA, China

1 Cell Search for a Millimeter Wave Cellular Systemwith 1-bit Quantization at the Receiver
Kilian Roth, Intel, Germany; Honglei Miao, Intel, Germany; Josef Nossek, Technical University Munich, Germany

2 Hierarchical Multi-Beam Search for Millimeter-Wave MIMO Systems
Zhenyu Xiao, Beihang University, China; Pengfei Xia, Tongji University, China; Xiang-Gen Xia, University of Delaware, United States

3 On OFDM and SC-FDE Transmissions in Millimeter Wave Channels with Beamforming
Meng Wu, University of Bremen, Germany; Dirk Wübben, University of Bremen, Germany; Armin Dekorsy, University of Bremen, Germany; Paolo Baracca, Nokia, Germany; Volker Braun, Nokia, Germany; Hardy Halbauer, Nokia, Germany

4 On Spectral Efficiency of Asynchronous GFDMA and SC-FDMA in Frequency Selective Channels
Woojin Park, Ulsan National Institute of ScienceTechnology (UNIST), South Korea; Hyun Jong Yang, Ulsan National Institute of Science and Technology (UNIST), South Korea

5 Phase Noise Mitigation in OFDM-based Backhaul in the Presence of Channel Estimation and Synchronization Errors
Xiaoming Chen, Andreas Wolfgang, Qamcom Research & Technology AB, Sweden

Monday, 16 May 2016 11:00-12:30 Krabi +Pattya

1E: Channel Measurements and Modeling I

Chair: Jianhua Zhang, Beijing University of Posts and Telecommunications, China

1 A Study on Channel Modeling in Tunnel Scenario Based on Propagation-graph Theory
Jiachi Zhang, Cheng Tao, Liu Liu, Rongchen Sun, Beijing Jiaotong University, China

2 Characterization and Modeling of Visible Light Communication Channels
Ahmed Al-Kinani, Heriot-Watt University, United Kingdom; Cheng-Xiang Wang, Heriot-Watt University, United Kingdom; Harald Haas, The University of Edinburgh, United Kingdom; Yang Yang, Shanghai Research Center for Wireless Communications (WiCO), China

3 Deterministic Modeling and Stochastic Analysis for Channel in Composite High-Speed Railway Scenario
Jingya Yang, Beijing Jiaotong University, China; Bo Ai, Beijing Jiaotong University, China; Ke Guan, Beijing Jiaotong University, China; Danping He, Beijing Jiaotong University, China; Ruisi He, Beijing Jiaotong University, China; Bei Zhang, Beijing Jiaotong University, China; Zhangdui Zhong, Beijing Jiaotong University, China; Zhuyan Zhao, Nokia, China; Deshan Miao, Nokia, China; Hao Guan, Nokia, China

4 Propagation Path Loss Models for 5G Urban Micro- and Macro-Cellular Scenarios
Shu Sun, New York University, United States; Theodore Rappaport, New York University, United States; Sundeep Rangan, New York University, United States; Timothy Thomas, Nokia, United States; Amitava Ghosh, Nokia, United States; Istvan Kovacs, Nokia, Denmark; Ignacio Rodriguez, Aalborg University, Denmark; Ozge Koymen, Qualcomm, United States; Andrzej Partyka, Qualcomm, United States; Jan Jarvelainen, Aalto University, Finland

5 The Wigner Distribution of Sum-of-Cisoids and Sum-of-Chirps Processes for the Modelling of Stationary and Non-Stationary Mobile Channels
Matthias Paetzold, University of Agder, Norway; Carlos A. Gutierrez, Universidad Autonoma de San Luis, Mexico

Monday, 16 May 2016 11:00-12:30 Liu He

1F: Data Dissemination in Vehicular Networks

Chair: Claes Beckman, Royal Institute of Technology, Sweden

1 On Efficient Data Dissemination using Network Coding in Multi-RSU Vehicular Ad Hoc Networks
G. G. Md. Nawaz Ali, Nanyang Technological University, Singapore; Md. Ashiqur Rahman, Khulna University of Engineering & Technology, Bangladesh; Peter Han Joo Chong, Nanyang Technological University, Singapore; Syeda Khairunnesa Samantha, Iowa State University, United States

2 A Novel Triple Cluster based Routing Protocol (TCRP) for VANETs
Zahid khan, Southwest Jiaotong University, China; Pingzhi Fan, Institute of Mobile Communication, China

3 A Collision Avoidance Mechanism for Emergency Message Broadcast in Urban VANET
Wanting Zhu, Deyun Gao, Beijing Jiaotong University, China; Chuan Heng Foh, University of Surrey, United Kingdom; Weicheng Zhao, Hongke Zhang, Beijing Jiaotong University, China

4 Information Congestion Control on Intersections in VANETs: A Bargaining Game Approach
Chen Chen, Jinna Hu, Jianfeng Zhang, Canding Sun, Liqiang Zhao, Zhiyuan Ren, Xidian University, China

5 Ensuring the Quality-of-Service of Tactile Internet
Changyang She, Chenyang Yang, Beihang University, China

Monday, 16 May 2016 11:00-12:30 Ballroom 1

1G: 5G Architecture

Chair: Miurel Tercero, Ericsson Research, Sweden

1 A C-RAN Architecture for LTE Control Signalling
Imad AL-Samman, Angela Doufexi, Mark Beach, University of Bristol, United Kingdom

2 Coexistence between 5G and Fixed Services
Miurel Tercero, Sachin Sharma, Michael Coldrey, Jonas Kronander, Ericsson AB, Sweden

3 Architecture Principles for Cloud RAN
Rajeev Agrawal, Nokia, United States; Anand Bedekar, Nokia, United States; Suresh Kalyanasundaram, Nokia, India; Troels Kolding, Nokia, Denmark; Hans Kroener, Nokia, Germany; Vishnu Ram, Nokia, India

4 Performance Analysis of Several Functional Splits in C-RAN
Jialong Duan, Xavier Lagrange, Frederic Guilloud, Telecom Bretagne, France

5 Performance Analysis of Centralized RAN Deployment with Non-ideal Fronthaul in LTE-Advanced Networks
Shalini Gulati, Nokia, India; Balamurali Natarajan, Northwestern University, United States; Suresh Kalyanasundaram, Nokia, India; Rajeev Agrawal, Nokia, United States

Monday, 16 May 2016 11:00-12:30 Ballroom Foyer

1P: Transmission and Detection

1 CQI reporting strategy for Multi-SIM UEs
Jakob Lindbjerg Buthler, Troels Soerensen, Aalborg University, Denmark

2 Digital Predistortion of Power Amplifiers for Spectrally Agile Wireless Transmitters
Srikanth Pagadarai, Worcester Polytechnic Institute, United States; Rohan Grover, ORB Analytics, Inc., United States; Samuel J. Macmullan, ORB Analytics, Inc., United States; Alexander M. Wyglinski, Worcester Polytechnic Institute, United States

3 GRG-MAPE and PCC-MAPE based on Uncertainty-Mathematical Theory for Path-Loss Model Selection
Junyi Yu, Changzhen Li, Wuhan University of Technology, China; Kun Yang, Super Radio AS, China; Wei Chen, Wuhan University of Technology, China

4 Methods to Perform High Velocity LTE Experiments at Low Velocities
Martin Lerch, Institute of Telecommunications, TU Wien, Austria; José Rodríguez-Piñeiro, University of A Coruña, Spain; José A. García-Naya, University of A Coruña, Spain; Luis Castedo, University of A Coruña, Spain

5 A Rate-Distortion Region Analysis for a Binary CEO Problem
Xin He, Japan Advanced Institute of ScienceTechnology, Japan; Xiaobo Zhou, Tianjin University, China; Markku Juntti, University of Oulu, Finland; Tad Matsumoto, Japan Advanced Institute of Science and Technology, Japan

6 Beam-pattern Synthesis for Circular Arrays With Sensor Selection for WBAN via Convex Optimization
Yu Du, Fengye Hu, Wei Xiong, Xiaolan Liu, Jilin University, China

7 Novel Approaches for Performance Enhancement of High Rate-Spatial Modulation System
Van-Son Trinh, Xuan-Nghia Nguyen, Hanoi University of Science and Technology, Viet Nam; Minh-Tuan Le, Hanoi Department of Science and Technology, Viet Nam; Xuan-Nam Tran, Le Quy Don Technical University, Viet Nam; Vu-Duc Ngo, Hanoi University of Science and Technology, Viet Nam

8 Segmented CRC-Aided SC List Polar Decoding
Huayi Zhou, Southeast University, China; Chuan Zhang, Southeast University, China; Wenqing Song, Southeast University, China; Shugong Xu, Intel Labs, China; Xiaohu You, Southeast University, China

9 Sparsity-Exploiting Detection of Large-Scale Multiuser GSM-MIMO Signals Using FOCUSS
Sandeep Bhat, A. Chockalingam, Indian Institute of Science, Bangalore, India

10 A General Framework for MIMO Uplink and Downlink Transmissions in 5G Multiple Access
Zheng Ma, Southwest Jiaotong University, China; Zhiguo Ding, Lancaster University, United Kingdom; Pingzhi Fan, Siyang Tang, Southwest Jiaotong University, China

11 UL/DL Channel Estimation for TDD/FDD Massive MIMO Systems Using DFT and Angle Reciprocity
Hongxiang Xie, Feifei Gao, Tsinghua National Laboratory for Information ScienceTechnology (TNList), China; Shun Zhang, State Key Laboratory of Integrated Services Networks, Xidian University, China; Shi Jin, National Communications Research Laboratory, Southeast University, China

12 Enabling early HARQ feedback in 5G networks
Gilberto Berardinelli, Aalborg University, Denmark; Saeed R. Khosravirad, Nokia - Bell Labs, Poland; Klaus I. Pedersen, Nokia - Bell Labs, Denmark; Frank Frederiksen, Nokia - Bell Labs, Denmark; Preben Mogensen, Aalborg University, Denmark

Monday, 16 May 2016 14:00-15:30 Jin Ling + Mo Ling

2A: Sensor Networks II

Chair: Qian Dong, Zhongshan University, China

1 **Dynamic Sensor Selection in Heterogenous Sensor Network**
Yifan Ma, Fen Hou, Shaodan Ma, Dawei Liu, Xi'an Jiaotong-Liverpool University, China

2 **Irregular Repetition Slotted ALOHA with Priority (P-IRSA)**
Jingyun Sun, Beihang University, China; Rongke Liu, Beihang University, China; Yan Wang, Beihang University, China; Chang Wen Chen, The State University of New York at Buffalo, United States

3 **Spatial Relay Node Placement in Wireless Sensor Networks**
Armeline Dembo Mafuta, Tom Walingo, University of KwaZulu-Natal, South Africa

4 **Super-Resolution Reconstruction of Radio Tomographic Image**
Cheng Sun, Fei Gao, Heng Liu, Beijing Institute of Technology, China

5 **WSN-UAV Monitoring System with Collaborative Beamforming and ADS-B based Multilateration**
Yogesh Nijsure, Ecole de Technologie Superieure, Canada; Mohammed F. A. Ahmed, Assiut University, Egypt; Georges Kaddoum, Ecole de Technologie Superieure, Canada; Ghyslain Gagnon, Ecole de Technologie Superieure, Canada; Francois Gagnon, Ecole de Technologie Superieure, Canada

Monday, 16 May 2016 14:00-15:30 Jian Kang + Ye Cheng

2B: D2D Communcations II

Chair: Dong Chao, PLA University, China

1 **A NOMA and MU-MIMO Supported Cellular Network with Underlaid D2D Communications**
Haijian Sun, Utah State University, United States; Yiran Xu, Utah State University, United States; Rose Qingyang Hu, Utah State University, United States

2 **Network-Assisted D2D Discovery Method by using Efficient Power Control Strategy**
Hind Albasry, University of Kent, United Kingdom; Qasim Ahmed, University of Kent, United Kingdom

3 **An Experimental Study on Multihop D2D Communications Based on Smartphones**
Hengjia Qin, PLA University of Science and Technology, China; Chao Dong, PLA University of Science and Technology, China; Zhichao Mi, PLA University of Science and Technology, China; Fei Peng, PLA University of Science and Technology, China; Pengkun Sheng, Xi'an Communications Institute, China

4 **Social-Aware Energy-Efficient Data Dissemination with D2D Communications**
Yiming Zhao, Wei Song, University of New Brunswick, Canada

5 **On the Performance Analysis and Relay Algorithm Design in Social-aware D2D Cooperated Communications**
Xin Pan, Haibo Wang, Beijing Jiaotong University, China

Monday, 16 May 2016 14:00-15:30 VIP

2C: Relay II - Detection, Estimation, and Relay Selection

Chair: Ming Cheng, Southeast University, China

1 **Combined Bulk/Per-Subcarrier Relay Selection in Two-Hop OFDM Systems**
Shuping Dang, Justin Coon, David Simmons, University of Oxford, United Kingdom

2 **Joint Estimation of Frequency Offset and Channel for EF multi-relay DMIMO-OFDM System**
Sucharita Chakraborty, Debarati Sen, Indian Institute of Technology, Kharagpur, India

3 **Joint Relay Selection and Power Allocation in Underwater Cognitive Acoustic Cooperative System with Limited Feedback**
Lei Yan, Yanshan University, China; Xinbin Li, Yanshan University, China; Kai Ma, Yanshan University, China; Jing Yan, Yanshan University, China; Song Han, Yanshan University, China

4 **MMSE-based Distributed Beamforming in AF Relay System under Network Power Constraint**
Kanghee Lee, Air Force Headquarters, South Korea; Kyungsik Chang, Ajou University, South Korea; Jaesung Lim, Ajou University, South Korea

5 **Multiple-Symbol Differential Sphere Detection for Amplify-and-Forward over Time-Varying Relaying Channel**
Fengyue Gao, PLA University of Science and Technology; Institute of China Electronic System Engineering Corporation, China; Feihong Dong, PLA University of Science and Technology, China; Lei Kong, Xi'an Communications Institute, China; Rui Yu, Institute of China Electronic System Engineering Corporation, China

Monday, 16 May 2016 14:00-15:30 Wan Da

2D: MIMO and OFDM techniques

Chair: Ming Jiang, Sun Yat-Sen University, China

1 **Adaptive Network MIMO Architecture Based on Dynamic User-Oriented Frequency Allocation Scheme: Part I Homogeneous Network**
Wenson Chang, Chih-Yuan Yang, Szu-Lin Su, Yinman Lee, National Chi Nan University, Taiwan

2 **A Filtered OFDM Using FIR Filter Based on Window Function Method**
Xudong Cheng, Yejun He, Baohong Ge, Chunlong He, Shenzhen University, China

3 **Novel Time-Frequency Behavioral RF Wideband Power Amplifier Model based on Neural Networks and Multiresolution Analysis for OFDM Systems**
Jose-Ramon Perez-Cisneros, Pedro Carro, Jesus de Mingo, Paloma Garcia, Carlos Mateo, Antonio Valdovinos, University of Zaragoza, Spain

4 **Downlink Closed-Loop Training Sequence Design for Massive MIMO Systems with Uniform Planar Arrays**
Yang Zhao, Xiangyang Wang, Jingwen Yang, Bingqiang Zhao, Southeast University, China

5 **Multi-User MIMO-OOFDM Imaging VLC System with PD Selection**
Kunyi Cai, Ming Jiang, Sun Yat-sen University, China

Monday, 16 May 2016 14:00-15:30 Krabi +Pattya

2E: Channel Measurements and Modeling II

Chair: Geoffrey Li, Georgia Institute of Technology, USA

1 **5G 3GPP-like Channel Models for Outdoor Urban Microcellular and Macrocellular Environments**
Katsuyuki Haneda, Aalto, Finland; Lei Tan, BUPT, China; Yi Zheng, CMCC, China; Henrik Asplund, Ericsson, Sweden; Jian Li, Huawei, China; Yi Wang, Huawei, China; David Steer, Huawei, Canada; Clara Li, Intel, United States; Tommaso Balercia, Intel, Denmark; Sunguk Lee, KT, South Korea; Youngsuk Kim, KT, South Korea; Amitava Ghosh, NOKIA, United States; Timothy Thomas, NOKIA, United States; Takehiro Nakamura, NTT DOCOMO, Japan; Yuichi Kakishima, NTT DOCOMO, United States; Tetsuro Imai, NTT DOCOMO, Japan; Haralabos Papadopoulos, NTT DOCOMO, United States; Theodore Rappaport, NYU Wireless, United States; George MacCartney, NYU Wireless, United States; Mathew Samimi, NYU Wireless, United States; Shu Sun, NYU Wireless, United States; Ozge Koymen, Qualcomm, United States; Sooyoung Hur, Samsung, South Korea; Jeongho Park, Samsung, South Korea; Charlie Zhang, Samsung, South Korea; Evangelos Mellios, University of Bristol, United Kingdom; Andreas Molisch, USC, United States; Saeed Ghassamzadeh, AT&T, United States; Arun Ghosh, AT&T, United States

2 A Sparsity-Based Clustering Framework for Radio Channel Impulse Responses
Ruisi He, Beijing Jiaotong University, China; Wei Chen, Beijing Jiaotong University, China; Bo Ai, Beijing Jiaotong University, China; Andreas F. Molisch, University of Southern California, United States; Wei Wang, German Aerospace Center, Germany; Zhangdui Zhong, Beijing Jiaotong University, China; Jian Yu, Beijing Jiaotong University, China; Seun Sangodoyin, University of Southern California, United States

3 15 GHz Street-level Blocking Characteristics Assessed with 5G Radio Access Prototype
Peter Ökvist, Ericsson Research, Sweden; Nima Seifi, Ericsson Research, Sweden; Björn Halvarsson, Ericsson AB, Sweden; Arne Simonsson, Ericsson Research, Sweden; Magnus Thurfjell, Ericsson Research, Sweden; Henrik Asplund, Ericsson Research, Sweden; Jonas Medbo, Ericsson Research, Sweden

4 Evaluating Full Duplex Potential in Dense Small Cells from Channel Measurements
Gilberto Berardinelli, Aalborg University, Denmark; Dereje A. Wassie, Aalborg University, Denmark; Nurul H. Mahmood, Aalborg University, Denmark; Marta G. Sarret, Aalborg University, Denmark; Troels B. Sørensen, Aalborg University, Denmark; Preben Mogensen, Aalborg University, Denmark

5 MIMO Channel Measurement and Characterization for 26GHz Wave in Outdoor Scenarios
Zhimeng Zhong, Xianyue Wu, Jingfeng Qu, Xuefeng Yin, School of Electronics and Information Engineering, Tongji University, China

Monday, 16 May 2016 14:00-15:30 Liu He

2F: Mobility, Connectivity, and Positioning in Vehicular Networks

Chair: Changle Li, Xidian University, China

1 A Real-time User Mobility Pattern Modeling and Similarity Measurement for Mobile Social Networks
Feng Ding, Jian Wang, Naitong Zhang, Wenfeng Li, Kanglian Zhao, Nanjing University, China

2 Statistical Properties of High-Speed Train Wireless Channels in Different Scenarios
Yu Liu, Shandong University, China; Yapei Zhang, Shandong University, China; Ammar Ghazal, Heriot-Watt University, United Kingdom; Cheng-Xiang Wang, Heriot-Watt University, United Kingdom; Yang Yang, Shanghai Research Center for Wireless Communications (WiCO), China

3 A Three-Dimensional Accident Driver Model for Vehicular Ad Hoc Networks
Bing Xia, Xidian University, China; Changle Li, Xidian University, China; Lina Zhu, Xidian University, China; Zhe Liu, Xidian University, China; Yuchuan Fu, Xidian University, China; Lei Xiong, Beijing Jiaotong University, China

4 Study of Connectivity Probability of Vehicle-to-Vehicle and Vehicle-to-Infrastructure Communication Systems
Junhui Zhao, Beijing Jiaotong University, China; Yan Chen, Beijing Jiaotong University, China; Yi Gong, South University of Science and Technology, China

5 Vehicle Positioning Scheme using V2V and V2I Visible Light Communications
Byung Wook Kim, Hoseo University, South Korea; Sung-Yoon Jung, Yeungnam University, South Korea

Monday, 16 May 2016 14:00-15:30 Ballroom 1

2G: 5G Air Interface

Chair: Gregory Morozov, Intel Corp., USA

1 Multi-dimensional SCMA Codebook Design Based on Constellation Rotation and Interleaving
Donghong Cai, Southwest Jiaotong University, China; PingZhi Fan, Southwest Jiaotong University, China; Xianfu Lei, Southwest Jiaotong University, China; Yingjie Liu, Southwest Jiaotong University, China; Dageng Chen, Communications Technology Lab Huawei Technologies Co., Ltd, China

2 On the Guard Period design in 5G TDD Wide Area
Gilberto Berardinelli, Aalborg University, Denmark; Klaus I. Pedersen, Nokia - Bell Labs, Denmark; Frank Frederiksen, Nokia - Bell Labs, Denmark; Preben Mogensen, Aalborg University, Denmark

3 Performance Analysis of Full Duplex in Cellular Systems
Ryan Keating, Nokia Networks, United States; Rapeepat Ratasuk, Nokia Networks, United States; Amitava Ghosh, Nokia Networks, United States

4 The Coverage-Latency-Capacity Dilemma for TDD Wide Area Operation and Related 5G Solutions
Klaus Pedersen, Nokia - Bell Labs, Denmark; Frank Frederiksen, Nokia - Bell Labs, Denmark; Gilberto Berardinelli, Aalborg University, Denmark; Preben Mogensen, Nokia - Bell Labs, Denmark

5 Solutions for the Interference Caused by Spatial Modulation
Xiangxue Ma, Shandong University, China; Dushyantha Basnayaka, University of Edinburgh, United Kingdom; Harald Haas, University of Edinburgh, United Kingdom; Dongfeng Yuan, Shandong University, China

Monday, 16 May 2016 14:00-15:30 Ballroom Foyer

2P: Spectrum Allocation and Wireless Networking

1 Dynamic Spectrum Allocation for Energy Harvesting-Based Underlaying D2D Communication
Jianfeng Ding, Lingge Jiang, Chen He, Shanghai Jiao Tong University, China

2 Matching Theory for Channel Allocation in Cognitive Radio Networks
Long Cao, PLA University of ScienceTechnology, China; Hangsheng Zhao, Nanjing Telecommunication Technology Institute, China; Xiangyang Li, PLA University of ScienceTechnology, China; Jianzhao Zhang, Nanjing Telecommunication Technology Institute, China

3 Characterizing and Modeling Social Mobile Data Traffic in Cellular Networks
Chen Qi, Zhejiang University, China; Zhifeng Zhao, Zhejiang University, China; Rongpeng Li, Huawei Technologies Co., Ltd, China; Honggang Zhang, Zhejiang University, China

4 Software Defined Network Based Protocol Module Multiplexing Algorithm for Wireless Network
Hong LI, Huawei Technologies Co., Ltd, China; Jinfang zhang, Huawei Technologies Co., Ltd, China; Wei Tan, Huawei Technologies Co., Ltd, China

5 Ave-Max-Min Network Coding for Wireless Data Broadcasting
Hui Tian, Kui Xu, Xiaoming Chen, Wei Xie, Wenfeng Ma, Youyun Xu, PLA University of Science and Technology, China

6 Random Network Coding Based on Adaptive Sliding Window in Wireless Multicast Networks
Bin Li, Siying Bi, Ruonan Zhang, Yi Jiang, Quan Li, Northwest Polytechnical University, China

7 Performance Analysis of Multicasting in Cloud-Radio Access Networks
Shiwei Jia, Beijing University of Posts and Telecommunications, China; Liu Liu, DOCOMO Beijing Communications Laboratories Co., Ltd., China; Huiling Jiang, DOCOMO Beijing Communications Laboratories Co., Ltd., China; Zhongyuan Zhao, Beijing University of Posts and Telecommunications, China; Mugen Peng, Beijing University of Posts and Telecommunications, China; Yong Li, Beijing University of Posts and Telecommunications, China

8 A Streaming Method for Efficient Bandwidth Utilization using QoS Control Function of LTE
Yasuhiro Nagai, Takao Okamawari, Teruya Fujii, SoftBank Corp., Japan

9 Video Content Delivery using Multiple Devices toSingle Device Communications
Asaad Daghal, Qasim Ahmed, University of Kent, United Kingdom

10 Coordinated blanking for 5G millimeter-wave networks spectrum sharing
Cong Shi, Gen Li, Ericsson, China

11 Pattern Design in Joint Space Domain and Power Domain for Novel Multiple Access
Yulong Mao, University of Electronic Science and Technology of China, China; Jie Zeng, Tsinghua National Laboratory for Information Science and Technology, China; Xin Su, Tsinghua National Laboratory for Information Science and Technology, China; Lili Liu, Tsinghua National Laboratory for Information Science and Technology, China; Yujun Kuang, University of Electronic Science and Technology of China, China

12 The Cooperative Multicasting based on Random NetworkCoding in Wireless Networks
Ruonan Zhang, Dengke Ban, Bin Li, Yi Jiang, Northwest Polytechnical University, China

Monday, 16 May 2016 16:00-17:30 Jin Ling + Mo Ling

3A: Cellular & Cooperative Networks

Chair: Guangbing Xiao, University of Otago, New Zealand

1 Cooperative Device-to-Device Communications With Caching
Binqiang Chen, Beihang University, China; Chenyang Yang, Beihang University, China; Gang Wang, NEC Labs, China

2 Energy-Efficient Device-to-Device Communication in Cellular Networks
Bodong Shang, Xidian University, China; Liqiang Zhao, Xidian University, China; Kwang-Cheng Chen, National Taiwan University, Taiwan; Guogang Zhao, Xidian University, China

3 Modular Control for Throughput Utility Maximization in Multihop Wireless Networks
Shu Fan, Harbin Institute of Technology, China; Honglin Zhao, Harbin Institute of Technology, China

4 Decentralized Cooperative Piggybacking for Reliable Broadcast in the VANET
Guangbing Xiao, University of Otago, New Zealand; Haibo Zhang, University of Otago, New Zealand; Zhiyi Huang, University of Otago, New Zealand; Yawen Chen, University of Otago, New Zealand

5 Investigation on Link Adaptation for LTE-based Machine Type Communication
Qin Mu, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Liu Liu, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Huiling Jiang, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Kazuaki Takeda, NTT DOCOMO, INC., Japan; Ruifeng Ma, DOCOMO Beijing Communications Laboratories Co., Ltd, China

Monday, 16 May 2016 16:00-17:30 Jian Kang + Ye Cheng

3B: Multi-carrier Communications

Chair: Chongbin Xu, Fudan University, China

1 A Bayesian Sparse Reconstruction Framework for Mitigation of Non-Linear Effects in OFDM Systems
Francisco Javier Garcia Gomez, Jawad Munir, Amine Mezghani, Josef Nossek, Technische Universität München, Germany

2 Design of OFDM Timing Synchronization Based on Correlations of Preamble Symbol
Yunsi Ma, Sanwen Zhou, Chaoxing Yan, Tongling Liu, Lingang Fu, Beijing Research Institute of Telemetry, China

3 Index Modulated OFDM with ICI Self-Cancellation
Yuke Li, State Key Laboratory of Management and Control for Complex Systems, Chinese Academy of Sciences, China; Miaowen Wen, South China University of Technology, China; Xiang Cheng, Peking University, China; Liu-Qing Yang, Colorado State University, United States

4 Low-PAPR Multiplexing of Data and Pilots
Xiliang Luo, ShanghaiTech University, China

5 Spectral Precoding for OFDM Without Guard Interval Insertion
Char-Dir Chung, Kuo-Wei Chen, National Taiwan University, Taiwan

Monday, 16 May 2016 16:00-17:30 VIP

3C: Relay III - Compute-and-Forward, Full-Duplex and Two-Way Relaying

Chair: Caijun Zhong, Zhejiang University, China

1 A Hybrid Decode-and-Forward Relaying Scheme for Full Duplex Wireless Relay Networks
Chang Liu, Peking University, China; Meng Ma, Peking University, China; Bingli Jiao, Peking University, China

2 Energy Efficient Resource Allocation for Uplink OFDMA cooperative system using multiplexing half and full-duplex mobile relays
Salma Hamda, Conservatoire National des Arts et Metiers, France; Mylene Pischella, Conservatoire National des Arts et Metiers, France; Daniel Roviras, Conservatoire National des Arts et Metiers, France; Ridha Bouallegue, Ecole supérieure des communications de Tunis, Tunisia

3 Low Complexity Coefficient Selection Algorithms for Compute-and-Forward
Qinhui Huang, Alister Burr, University of York, United Kingdom

4 Relay Selection for Full-duplex Cooperative Networks with Outdated CSI in an Interference-limited Environment
Yinjie Su, Shanghai Jiao Tong University, China; Lingge Jiang, Shanghai Jiao Tong University, China; Chen He, Shanghai Jiao Tong University, China

5 Scalar and Vector Compress and Forward for the Two Way Relay Channels
Di Chen, Volker Kuehn, University of Rostock, Germany

Monday, 16 May 2016 16:00-17:30 Wan Da

3D: MIMO Precoding

Chair: Dongming Wang, Southeast University, China

1 Energy-Efficient Hybrid Precoding for Millimeter Wave Systems In MIMO Interference Channels
Chunhua Ma, Jianfeng Shi, Nuo Huang, So Ming Chen, Southeast University, China

2 Multi-Branch Vector Perturbation Precoding Design Using Lattice Reduction for MU-MIMO Systems
Lei Zhang, Zhejiang University, China; Yunlong Cai, Zhejiang University, China; Rodrigo de Lamare, University of York, United Kingdom; Minjian Zhao, Zhejiang University, China

3 Multi-Cell MMSE Precoding in Large-Scale DAS with PilotContamination
Chiyang Xiao, Tsinghua University, China; Jie Zeng, Tsinghua University, China; Xin Su, Tsinghua University, China; Jing Wang, Tsinghua University, China; Xibin Xu, Tsinghua University, China

4 Performance Analysis of Diagonal Precoding for Alamouti STBC over Nakagami-m Fading Channels
Ankit Garg, Indian Institute of Technology-Delhi, New Delhi, India; Manav Bhatnagar, Indian Institute of Technology-Delhi, New Delhi, India

5 Performance Analysis of Spatial Modulation OFDM System with N-Continuous Precoder
Feng Yu, Xia Lei, Lan Peng, Yue Xiao, Peng Wei, Xiaojie Wen, University of Electronic Science and Technology of China, China

Monday, 16 May 2016 16:00-17:30 Krabi +Pattya

3E: Channel Measurements and Modeling III

Chair: Konstantinos Maliatsos, University of Piraeus, Greece

1 A Prediction Study of Path Loss Models from 2-73.5 GHz in an Urban-Macro Environment
Timothy Thomas, Nokia, United States; Marcin Rybakowski, Nokia, Poland; Shu Sun, New York University, United States; Theodore Rappaport, New York University, United States; Huan Nguyen, Aalborg Univeristy, Denmark; Istvan Kovacs, Nokia, Denmark; Ignacio Rodriguez, Aalborg Univeristy, Denmark

2 Frequency Dependence of Measured Massive MIMO Channel Properties
Àlex Oliveras Martínez, Aalborg University, Denmark; Elisabeth De Carvalho, Aalborg University, Denmark; Jesper Ødum Nielsen, Aalborg University, Denmark; Lishuai Jing, Aalborg University, Denmark

3 Measurement-Based Characterizations of Indoor Massive MIMO Channels at 2 GHz, 4 GHz, and 6 GHz Frequency Bands
Jianzhi Li, Beijing Jiaotong University, China; Bo Ai, Beijing Jiaotong University, China; Ruisi He, Beijing Jiaotong University, China; Ke Guan, Beijing Jiaotong University, China; Qi Wang, Beijing Jiaotong University, China; Dan Fei, Beijing Jiaotong University, China; Zhangdui Zhong, Beijing Jiaotong University, China; Zhuyan Zhao, Nokia, Beijing, China; Deshan Miao, Nokia, Beijing, China; Hao Guan, Nokia, Beijing, China

4 Propagation Channel in a Rural Overtaking Scenario with Large Obstructing Vehicles
Kim Mahler, Fraunhofer Heinrich Hertz Institute, Germany; Wilhelm Keusgen, Fraunhofer Heinrich Hertz Institute, Germany; Fredrik Tufvesson, Lund University, Sweden; Thomas Zemen, AIT Austrian Institute of Technology, Austria; Giuseppe Caire, Technische Universitaet Berlin, Germany

5 Stochastic Modeling for Extra Propagation Loss ofTunnel Curve
Ke Guan, Beijing Jiaotong University, China; Bo Ai, Beijing Jiaotong University, China; Ruisi He, Beijing Jiaotong University, China; Zhangdui Zhong, Beijing Jiaotong University, China; Ting Xu, Beijing Jiaotong University, China; Cesar Briso-Rodriguez, Beijing Jiaotong University, Chile; Andrej Hrovat, Jøzef Stefan Institute, Slovenia

Monday, 16 May 2016 16:00-17:30 Liu He

3F: Advanced Topics in Vehicular Networks

Chair: Natalie Mitton, Inria Lille-Nord Europe, France

1 Energy Efficient Power Allocation in Massive MIMO Systems based on Standard Interference Function
Jiadian Zhang, Southeast University, China; Yanxiang Jiang, Southeast University, China; Peng Li, Southeast University, China; Fuchun Zheng, University of Reading, United Kingdom; Xiaohu You, Southeast University, China

2 A Seamless Dual-Link Handover Scheme with Optimized Threshold for C/U Plane Network in High-Speed Rail
Songfan Xie, Shanghai Jiao Tong University, China; Xinchun Yu, Shanghai Jiao Tong University, China; Yuan Luo, Shanghai Jiao Tong University, China

3 Gap-based Caching for ICN-based Vehicular Networks
Yuhong Li, State Key Laboratory of Networking and Switching Technology,Beijing University of Posts and Telecomm, China; Yusen Yang, State Key Laboratory of Networking and Switching Technology,Beijing University of Posts and Telecomm, China; Rahim Rahmani, Department of Computer and Systems Sciences,Stockholm University, Sweden; Theo Kanter, Stockholm University, Sweden; Xiang Su, University of Oulu, Finland; Jukka Riekki, University of Oulu, Finland

4 Building Long Term Trust in Vehicular Networks
Tamal Biswas, Ameya Sanzgiri, Shambhu Upadhyaya, University at Buffalo, United States

5 The Technical and Economic Consequences of Protecting GSM-R in Sweden
Claes Beckman, KTH Royal Institute of Technology, Sweden; Kristoffer Nilsson, Netlight Consultants, Sweden

Monday, 16 May 2016 16:00-17:30 Ballroom 1

3G: LTE-U

Chair: Oliver Holland , Kings College London, UK

1 Enabling Frequency Reuse for Licensed-Assisted Access with Listen-before-talk in Unlicensed Bands
Hua Wang, Aalborg University, Denmark; Markku Kuusela, Nokia Networks, Finland; Claudio Rosa, Nokia Networks, Denmark; Antti Sorri, Nokia Networks, Finland

2 Genetic Algorithm for Balancing WiFi and LTE Coexistence in the Unlicensed Spectrum
Kai He, Xi'an Jiaotong University, China; Guanding Yu, Zhejiang University, China

3 HetNet Capacity Optimization under Optimal Femtocell Operation in LTE-U
Jin Li, KAIST, South Korea; Weisong He, Chongqing University of Technology, China; Youngnam Han, Chongqing University of Technology, China & KAIST, South Korea

4 A Listen Before Talk Algorithm with Frequency Reuse for LTE based Licensed Assisted Access in Unlicensed Spectrum
Naoki Kusashima, Sharp Corporation, Japan; Toshizo Nogami, Sharp Laboratories of America, United States; Hiroki Takahashi, Sharp Corporation, Japan; Kazunari Yokomakura, Sharp Corporation, Japan; Kimihiko Imamura, Sharp Corporation, Japan

5 Performance of Multi-Carrier LBT Mechanism for LTE-LAA
Jianguo Liu, Nokia Shanghai Bell, China; Gang Shen, Nokia Shanghai Bell, China

Tuesday 17 May 2016

Tuesday, 17 May 2016 11:00-12:30 Jin Ling + Mo Ling

4A: IoT & Ad Hoc Networks

Chair: Frank Y. Li, University of Agder, Norway

1 Topology Evolution Model for Cognitive Ad Hoc Networks Based on Complex Network Theory
Yongfu Hou, Beijing University of Posts and Telecommunications, China; Yifei Wei, Beijing University of Posts and Telecommunications, China; Mei Song, Beijing University of Posts and Telecommunications, China; F. Richard Yu, Carleton University, Canada

2 Multi-User Shared Access for Internet of Things
Zhifeng Yuan, ZTE Corporation, China; Guanghui Yu, ZTE Corporation, China; Weimin Li, ZTE Corporation, China; Yifei Yuan, ZTE Corporation, China; Xinhui Wang, ZTE Corporation, China; Jun Xu, ZTE Corporation, China

3 Machine-Learning Indoor Localization with Access Point Selection and Signal Strength Reconstruction
Yen-Kai Cheng, Academia Sinica, Taiwan; Hsin-Jui Chou, Academia Sinica, Taiwan; Ronald Chang, Academia Sinica, Taiwan

4 A Stochastic Routing Algorithm for Distributed IoTwith Unreliable Wireless Links
Zaiwar Ali, Ghulam Ishaq Khan Institute of Engineering SciencesTechnology, Pakistan; Ziaul Haq Abbas, Ghulam Ishaq Khan Institute of Engineering SciencesTechnology, Pakistan; Frank Y. Li, University of Agder, Norway

5 Exploiting Distributed Source Coding for Multi-hop Routing in Wireless Ad Hoc Networks
Sebastian Kühlmorgen, Andreas Festag, Gerhard Fettweis, Technische Universität Dresden, Germany

Tuesday, 17 May 2016 11:00-12:30 Jian Kang + Ye Cheng

4B: Cognitive Radio and Spectrum Management I

Chair: Lieliang Yang, University of Southampton, UK

1 **Distribution of Microcells for Cellular Mobile Networks.**
Heykel Houas, Agence Nationale des Fréquences, France; Yves Louet, CentraleSupélec, France; Eric Fournier, Agence Nationale des Fréquences, France; Yann Maigron, Agence Nationale des Fréquences, France

2 **Interference Minimization Approach for Joint Resource Allocation in Cognitive OFDMA Networks**
Miao Liu, Tiecheng Song, Jing Hu, Lei Zhang, Southeast University, China

3 **Performance of Cognitive Hybrid Automatic Repeat reQuest: Go-Back-N**
Ateeq Ur Rehman, Lie-Liang Yang, Lajos Hanzo, University of Southampton, United Kingdom

4 **Performance Analysis of Cooperative Spectrum Sharing for Cognitive Radio Networks Using Spatial Modulation at Secondary Users**
Seda Ustunbas, Istanbul Technical University, Turkey; Ertugrul Basar, Istanbul Technical University, Turkey; Umit Aygolu, Istanbul Technical University, Turkey

Tuesday, 17 May 2016 11:00-12:30 VIP

4C: Relay IV - Coverage and Security

Chair: Wei Xu, Southeastern Univ, China

1 **Performance Study on Relay-Assisted Millimeter Wave Cellular Networks**
Bei Xie, Utah State University, United States; Zekun Zhang, Utah State University, United States; Rose Qingyang Hu, Utah State University, United States

2 **Cooperative Relaying and Jamming for Primary Secure Communication in Cognitive Two-Way Networks**
Dawei Wang, Xi'an Jiaotong University, China; Pinyi Ren, Xi'an Jiaotong University, China; Qinghe Du, Xi'an Jiaotong University, China; Li Sun, Xi'an Jiaotong University, China; Yichen Wang, Xi'an Jiaotong University, China

3 **Improving the Security of Cooperative Relaying Networks with Multiple Antennas**
Yuzhen Huang, PLA University of Science and Technology, China; Caijun Zhong, Zhejiang University, China; Jinlong Wang, PLA University of Science and Technology, China; Q. Duong Trung, Queen's University Belfast, United Kingdom; Qihui Wu, PLA University of Science and Technology, China; K. Karagiannidis George, Aristotle University of Thessaloniki, Greece

4 **Secrecy Enhancement via Cooperative Relays in Multi-hop Communication Systems**
Elham Nosrati, Western University, Canada; Xianbin Wang, Western University, Canada; Arash Khabbazibasmenj, Western University, Canada; Auon Muhammad Akhtar, Western University, Canada

5 **Two-Cell Two-Way Relaying with Reduced Interference**
Yeong Jun Kim, Jong Gyu Jang, Hyun Jong Yang, Ulsan National Institute of Science and Technology (UNIST), South Korea

Tuesday, 17 May 2016 11:00-12:30 Wan Da

4D: Resource Allocation I

Chair: Xiping Wu, University of Edinburgh, UK

1 **Resource Management Algorithm for Multicast Services in Multi-CCs wireless system**
Shun-Shim Chun, Young-Il Kim, Un-Jung Kwan, Jong-Hwan Kim, Ki-Sung Cho, Hyun-Woo Lee, ETRI, South Korea

2 **Tri-Sectoring and Power Allocation of Macro Base Stations in Heterogeneous Cellular Networks with Matern Hard-Core Processes**
Mingzhe Chen, Ye Hu, Changchuan Yin, Beijing University of Posts and Telecommunications, China

3 **Bidirectional Allocation Game in Visible Light Communications**
Xiping Wu, Majid Safari, Harald Haas, The University of Edinburgh, United Kingdom

4 **Solving the Nonlinear LTE Resource Allocation Problem with a Linear Approach**
Xian Liu, Univ. of Arkansas at Little Rock, United States

5 **Virtualization Framework and VCG Based Resource Block Allocation Scheme for LTE Virtualization**
Lvyang Gao, Pei Li, Zhiwen Pan, Nan Liu, Xiaohu You, Southeast University, China

Tuesday, 17 May 2016 11:00-12:30 Krabi + Pattya

4E: Channel Modeling, Estimation, and Performance Analysis

Chair: Ruisi He, Beijing Jiaotong Unviersity, Beijing

1 **Indoor Propagation Using a Game Engine Ray-Based Model in Indoor Scenario at 5.4GHz**
Andres Navarro, Universidad Icesi, Colombia; Dinael Guevara, Universidad Francisco de Paula Santander, Colombia; Diego Parada, Universidad Francisco de Paula Santander, Colombia; Narcis Cardona, Universitat Politecnica de Valencia, Spain; Jordi Gimenez, Universitat Politecnica de Valencia, Spain

2 **Bayesian Channel Estimation for Massive MIMO Communications**
Chengzhi Zhu, Southeast University, China; Zhitan Zheng, Southeast University, China; Bin Jiang, Southeast University, China; Wen Zhong, Southeast University, China; Xiqi Gao, Southeast University, China

3 **Channel Modeling and Estimation for OFDM Systems in High-speed Trains Scenarios**
Yuming Bi, Jianhua Zhang, Ming Zeng, Xiaodong Xu, Beijing University of Posts and Telecommunications, China

4 **Performance of Improved Adaptive Decode-and-Forward Over Free-Space Optical Lognormal Fading Channels**
Bingcheng Zhu, Nanjing University of Posts and Telecommunications, China; Julian Cheng, The University of British Columbia, Canada; Lenan Wu, Southeast University, China

5 **V2V Communication Systems under Correlated Double-Rayleigh Fading Channels**
Petros Bithas, Konstantinos Maliatsos, Athanasios Kanatas, University of Piraeus, Greece

Tuesday, 17 May 2016 11:00-12:30 Xuan Wu + Go Lou

4F: Massive MIMO I - Channel Estimation

Chair: Guanding Yu, Zhejiang University, China

1 **A 2D-DFT Based Channel Estimation Scheme in Indoor 60GHz Communication Systems with Large-Scale Multiple-Antenna**
Dian Fan, Beijing Jiaotong University, China; FeiFei Gao, Tsinghua National Laboratory for Information ScienceTechnology, China; Gongpu Wang, Beijing Jiaotong University, China; Zhangdui Zhong, Beijing Jiaotong University, China

2 **Analysis of Channel Estimation in Large-Scale MIMO Aided OFDM Systems with Pilot Design**
Shanjin Ni, Beijing Jiaotong University, China; Junhui Zhao, Beijing Jiaotong University, China; Rong Ran, Ajou University, South Korea

3 **An Efficient Downlink Channel Estimation Approach for TDD Massive MIMO Systems**
Yang Nan, Beijing Jiaotong University, China; Li Zhang, University of Leeds, United Kingdom; Xin Sun, Beijing Jiaotong University, China

4 **A Simple Scheme of Channel Estimation in Large MIMO Systems**
Arti M.K., Northern India Engineering College, New Delhi, India

5 **Linear Programming Based Pilot Allocation in TDD Massive Multiple-Input Multiple-Output Systems**
Guannan Dong, Shandong University, China; Xiaotian Zhou, Shandong University, China; Haixia Zhang, Shandong University, China; and Dongfeng Yuan, Shandong University, China

Tuesday, 17 May 2016 11:00-12:30 Ballroom Foyer

4P: Wireless Networking and Engery Efficiency

1 **Mobility Prediction of Diurnal Users for Enabling Context Aware Resource Allocation**
Nandish P Kuruvatti, Wenxiao Zhou, Hans D Schotten, University of Kaiserslautern, Germany

2 **Macro Cell Assisted Cell Discovery Method for 5G Mobile Networks**
Andrea S. Marcano, Henrik L. Christiansen, Technical University of Denmark, Denmark

3 **A simulative investigation of hotspot detection based on erroneous user location data**
Jürgen Beyer, Ole Klein, Marc Hipke, Deutsche Telekom, Germany

4 **Downlink Resource Sharing for D2D Communications in a Filtered OFDM System**
Yue Li, Xuejun Sha, Liang Ye, Harbin Institute of Technology, China

5 **User-oriented Load Balance in Software-Defined Campus WLANs**
Jie Feng, Liqiang Zhao, Chen Chen, Zhiyuan Ren, Jianbo Du, Xidian University, China

6 **Joint Power Control and Scheduling for Context-Aware Unicast Cellular Networks**
Linyu Huang, Sichuan University, China; Chi Wan Sung, City University of Hong Kong, Hong Kong; Chung Shue Chen, Bell Labs, Nokia, France

7 **Outage Behavior of LTE-A with Non-identical Rician Relay Links**
Xian Liu, University of Arkansas at Little Rock, United States

8 **Sensitivity Analysis of Centralized Dynamic Cell Selection**
Victor Fernandez-Lopez, Aalborg University, Denmark; Beatriz Soret, Nokia - Bell Labs, Denmark; Klaus Pedersen, Nokia - Bell Labs, Denmark; Jens Steiner, Nokia - Bell Labs, Denmark; Preben Mogensen, Nokia - Bell Labs, Denmark

9 **Joint Information and Energy Transfer in Selection Relay Systems**
Lan Tang, Nanjing University, China; Xinggan Zhang, Nanjing University, China; Yechao Bai, Nanjing University, China; Pengcheng Zhu, Southeast University, China

10 **Energy-saving Pushing Based on Personal Interest and Context Information**
Chuting Yao, Beihang University, China; Binqiang Chen, Beihang University, China; Chenyang Yang, Beihang University, China; Gang Wang, NEC Labs, China

11 **Energy-Efficient Optimization with Cell Load Coupling for LTE Networks**
Zhaohui Yang, Jianfeng Shi, Hao Xu, Yijin Pan, Ming Chen, Southeast University, China

12 **Optimal and Cooperative Energy Replenishment in Mobile Rechargeable Networks**
Maoqiang Wu, Dongdong Ye, Jiawen Kang, Haochuan Zhang, Rong Yu, Guangdong University of Technology, China

Tuesday, 17 May 2016 14:00-15:30 Jin Ling + Mo Ling

5A: Network Security I

Chair: Yao Ma, NIST, USA

1 **A Secure Network Coding based Modify-and-Forward Scheme for Cooperative Wireless Relay Networks**
Quoc-Tuan Vien, Middlesex University, United Kingdom; Tuan Anh Le, Middlesex University, United Kingdom; Huan X. Nguyen, Middlesex University, United Kingdom; Hoc Phan, University of Reading, United Kingdom

2 **Delay-QoS-Driven Secrecy Power Allocation in Underlay Secure Cognitive Radio System**
Liuqing Ma, Shandong University, China; Yanbo Ma, Shandong University of Finance and Economics, China; Piming Ma, Shandong University, China

3 **Full-Duplex or Half-Duplex? Hybrid Relay Selection for Physical Layer Secrecy**
Hongliang He, Pinyi Ren, Qinghe Du, Li Sun, Xi'an Jiaotong University, China

4 **Secure Subway Train-to-Train Communications via GSM-R Communication Systems**
Yongdong Wu, Institute for Infocomm Research, Singapore; Bo Qiu, Hebei University of Technology, China; Zhuo Wei, Huawei International Pte Ltd, Singapore; Jian Weng, Jinan University, China

5 **Secure Transmission in Interference Alignment (IA)-Based Networks with Artificial Noise**
Nan Zhao, Dalian University of Technology, China; F. Richard Yu, Carleton University, Canada; Ming Li, Dalian University of Technology, China; Victor C.M. Leung, The University of British Columbia, Canada

Tuesday, 17 May 2016 14:00-15:30 Jian Kang + Ye Cheng

5B: Cognitive Radio and Spectrum Management II

Chair: Michael Fitch, BT, UK

1 **Resource Allocation and Performance Measures in Multi-user Multi-channel Cognitive Radio Networks**
Shi Wang, Sunil Maharaj, Attahiru Alfa, University of Pretoria, South Africa

2 **O White Space, White Space, Whatfore Art Thou White Space?**
Oliver Holland, King's College London, United Kingdom

3 **Sequential Sensing and Recognition When Primary User Has Multiple Transmit Power Levels**
Shuijun Cheng, Xidian University, China; Zan Li, Xidian University, China; Feifei Gao, Tsinghua University, China; Danyang Wang, Xidian University, China

4 **Sliding Window Spectrum Sensing for Full-Duplex Cognitive Radios with Low Access-Latency**
Orion Afisiadis, Andrew Charles Mallory Austin, Alexios Balatsoukas-Stimming, Andreas Burg, EPFL, Switzerland

5 **Skolem Sequence Based Self-adaptive Broadcast Protocol in Cognitive Radio Networks**
Lin Chen, Peking University, Yale University, China; Zhiping Xiao, Peking University, China; Kaigui Bian, Peking University, China; Shuyu Shi, National Institute of Informatics, Japan; Rui Li, Yale University, United States; Yusheng Ji, National Institute of Informatics, Japan

Tuesday, 17 May 2016 14:00-15:30 VIP

5C: MIMO System Design and Analysis I

Chair: Tommy Svensson, Chalmers University, Sweden

1 **Asymmetric MIMO System Design Based on OFDMA-TDD for Unmanned Ground Systems**
Jisang You, Korea Advanced Institute of Science and Technology, South Korea; Joonsung Choi, Agency for Defense Development, South Korea; Seungjae Jung, Korea Advanced Institute of Science and Technology, South Korea; Joonhyuk Kang, Korea Advanced Institute of Science and Technology, South Korea

2 **Interference Alignment based on Alamouti Code for Mx2 X Channels with Multiple Antennas**
Dongyeong Song, Wonjae Shin, Se Jungwoo Lee, Seoul National University, South Korea

3 **Low-Complexity Detection for GSM-MIMO Systems via Spatial Constraint**
Cong Li, PLA University of ScienceTechnology, China; Jinlong Wang, PLA University of ScienceTechnology, China; Wenlong Liu, Dalian University of Technology, China; Yunpeng Cheng, PLA University of ScienceTechnology, China; Yuzhen Huang, PLA University of Science and Technology, China

4 **On Some Unifications Arising from the MIMO Rician Shadowed Model**
Laureano Moreno-Pozas, Eduardo Martos-Naya, Universidad de Malaga, Spain

5 Spectral Efficiency of Multi-User mmWave Systems with Uniform Linear Arrays and MRT
Weiqiang Tan, Southeast University, China; Peter J. Smith, Victoria University of Wellington, New Zealand; Himal A. Suraweera, University of Peradeniya, Sri Lanka; Michail Matthaiou, Queen's University Belfast, United Kingdom; Shi Jin, Southeast University, China

Tuesday, 17 May 2016 14:00-15:30 Wan Da

5D: Resource Allocation II

Chair: Kui Wang, Nanjing University of Posts and Telecommunications,China

1 Remote Radio Head Selection for Power Saving in Cloud Radio Access Networks
Wentao Zhao, Shaowei Wang, Nanjing University, China

2 Joint Access-Selection and Power Allocation for Spectrum Sharing Cognitive Radio Networks
Jiachao Chen, Zhejiang University of Technology, China; Yuan Wu, Zhejiang University of Technology, China; Liping Qian, Zhejiang University of Technology, China; Weidang Lu, Zhejiang University of Technology, China; Xiang Qiu, Zhejiang University of Technology, China

3 Resource Allocation in Topology Management of Asymmetric Wireless Interference Networks
Xinyu Zhang, Dalian University of Technology, China; Nan Zhao, Dalian University of Technology, China; F. Richard Yu, Carleton University, Canada; Victor C.M. Leung, The University of British Columbia, Canada

4 QoE-aware Scheduling for Video Streaming in 802.11n/ac-based High User Density Networks
Maodong Li, Peng Hui Tan, Sumei Sun, Yong Huat Chew, Institute for Infocomm Research (I2R), Singapore

5 Historical PMI based Multi-User Scheduling for FDD Massive MIMO Systems
Bin Han, China Telecom Technology Innovation Center, China; Song Zhao, China Telecom Technology Innovation Center, China; Bei Yang, China Telecom Technology Innovation Center, China; Haijun Zhang, The University of British Columbia, China; Peng Chen, China Telecom Technology Innovation Center, China; Fengyi Yang, China Telecom Technology Innovation Center, China

Tuesday, 17 May 2016 14:00-15:30 Krabi + Pattya

5E: Antenna Systems and Propagation

Chair: Bo Ai, Beijing Jiaotong Unviersity, China

1 A Low Complexity Calibration Method for Space-borne Phased Array Antennas
Shuai Wang, Jibo Dai, Yujie Lin, Xiangyuan Bu, Beijing Institute of Technology, China

2 Multilayer CPW-Fed Patch Antenna on New AMC Ground Plane for 60 GHz Millimeter-Wave Communications
Imad Ali, Academia Sinica, National Tsing Hua University, Taiwan; Ronald Chang, Academia Sinica, Taiwan; Jenny Yi-Chun Liu, National Tsing Hua University, Taiwan

3 Synthesis of Radiation Patterns in Arbitrary Geometry Antenna Arrays
Barry Cardiff, Anthony Fagan, University College Dublin, Ireland

4 Effect of Person Density on Propagation Charateristics of MIMO Channel under Office Environment
Yu Yu, Yang Liu, Wen-Jun Lu, Hong-Bo Zhu, Nanjing University of Posts and Telecommunications, China

5 Generating Spatial Channel Models in Multi-probe Anechoic Chamber Setups
Wei Fan, Aalborg University, Denmark; Pekka Kyösti, Anite Telecoms Oy, Finland; Jukka-Pekka Nuutinen, Intel Mobile Communications, Denmark; Àlex Oliveras Martínez, Aalborg University, Denmark; Jesper Ø. Nielsen, Aalborg University, Denmark; Gert F. Pedersen, Aalborg University, Denmark

Tuesday, 17 May 2016 14:00-15:30 Xuan Wu + Go Lou

5F: Massive MIMO II - Detection, Coding, and Interference Mitigation

Chair: Manav Bhatnagar, Indian Institute of Technology Delhi, India

1 A Low-Complexity Detector for Very Large MIMO
Ergin Aslan, Mehmet Ertuğrul Çelebi, Istanbul Technical University, Turkey

2 Downlink and Uplink Transmissions in Distributed Large-Scale MIMO Systems for BD Precoding with Partial Calibration
Hao Wei, National Mobile Comm. Research Lab., Southeast Univ., Nanjing, China, China; Dongming Wang, National Mobile Comm. Research Lab., Southeast Univ., Nanjing, China, China; Xiaohu You, National Mobile Comm. Research Lab., Southeast Univ., Nanjing, China, China

3 HARQ with Chase-combining (HARQ-CC) for Uplink Transmission in Large-Antenna-Array Multicell Systems
Seong Hwan Kim, McGill University, Canada; V. K. Chaitanya Tumula, Huawei Sweden Technologies, Sweden; Tho Le-Ngoc, McGill University, Canada

4 Heterogeneous Massive MIMO with Small Cells
Dawei Ying, Purdue University, United States; Hong Yang, Bell Labs, Nokia, United States; Thomas Marzetta, Bell Labs, Nokia, United States; David Love, Purdue University, United States

5 Interference Mitigation With Dual Antenna Users In Massive MIMO Systems
Xiaokang Shao, Shanghai Jiao Tong University, China; Lingge Jiang, Shanghai Jiao Tong University, China; Chen He, Shanghai Jiao Tong University, China; Qi Xi, Shanghai Jiao Tong University, China

Tuesday, 17 May 2016 14:00-15:30 Ballroom Foyer

5P: Localization, C-RAN, and VLC

1 How Near is Near: a Case Study of the Minimum Distance to Distinguish Neighbouring Places in Place Learning Using Wi-Fi Signals
Yaqian Xu, University of Kassel, Germany; Doan Duong, University of Kassel, Germany; Klaus David, University of Kassel, Germany

2 Probabilistic Fingerprinting Based PassiveDevice-free Localization from Channel StateInformation
Shuyu Shi, National Institute of Informatics, Japan; Stephan Sigg, Aalto University, Finland; Yusheng Ji, National Institute of Informatics, Japan

3 Geolocation Algorithm of Interference Sources from FDOA Measurements using Satellites Based on Taylor Series Expansion
Wei Zhang, Gengxin Zhang, PLA University of Science and Technology, China

4 Analysis on the Performance Bound of DopplerPositioning Using One LEO Satellite
Xi Chen, Tsinghua University, China; Menglu Wang, Tsinghua University, China; Lei Zhang, East China Normal University, China

5 Navigation Integrated Information Transmission Routing Strategy Based on Fixed Topology Mode
Yue Zhao, National University of Defense Technology, China

6 A Software-Defined Network based Node Selection Algorithm in WSN Localization
Yaping Zhu, Yueyue Zhang, Weiwei Xia, Lianfeng Shen, Southeast University, China

7 Gaussian Sum Cubature Belief Propagation for Distributed Vehicular Network Navigation
Wenyun Gao, Tsinghua University, China; Xi Chen, Tsinghua University, China; Menglu Wang, Tsinghua University, China; Daichen Zhang, College of National Defense Information Science, China

8 Optimising TCP for Cloud-Based Mobile Networks
Matteo Artuso, Henrik Christiansen, Technical University of Denmark, Denmark

9 **Efficient Algorithm for Baseband Unit Pool Planning in Cloud Radio Access Networks**
Sheng Xu, Shaowei Wang, Nanjing University, China

10 **Joint Colour-and-Spatial Modulation Aided Visible Light Communication System**
Yufa Chen, Ming Jiang, Sun Yat-sen University, China

Tuesday, 17 May 2016 16:00-17:30 Jin Ling + Mo Ling

6A: Network Security II

Chair: Pinyi Ren, Xi'an Jiaotong Univ, China

1 **Resource Allocation with Cooperative Jamming in Socially Interactive Secure D2D Underlay**
Li Wang, Bupt, China; Huaqing Wu, Bupt, China; Gordon Stuber, Gatech, United States

2 **Probability of Secrecy Capacity of the MISOSystem with an Eavesdropper**
Xian Liu, University of Arkansas at Little Rock, United States

3 **Secure Secondary Communications with Curious Primary Users in Cognitive Underlay Networks**
Qian Xu, Pinyi Ren, Qinghe Du, Li Sun, Xi'an Jiaotong University, China

4 **Improving Security and Privacy of Images on Cloud Storage by Histogram Shifting and Secret Sharing**
Min-Ying Wu, Min-Chieh Yu, Jenq-Shiou Leu, Sheng-Kai Chen, National Taiwan University of Science and Technology, Taiwan

5 **An Improved TCM-based Approach for Cell Outage Detection for Self-Healing in LTE HetNets**
Jijuan Wang, Southeast University, China; Nhu Quan Phan, Southeast University, Viet Nam; Zhiwen Pan, Southeast University, China; Nan Liu, Southeast University, China; Xiaohu You, Southeast University, China; Tianle Deng, Southeast University, China

Tuesday, 17 May 2016 16:00-17:30 Jian Kang + Ye Cheng

6B: Filtering and Equalization

Chair: Chenhao Qi, Southeast University, China

1 **Correntropy Induced Metric Penalized Sparse RLS Algorithm to Improve Adaptive System Identification**
Guan Gui, Nanjing University of Posts and Telecommunications, China; Linglong Dai, Tsinghua University, China; Baoyu Zheng, Nanjing University of Posts and Telecommunications, China; Li Xu, Akita Prefectural University, Japan; Fumiyuki Adachi, Tohoku University, Japan

2 **Joint Linearization for Radio-over-Fiber Links Equipped With High Power Amplifiers**
Alexander Lozhkin, Fujitsu Laboratories Ltd., Japan; Kazuo Nagatani, Fujitsu Laboratories Ltd., Japan; Yasuyuki Oishi, Fujitsu Laboratories Ltd., Japan

3 **Low-Complexity Detection for FTN Signaling Based on Weighted FG-SS-BP Equalization Method**
Tianhang Yu, Zhejiang University, China; Minjian Zhao, Zhejiang University, China; Jie Zhong, University, China; Yunlong Cai, Zhejiang University, China

4 **Selection of Nonzero Taps for Sparse Linear Equalizer**
Chenhao Qi, Southeast University, China; Xin Wang, Southeast University, China; Yongming Huang, Southeast University, China

5 **Equalization for MIMO-OFDM Systems with Insufficient Cyclic Prefix**
Tri Pham, University of Canterbury, New Zealand; Tho Le-Ngoc, McGill University, Canada; Graeme Woodward, University of Canterbury, New Zealand; Philippa Martin, University of Canterbury, New Zealand; Khoa Phan, McGill University, Canada

Tuesday, 17 May 2016 16:00-17:30 VIP

6C: MIMO System Design and Analysis II

Chair: Yaoming Cai, PLA University of Science and Technology, China

1 **Unequal Power Amplifier Dimensioning for Adaptive Massive MIMO Base Stations**
Olli Apilo, VTT Technical Research Centre of Finland Ltd, Finland; Mika Lasanen, VTT Technical Research Centre of Finland Ltd, Finland; Aarne Mämmelä, VTT Technical Research Centre of Finland Ltd, Finland

2 **Multi-antenna Relay Beamforming Design in SC-FDMA Systems with Imperfect CSI**
Longhai Zhao, Harbin Institute of Technology, China; Xuejun Sha, Harbin Institute of Technology, China; Xuanli Wu, Harbin Institute of Technology, China

3 **Hybrid Beamforming with Time Delay Compensation for Millimeter Wave MIMO Frequency Selective Channels**
Gaojian Wang, RWTH Aachen ICE, Germany; Jiaxin Sun, RWTH Aachen, Germany; Gerd Ascheid, RWTH Aachen ICE, Germany

4 **Power Iteration Based Training for Millimeter WaveMIMO Beamforming Systems**
Xiantao Cheng, University of Electronic Science and Technology of China, UESTC, China; Zigang Fu, University of Electronic Science and Technology of China, UESTC, China; Niannian Lou, University of Electronic Science and Technology of China, UESTC, China; Qiang Li, University of Electronic Science and Technology of China, UESTC, China

5 **LoS Spatial Multiplexing and Beamforming using Uniform Circular Array of Subarrays**
Yuri Jeon, Minhyun Kim, Gye-Tae Gil, Yong H. Lee, Korea Advanced Institute of Science and Technology (KAIST), South Korea

Tuesday, 17 May 2016 16:00-17:30 Wan Da

6D: MIMO-OFDM

Chair: Xuemin Hong, Xiamen University, China

1 **A Low Complexity and High Throughput MIMO Detection VLSI Design for MIMO-OFDM Systems**
Zhaohui Cai, Yuhong Wang, Suttinan Chattong, Institute for Infocomm Research, Singapore

2 **An Improved Transceiver Design for Two-Relay SFBC-OFDM Cooperative Relay Systems**
Chin-Liang Wang, Kuan-Yu Chu, National Tsing Hua University, Taiwan

3 **Joint Iterative Interference Alignment and SCMA Technique for MIMO-OFDM Systems**
Yi Li, Xianfu Lei, Pingzhi Fan, Southwest Jiaotong University, China; Dageng Chen, Huawei Technologies Co., Ltd., China

4 **On the Assessment of Nonlinear Distortion Effects in MIMO-OFDM Systems**
Joao Guerreiro, Instituto de Telecomunicações, Portugal; Rui Dinis, Instituto de Telecomunicações, Portugal; Paulo Montezuma, Uninova, Portugal

5 **Subcarrier and Power Allocation for Multiuser MIMO-OFDM Systems with Various Detectors**
Jing Mao, Peking University, China; Chen Chen, Peking University, China; Lin Bai, Beihang University, China; Haige Xiang, Peking University, China; Jinho Choi, Gwangju Institute of Science and Technology, Korea, Republic of

Tuesday, 17 May 2016 16:00-17:30 Krabi +Pattya

6E: Millimeter-Wave Channels

Chair: Danping He , Beijing Jiaotong Unviersity, Beijing

1 **28 GHz Millimeter-Wave Ultrawideband Small-Scale Fading Models in Wireless Channels**
Mathew Samimi, NYU Tandon School of Engineering, United States; George MacCartney, NYU Tandon School of Engineering, United States; Shu Sun, NYU Tandon School of Engineering, United States; Theodore Rappaport, NYU Tandon School of Engineering, United States

2 **Indoor Office Plan Environment and Layout-Based MmWave Path Loss Models for 28 GHz and 73 GHz**
George MacCartney, NYU Tandon School of Engineering, United States; Sijia Deng, NYU Tandon School of Engineering, United States; Theodore Rappaport, NYU Tandon School of Engineering, United States

3 **Wideband Millimeter-Wave Channel Characterization based on LOS Measurements in an Open Office at 26GHz**
Qi Wang, Shu Li, Xiongwen Zhao, North China Electric Power University, China; Mengjun Wang, Shaohui Sun, Datang Wireless Mobile Innovation Center of the China Academy of Telecommunication Technology, China

4 **Large-Scale Modeling and Cell-edge Coverage for Future HetNet Deployments**
Angelos Goulianos, Wenfang Yuan, Denys Berkovskyy, Michael Charitos, Simon Armour, University of Bristol, United Kingdom

5 **An Empirical Study of Urban Macro Propagation at 10, 18 and 28 GHz**
Huan Nguyen Cong, Aalborg University, Denmark; Ignacio Rodriguez, Aalborg University, Denmark; Troels Bundgaard So_rensen, Aalborg University, Denmark; Laura Sanchez, Aalborg University, Denmark; Istvan Kovacs, Nokia, Denmark; Preben Mogensen, Aalborg University, Denmark

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6F: Massive MIMO III - Security, Spectrum and Energy Efficiency

Chair: Houjin Chen, Beijing Jiaotong Univeristy, China

1 **Energy Efficiency Analysis with Circuit Power Consumption in Downlink Large-Scale Multiple Antenna Systems**
Shunyuan Dong, Beijing University of Posts and Telecommunications (BUPT), China

2 **Massive MIMO Aided Secure Multi-Pair Relaying with Power Control**
Kaifeng Guo, RWTH Aachen University, Germany; Congchi Zhang, RWTH Aachen University, Germany; Yan Guo, RWTH Aachen University, Germany; Gerd Ascheid, RWTH Aachen University, Germany

3 **Optimal Resource Allocation for Massive MIMO over Spatially Correlated Fading Channels**
Yongzhi Li, Beijing Jiaotong University, China; Cheng Tao, Beijing Jiaotong University, China; Liu Liu, Beijing Jiaotong University, China; Lingwen Zhang, Beijing Jiaotong University, China

4 **Power-Saving Transmission in MU-Massive-MIMO with Distributed Antennas and Security Guarantee**
Kaifeng Guo, RWTH Aachen University, Germany; Yan Guo, RWTH Aachen University, Germany; Gerd Ascheid, RWTH Aachen University, Germany

5 **Sum-Rate Capacity Investigation of Multiuser Massive MIMO Uplink Systems in Semi-correlated Channels**
Liu Liu, Beijing Jiaotong University, China; David Matolak, University of South Carolina, United States; Cheng Tao, Beijing Jiaotong University, China; Yongzhi Li, Beijing Jiaotong University, China; Houjin Chen, Beijing Jiaotong University, China

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7A: Energy Harvesting and Energy Efficient Wireless Networks

Chair: Yue Xiao, UESTC, China

1 **Energy Borrowing: An Efficient Way to Bridge Energy Harvesting and Power Grid in Wireless Communications**
Zhaojie Sun, University of Electronic ScienceTechnology of China, China; Lilin Dan, University of Electronic ScienceTechnology of China, China; Yue Xiao, University of Electronic ScienceTechnology of China, China; Peibo Wen, University of Electronic ScienceTechnology of China, China; Ping Yang, University of Electronic ScienceTechnology of China, China; Shaoqian Li, University of Electronic Science and Technology of China, China

2 **Robust Beamforming Design for MISO SecrecyMulticasting Systems with Energy Harvesting**
Zhengyu Zhu, Zhengzhou University, China; Zheng Chu, Newcastle University, United Kingdom; Zhongyong Wang, Zhengzhou University, China; Inkyu Lee, Korea University, South Korea

3 **Information Processing and Wireless Energy Harvesting in Two-Way Amplify-and-Forward Relay Networks**
Syed Tariq Shah, Sungkyunkwan University, South Korea; Daniyal Munir, Sungkyunkwan University, South Korea; Kae Won Choi, Seoul National University of ScienceTechnology, South Korea; Min Young Chung, Sungkyunkwan University, South Korea

4 **An Iterative Power Allocation Scheme for Improving Energy Efficiency in Massively Dense Distributed Antenna Systems**
Jing Wang, Tsinghua University, China; Yanmin Wang, China Academy of Electronics and Information Technology, China; Wei Feng, Tsinghua University, China; Xin Su, Tsinghua University, China; Shidong Zhou, Tsinghua University, China

5 **Performance Evaluation of IEEE 802.11ah Actuators**
Behnam Badihi, Ericsson Research, Finland; Luis Felipe Del Carpio, Ericsson Research, Finland; Parth Amin, Ericsson Research, Finland; Anna Larmo, Ericsson Research, Finland; Miguel Lopez, Ericsson Research, Sweden; Dee Denteneer, Philips Research, Netherlands

Wednesday, 18 May 2016 09:00-10:30 Jian Kang + Ye Cheng

7B: Multiple Access Techniques

Chair: Xin Wang, Fudan University, China

1 **Comparison of Interference Cancellation Schemes for Non-Orthogonal Multiple Access System**
Guanghui Song, Xianbin Wang, Western University, Canada

2 **Random Access with Massive-Antenna Arrays**
Chongbin Xu, Fudan University, China; Xin Wang, Fudan University, China; Ping Li, City University of Hong Kong, Hong Kong

3 **Impact of HPA Non-linearity on Coexistence of FBMC-OQAM Systems with PMR/PPDR Systems**
Sri Satish Krishna Chaitanya Bulusu, Hmaied Shaiek, Daniel Roviras, CNAM, France

4 **Integer Frequency Offset Estimation for Dynamic Lattice Multicarrier Transmission System over Time-Varying Rayleigh Fading Channel**
Kui Xu, Wei Xie, Youyun Xu, Dongmei Zhang, PLA University of Science and Technology, China

Wednesday, 18 May 2016 09:00-10:30 VIP

7C: Coding I

Chair: Vladimir Rybalkin, University of Kaiserslautern, Germany

1 **A new Architecture for High Speed, Low Latency NB-LDPC Check Node Processing for GF(256)**
Vladimir Rybalkin, University of Kaiserslautern, Germany; Philipp Schläfer, University of Kaiserslautern, Germany; Norbert Wehn, University of Kaiserslautern, Germany

2 **Construction of Structured LDPC Code Based On Correlation Limitation**
Jun Xu, Southeast Univ, China; Dongming Wang, Southeast Univ, China; Jin Xu, ZTE Corp, China; Xiaomei Xu, ZTE Corp, China; LiGuang Li, ZTE Corp, China; XiaoHu You, Southeast Univ, China

3 **Incremental Decoding Schedules for Puncture-based Rate-compatible LDPC codes**
Huang-Chang Lee, National Tsing Hua University, Taiwan; Yeong-Luh Ueng, National Tsing Hua University, Taiwan

4 **Design of Short Quasi-Cyclic LDPC Codes for Next Generation Broadcast Wireless Systems**
Fang Wang, Shanghai Advanced Research Institute, Chinese Academy of Sciences, China; Yajun Kou, Shanghai Advanced Research Institute, Chinese Academy of Sciences, Canada; Ming Jiang, Southeast Uinversity, China; Yang Xu, Nanjing University of Posts and Telecommunications, China

5 **Finite Length Design of Precoded EWF Codes**
Lei Yuan, Lanzhou University, China; Huaan Li, Lanzhou University, China; Yi Wan, Lanzhou University, China

Wednesday, 18 May 2016 09:00-10:30 Wan Da

7D: Test-bed and Field Experiments

Chair: Xavier Lagrange, Telecom Bretagne, France

1 **A Field Experimental Evaluation of Mobile Terminal Velocity Estimation Based on Doppler Spread Detection**
Sourabh Maiti, Softbank Corp., Japan; Manabu Mikami, Softbank Corp., Japan; Kenji Hoshino, Softbank Corp., Japan

2 **A Field Trial of Wi-Fi co-existing with U-LTE based on cell onoff on unlicensed spectrum**
Zheng Li, Huawei Technology Co. Ltd, China; Chuan Liu, Huawei Technology Co. Ltd, China; Hantao Li, Huawei Technology Co. Ltd, China; Zhenyu Li, Huawei Technology Co. Ltd, China

3 **Dynamic TDD Testbed and Field Measurements**
Jinhua Liu, Ericsson, China; Rui Fan, Ericsson, China; Hai Wang, Ericsson, China; Jianjun Liu, China Mobile, China; Fei Wang, China Mobile, China

4 **Empirical Analysis of the Impact of LTE Downlink Channel Indicators on the Uplink Connectivity**
Christoph Ide, TU Dortmund, Germany; Robert Falkenberg, TU Dortmund, Germany; Dennis Kaulbars, TU Dortmund, Germany; Christian Wietfeld, TU Dortmund, Germany

5 **Mobility Performance in Slow- and High-Speed LTE Real Scenarios**
Lucas Chavarria Gimenez, Aalborg University, Denmark; Maria Carmela Cascino, Aalborg University, Denmark; Maria Stefan, Aalborg University, Denmark; Klaus I. Pedersen, Nokia - Bell Labs, Denmark; Andrea F. Cattoni, Aalborg University, Denmark

Wednesday, 18 May 2016 09:00-10:30 Krabi +Pattya

7E: Satellite Communications Networks and Systems I

Chair: Qinyu Zhang , Harbin Institute of Technology, China

1 **Exposing an Openflow swtich abstraction of the satellite segment to Virtual Network Operators**
Slim Abdellatif, Univ de Toulouse, INSA, LAAS, France; Pascal Berthou, Univ de Toulouse, France, France; Patrick Gelard, CNES, Centre National d'Etudes Spatiales France, France; Thierry Plesse, Directorate General of Armaments (DGA), France; Sanae El-Yousfi, CNRS, LAAS, France

2 **QoS Routing for MANET and Satellite Hybrid Network to Support Disaster Relives and Management**
Xin Yang, University of Surrey, United Kingdom; Zhili Sun, University of Surrey, United Kingdom; Ye Miao, University of Surrey, United Kingdom; Haitham Cruickshank, University of Surrey, United Kingdom

3 **Lifetime Maximization Routing with Guaranteed Congestion Level for energy-constrained LEO Satellite Networks**
Di Zhou, Xidian University, China; Min Sheng, Xidian University, China; King-Shan Lui, University of Hong Kong, Hong Kong; Xijun Wang, Xidian University, China; Runzi Liu, Xidian University, China; Chao Xu, Xidian University, China; Yu Wang, Xidian University, China

4 **Green Hybrid Satellite Terrestrial Networks: Fundamental Trade-off Analysis**
Jiaxin Zhang, Beijing University of Posts and Telecommunications, China; Barry Evans, Institute for Communication Systems (ICS), United Kingdom; Muhammad Ali Imran, University of Surrey, United Kingdom; Xing Zhang, Beijing University of Posts and Telecommunications, China; Wenbo Wang, Beijing University of Posts and Telecommunications, China

5 **GEO Satellite Feeder links and Terrestrial Full-Duplex Small Cells: A case for Coexistence**
Bhavani Shankar Mysore R, University of Luxembourg, Luxembourg; Sina Maleki, University of Luxembourg, Luxembourg; Gan Zheng, University of Essex, United Kingdom; Adegbenga Awoseyila, University of Surrey, United Kingdom; Barry Evans, University of Surrey, United Kingdom; Bjorn Ottersten, University of Luxembourg, Luxembourg

Wednesday, 18 May 2016 09:00-10:30 Liu He

7F: Vehicle Controls

Chair: Amin Hosseini, Technical University of Munich, Germany

1 **A Combinatorial Insertion Algorithm for the PublicVehicle System**
Ning Li, Shanghai Jiao Tong University, China; Linghe Kong, Shanghai Jiao Tong University, China; Jia-liang Lu, Shanghai Jiao Tong University, China; Wei Shu, University of New Mexico, United States; Min-you Wu, Shanghai Jiao Tong University, China

2 **Admission Control and Scheduling for EV Charging Station Considering Time-of-Use Pricing**
Zhe Wei, University of Victoria, Canada; Jianping He, University of Victoria, Canada; Lin Cai, University of Victoria, Canada

3 **A Novel Intrusion Detection Method Using Deep Neural Network for In-Vehicle Network Security**
Jewon Kang, Ewha Womans University, South Korea; Min-Ju Kang, Ewha Womans University, South Korea

4 **Innovia Vehicle Radiated Emission Investigation and CENELEC Compliance Solution**
Jian Shen, Bombardier Transportation, United States

5 **Predictive Haptic Feedback for Safe Lateral Control of Teleoperated Road Vehicles in Urban Areas**
Amin Hosseini, Florian Richthammer, Markus Lienkamp, Technical University of Munich, Germany

Wednesday, 18 May 2016 09:00-10:30 Ballroom 1

7G: NOMA and Massive MIMO

Chair: Daniel K. C. So, University of Manchester, UK

1 **Efficient Antenna Selection and User Scheduling in 5G Massive MIMO-NOMA System**
Xin Liu, The University of Western Ontario, Canada; Xianbin Wang, The University of Western Ontario, Canada

2 **Outage Probability Analysis of NOMA within Massive MIMO Systems**
Di Zhang, Keping Yu, Zheng Wen, Takuro Sato, Waseda Univeristy, Japan

3 **Enhanced Channel Feedback Schemes for Downlink NOMA Combined with Closed-loop SU-MIMO**
Yang Lan, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Anass Benjebbour, NTT DOCOMO, INC., Japan; Xiaohang Chen, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Anxin Li, DOCOMO Beijing Communications Laboratories Co., Ltd, China; Huiling Jiang, DOCOMO Beijing Communications Laboratories Co., Ltd, China

4 **A Game-Theoretic Analysis of Uplink Power Control for a Non-Orthogonal Multiple Access System with Two Interfering Cells**
Chi Wan Sung, CityU, China; Yaru Fu, CityU, China

5 **User-Pairing based Non-Orthogonal MultipleAccess (NOMA) System**
Ziad Qais Al-Abbasi, University of Manchester, United Kingdom; Daniel K. C. So, University of Manchester, United Kingdom

Wednesday, 18 May 2016 09:00-10:30 Ballroom Foyer

7P: Recent Results in Wireless Networking I

1 **Analysis of Data Interruption in an LTE Highway Scenario with Dual Connectivity**
Lucas Chavarria Gimenez, Aalborg University, Denmark; Per Henrik Michaelsen, Nokia - Bell Labs, Denmark; Klaus I. Pedersen, Nokia - Bell Labs, Denmark

2 **Reverse Combinatorial Auction based Resource Allocation in Heterogeneous Software Defined Network with Infrastructure Sharing**
Di Zhang, University of Jyväskylä, Finland; Zheng Chang, University of Jyväskylä, Finland; Timo Hämäläinen, University of Jyväskylä, Finland

3 **Assessment of a Platform for Non-Contiguous Aggregation of IEEE 802.11 Waveforms in TV White Space**
Oliver Holland, King's College London, United Kingdom; Aravindh Raman, King's College London, United Kingdom; Nishanth Sastry, King's College London, United Kingdom; Stan Wong, King's College London, United Kingdom; Jane Mack, InterDigital Communications, Inc., United States; Lisa Lam, InterDigital Communications, Inc., United States

4 **Exact Outage Analysis of SIMO Relay-aided Underlay Communications with Limited Feedback**
Zakaria El-Moutaouakkil, Institut TELECOM/TELECOM Bretagne/UMR CNRS 3192 Lab-STICC, Brest, France; Kamel Tourki, Mathematical and Algorithmic Sciences Lab, France Research Center, Huawei Technologies Co., France; Samir Saoudi, Institut TELECOM/TELECOM Bretagne/UMR CNRS 3192 Lab-STICC, Brest, France

5 **Net Throughput Optimization by Situation Aware Feedback Scheduling**
Huijun Li, Shreya Tayade, Gerd Ascheid, RWTH Aachen University, Germany

6 **Incentive Mechanism Design for Shared Femtocell Networks - A Mobility Pattern Analysis**
Bingjie Huang, Tao Yang, Yuedong Xu, Bo Hu, Research Center of Smart Networks and Systems, China

7 **Adaptive Tone Reservation for better BER Performance in a Frequency Selective Fading Channel**
Marwa Chafii, Lamarana Diallo, Jacques Palicot, Faouzi Bader, CentraleSupelec/IETR, France; Remi Gribonval, Inria, France

8 **Enabling Retransmissions for Achieving ReliableMulticast Communications in WSNs**
Debasish Ghose, University of Agder, Norway; Frank Y. Li, University of Agder, Norway

9 **Unified Device-to-Device Communications for Low-Latency and High Reliable Vehicle-to-X Services**
Liang Hu, Huawei, Germany; Joseph Eichinger, Huawei, Germany; Joseph Eichinger, Huawei, Germany; Joseph Eichinger, Huawei, Germany

10 **Analytical Evaluation of Throughput and Coverage for FFR in OFDMA Cellular Network**
Libin Liu, WSPN LAB, Beijing University of PostsTelecommunication, China; Tao Peng, WSPN LAB, Beijing University of PostsTelecommunication, China; Pengbo Zhu, WSPN LAB, Beijing University of PostsTelecommunication, China; Zhiqiang Qi, WSPN LAB, Beijing University of PostsTelecommunication, China; Wenbo Wang, WSPN LAB, Beijing University of Posts and Telecommunication, China

11 **Blind detection and prediction of Multi-SIM UE subframe loss**
Jakob Lindbjerg Buthler, Aalborg University, Denmark; Troels Soerensen, Aalborg University, Denmark

12 **A Novel Stochastic Channel Modeling Approach for mmWave Systems With Beamforming**
Alexander Pyattaev, Tampere University of Technology, Finland; Kerstin Johnsson, Intel Corporation, United States; Sergey Andreev, Tampere University of Technology, Finland; Yevgeni Koucheryavy, Tampere University of Technology, Finland

Wednesday, 18 May 2016 11:00-12:30 Jin Ling + Mo Ling

8A: Vehicular Networks

Chair: Yao Ma, NIST, USA

1 **On Resource Management in Vehicular Ad Hoc Networks: A Fuzzy Optimization Scheme**
Zhifang Miao, Xidian University, China; Changle Li, Xidian University, China; Lina Zhu, Xidian University, China; Xiaolei Han, Xidian University, China; Mengmeng Wang, Xidian University, China; Xuelian Cai, Xidian University, China; Zhe Liu, Xidian University, China; Lei Xiong, Beijing Jiaotong University, China

2 **Remote Testimony: How to trust an Autonomous Vehicle**
Francesco Alesiani, NEC Laboratories Europe, NEC Europe Ltd., Germany; Sebastian Gajek, NEC Laboratories Europe, NEC Europe Ltd. and FUAS, Germany

3 **A Secure and Privacy-Preserving Billing Scheme for Online Electric Vehicles**
Tianyu Zhao, Lingbo Wei, Chi Zhang, University of Science and Technology of China, China

4 **TrInc-based Secure and Privacy-preserving Protocols for Vehicular Ad Hoc Networks**
Lingbo Wei, University of Science and Technology of China, China; Chi Zhang, University of Science and Technology of China, China

5 **A Hierarchical Pseudonyms Management Approach for Software-Defined Vehicular Networks**
Xumin Huang, Jiawen Kang, Rong Yu, Maoqiang Wu, Guangdong University of Technology, China; Yan Zhang, Stein Gjessing, Simula Research Laboratory and University of Oslo, Norway

Wednesday, 18 May 2016 11:00-12:30 Jian Kang + Ye Cheng

8B: Green Cellular Networks

Chair: Khairi Hamdi, University of Manchester, UK

1 **Ownership Benefits/Costs Analysis of Green Cellular Networks**
Luca Chiaraviglio, Francesca Cuomo, Marco Listanti, Valentina Salvatore, University of Rome Sapienza, Italy

2 **Optimal Deployment of Dense Cellular Networks**
Arman Shojaeifard, Khairi Hamdi, Emad Alsusa, Daniel So, Jie Tang, University of Manchester, United Kingdom

3 **Traffic Aware Energy Management in Cellular Networks with Renewable Energy Powered Base Stations**
Li Qiao, Wei Yifei, Song Mei, Beijing University of Posts and Telecommunications, China; Yu F. Richard, Department of Systems and Computer Engineering, Carleton University, Canada

4 **An Energy Saving Small Cell Sleeping Mechanism with Cell Expansion in Heterogeneous Networks**
Ran Tao, Jie Zhang, Xiaoli Chu, University of Sheffield, United Kingdom

5 **Analytical Evaluation of Throughput and Power Efficiency using Fractional Frequency Reuse**
Zhiqiang Qi, Tao Peng, Libin Liu, Pengbo Zhu, Wenbo Wang, WSPN LAB, Beijing University of Posts and Telecommunication, China

Wednesday, 18 May 2016 11:00-12:30 VIP

8C: Coding II

Chair: Jun Xu, ZTE, China

1 **A Novel Remapping-based Joint Detection Algorithm for Network Coding HARQ-CC Schemes**
Yuh-Ren Tsai, Tuan-Jung Hsu, National Tsing Hua University, Taiwan

2 Graph-based Decoding for High-Dense Vehicular Multiway Multirelay Networks
Khoirul Anwar, Japan Advanced Institute of Science and Technology, Japan

3 Physical Layer Packet Coding: Inter-block Cooperative Coding for 5G
Jun Xu, Southeast Univ, China; Dongming Wang, Southeast Univ, China; Jin Xu, ZTE Corp, China; Xiaomei Xu, ZTE Corp, China; LiGuang Li, ZTE Corp, China

4 Performance Advantage of Joint Source-Channel Decoder over Iterative Receiver under M-aryDifferential Chaotic Shift Keying Systems
Lin Wang, Xiamen University, China

5 Spherical Codes for SCMA Codebook
Jinchen Bao, Zheng Ma, Mahamuda Alhaji Mahamadu, Zhongliang Zhu, Southwest Jiaotong University, China; Dageng Chen, Huawei Technologies, China

Wednesday, 18 May 2016 11:00-12:30 Wan Da

8D: WiFi/WiGig, LTE/LTE-A

Chair: Hailan Peng, KDDI R&D Laboratories, Inc., Japan

1 Q-Learning Based Intelligent Traffic Steering in Heterogeneous Network
Koichi Adachi, Institute for Infocomm Research, A*STAR, Singapore; Maodong Li, Institute for Infocomm Research, A*STAR, Singapore; Peng Hui Tan, Institute for Infocomm Research, A*STAR, Singapore; Yuan Zhou, Institute for Infocomm Research, A*STAR, Singapore; Sumei Sun, Institute for Infocomm Research, A*STAR, Singapore

2 Wi-Fi/WiGig Coordination for Optimal WiGig Concurrent Transmissions in Random Access Scenarios
Ehab Mahmoud Mohamed, Osaka University, Japan; Kei Sakaguchi, Fraunhofer Heinrich-Hertz-Institute, Germany; Seiichi Sampei, Osaka University, Japan

3 Macro-controlled Beam Database-based Beamforming Protocol for LTE-WiGig Aggregation in Millimeter-wave Heterogeneous Networks
Hailan Peng, Kazuya Moriwaki, Yasuhiro Suegara, KDDI R&D Laboratories, Inc., Japan

4 Performance evaluation of TCP-based traffic over direct communications in LTE-Advanced
Giovanni Nardini, Giovanni Stea, Antonio Virdis, University of Pisa, Italy

5 A Method of Introducing Multipath TCP to Mobile Core Networks and Its Evaluations
Yuji Kojima, Fujitsu Laboratories Ltd., Japan; Takeshi Kawasaki, Fujitsu Laboratories Ltd., Japan; Junichi Suga, Fujitsu Laboratories Ltd., Japan; Ryuichi Takechi, Fujitsu Laboratories Ltd., Japan

Wednesday, 18 May 2016 11:00-12:30 Krabi +Pattya

8E: Satellite Communications Networks and Systems II

Chair: Haitham Cruickshank, Surrey University, UK

1 Energy Efficient Joint Precoding for Multibeam Satellite Systems
Hongjun Li, College of Communications Engineering, PLA University of ScienceTechnology, China; Feihong Dong, College of Communications Engineering, PLA University of ScienceTechnology, China; Yuanzhi He, Institute of China Electronic System Engineering Corporation, China; Bo Jing, Shenyang Military Region Equipment Department, China; Jingchao Wang, Institute of China Electronic System Engineering Corporation, China; Fuchun Han, Institute of China Electronic System Engineering Corporation, China; Jing Wang, Institute of China Electronic System Engineering Corporation, China

2 Joint security beamforming in cognitive hybrid satellite-terrestrial networks
Can Yuan, PLA University of Science and Technology, China; Min Lin, Nanjing Institute of Telecommunication Technology, China; Jian Ouyang, Nanjing University of Posts and Telecommunications, China; Yijia Bu, PLA University of Science and Technology, China

3 Near ML soft bit estimation for APSK with very low complexity
Meixiang Zhang, Yangzhou University, China; Sooyoung Kim, Chonbuk National University, Korea, Republic of

4 Performance Analysis of Hybrid Satellite-Terrestrial Cooperative Networks with Distributed Alamouti Code
Yuhan Ruan, Xidian University, China; Yongzhao Li, Xidian University, China; Rui Zhang, Xidian University, China; Hailin Zhang, Xidian University, China

5 Low-delay Transmission Scheme Based on LT code Employing Hybrid Decoding
Qixian Zhang, University of Science and Technology of China, China; Xuan Feng, Institute of Telecommunication Satellite,CAST, China; Guixing Cao, Institute of Telecommunication Satellite,CAST, China; Sihai Zhang, University of Science and Technology of China, China; Wuyang Zhou, University of Science and Technology of China, China

Wednesday, 18 May 2016 11:00-12:30 Liu He

8F: Traffic Safety

Chair: Seokheon Cho, Univ of California, San Diego, USA

1 Frequency Selective Convolutional Neural Networks for Traffic Sign Recognition
Zifeng Lian, Xiaojun Jing, Songlin Sun, Hai Huang, Beijing University of Posts and Telecommunications, China

2 On Traffic Bottleneck in Green ITS Navigation: An Identification Method
Jiao Ma, Xidian University, China; Changle Li, Xidian University, China; Zhe Liu, Xidian University, China; Yulong Duan, Xidian University, China; Yanle Lei, Xidian University, China; Lei Xiong, Beijing Jiaotong University, China

3 Safety Marginal Value as a Traffic Safety Metric for the Trailing Vehicle
Seokheon Cho, Ramesh R. Rao, University of California, San Diego, United States

4 Short-term Traffic Flow Prediction based on EnsembleReal-time Sequential Extreme Learning Machine underNon-stationary Condition
Dong Wang, Jie Xiong, Zhu Xiao, Xiaohong Li, Hunan University, China

5 Traffic Assignment with Maximum Delay Constraint in Stochastic Network
Chuansheng Dong, McGill University, Canada; Qingyu Liu, Virginia Tech, United States; Haibo Zeng, Virginia Tech, United States

Wednesday, 18 May 2016 11:00-12:30 Ballroom 1

8G: Small Cell Networks

Chair: Jie Tang, South China University of Technology, China

1 Can Full Duplex Boost Throughput and Delay of 5G Ultra-Dense Small Cell Networks?
Marta Gatnau Sarret, Gilberto Berardinelli, Nurul Huda Mahmood, Preben Mogensen, Aalborg University, Denmark

2 Modelling and Analysis of Reduced Power Subframes in Two-tier Femto HetNets
Haonan Hu, Chongqing University of Posts and Telecommunications, China; Jialai Weng, The University of Sheffield, United Kingdom; Jiliang Zhang, Shenzhen Graduate School, China; Jie Zhang, The University of Sheffield, United Kingdom; Yang Wang, Shenzhen Graduate School, China

3 NLOS Backhaul PHY Optimized for Small Cells
June Chul Roh, Texas Instruments, United States; Pierre Bertrand, Texas Instruments, France; Adam Yao, Texas Instruments, China; Chen Mo, Huawei Technologies Co Ltd, China

4 Investigation of a Femto-DAS Hybrid System for In-Building Wireless Solutions
Nobukazu Fudaba, Tadashi Nakamura, Hiroyuki Seki, Fujitsu Laboratories Ltd., Japan

5 Interference Management with Successive Cancellation for Dense Small Cell Networks
Victor Fernandez-Lopez, Aalborg University, Denmark; Klaus Pedersen, Nokia - Bell Labs, Denmark; Jens Steiner, Nokia - Bell Labs, Denmark; Beatriz Soret, Nokia - Bell Labs, Denmark; Preben Mogensen, Nokia - Bell Labs, Denmark

Wednesday, 18 May 2016 11:00-12:30 Ballroom Foyer

8Pa: Recent Results in Wireless Networking Posters II

1 Cross-Layer Design of Adaptive Network-Coded QAM Aided Truncated ARQ in Two-Way Relaying
Yanping Yang, National Digital Switching System Engineering and Technological R&D Center, China; Wei Chen, Tsinghua University, China; Ou Li, National Digital Switching System Engineering and Technological R&D Center, China; Qingwen Liu, Tongji University, China; Lajos Hanzo, University of Southampton, United Kingdom

2 Framework to Support Mobility Context Awareness in Cellular Networks
Nandish P Kuruvatti, Hans D Schotten, University of Kaiserslautern, Germany

3 Impact of Transport Control Protocol on Full Duplex Performance in 5G Networks
Marta Gatnau Sarret, Aalborg University, Denmark; Gilberto Berardinelli, Aalborg University, Denmark; Nurul Huda Mahmood, Aalborg University, Denmark; Preben Mogensen, Aalborg University, Denmark

4 Energy Harvesting Based Relay Selection in Cooperative Wireless Networks
Shaoyi Xu, Beijing Jiaotong University, China; Xintao Qin, Beijing Jiaotong University, China; Kyung Sup Kwak, Inha University, Korea, Republic of

5 Joint Beam-Frequency Multiuser Scheduling for Millimeter-wave Downlink Multiplexing
Honglei Miao, Intel Deutschland GmbH, Germany; Michael Faerber, Intel Deutschland GmbH, Germany; Maria Fresia, Intel Deutschland GmbH, Germany; Valerio Frascolla, Intel Deutschland GmbH, Germany

6 An Incentive Mechanism Design View in HybridAccess Control in Small Cell Networks
Youming Sun, Fenggang Sun, Jinlong Wang, Yuli Zhang, Kailing Yao, College of Communications Engineering, PLA University of Science and Technology, China

7 Vehicular Network Based Reliable Traffic Density Estimation
Yan Huang, Tsinghua University, China; Jian Wang, Tsinghua University, China; Chunxiao Jiang, Tsinghua University, China; Haijun Zhang, The University of British Columbia, Canada; Victor C. M. Leung, The University of British Columbia, Canada

8 Pilot Reuse & Sum Rate Analysis of mmWave & UHF-based Massive MIMO Systems
Syed Ahsan Raza Naqvi, National University of Sciences and Technology (NUST), Pakistan; Syed Ali Hassan, National University of Sciences and Technology (NUST), Pakistan; Zaka ul Mulk, National University of Sciences and Technology (NUST), Pakistan

Wednesday, 18 May 2016 11:00-12:30 Ballroom Foyer

8Pb: Vehicular Electronics and Intelligent Transportation Posters

1 A High Precision Multi-Cell Battery Voltage Detecting Circuit for Battery Management Systems
Xue-Cheng Man, Tsinghua University, China; Li-Ji Wu, Tsinghua University, China; Xiang-Min Zhang, Tsinghua University, China; Tai-Kun Ma, Tsinghua University, China; Wen Jia, Research Institute of Tsinghua University in Shenzhen, China

2 An Augmented Estimation of Distribution Algorithm For Multi-Carpooling Problem With Time Window
Fang Zhang, Liaoning Shihua University, China; Zhijia Yang, Shenyang Institute of Automation, Chinese Academy of Sciences, China; Yang Wang, Shenyang Institute of Automation, Chinese Academy of Sciences, China; Fangjun Kuang, University of Stuttgart, Germany

3 Resilient, Decentralized V2V Online Stop-free Strategy in a Complex Roundabout
Marie-Ange Lèbre, University of Lyon / INSA Lyon, France; Frédéric Le Mouël, University of Lyon / INSA Lyon, France; Eric Ménard, VALEO, France

Wednesday, 18 May 2016 14:00-15:30 Jin Ling + Mo Ling

9A: Vehicular Communications

Chair: Cheng Li, Memorial University of Newfoundland, Canada

1 A Bi-directional Visible Light Communication System Based on DTMB-A
YangTian Yan, Tsinghua University, China; Bangcheng Sun, CNR Tangshan Railway Vehicles Co.,Ltd R&D, China; Yun Zhao, Tsinghua University, China; Zhenhui Huang, CNR Tangshan Railway Vehicles Co.,Ltd R&D, China; Hui Yang, Jian Song, Tsinghua University, China

2 LDPC-Coded Index-Modulation Aided OFDM for In-vehicle Power Line Communications
Hongming Zhang, Lie-Liang Yang, Lajos Hanzo, University of Southampton, United Kingdom

3 A Cooperative V2I Uplink Transmission Scheme Utilizing V2V Network Coding
Eiji Okamoto, Keisuke Kunitomo, Nagoya Institute of Technology, Japan; Hidenori Akita, Takuma Kyo, DENSO CORPORATION, Japan

4 Geometry-Based Propagation Modeling and Simulation of Vehicle-to-Infrastructure Links
Bengi Aygun, Worcester Polytechnic Institute, United States; Mate Boban, Huawei European Research Center, Germany; Joao P. Vilela, University of Coimbra, Portugal; Alexander M. Wyglinski, Worcester Polytechnic Institute, United States

5 Relay-Assisted based AF in Two-Hop Vehicular Networks over Rayleigh Fading Channels
Guilu Wu, Pingping Xu, Wenxiang Zhu, ThiOanh Bui, National Mobile Communications Research Lab., Southeast University, China

Wednesday, 18 May 2016 14:00-15:30 Jian Kang + Ye Cheng

9B: Green Wireless Communications I

Chair: Jie Li, Southeast University, China

1 Energy-Efficient Data Transmission with A Non-FIFO Packet
Qing Zhou, Southeast University, China; Nan Liu, Southeast University, China

2 Energy Minimization via BS Selection and Beamforming for Cloud-RAN under Finite Fronthaul Capacity Constraints
Sufeng Kuang, Southeast University, China; Nan Liu, Southeast University, China

3 Minimum Energy Consumption with Interference through User Association in Macro-Relay Network
Jie Li, Southeast University, China; Nan Liu, Southeast University, China

4 Energy-Efficient Power Allocation in Cloud Radio Access Network of High-Speed Railway
Shichao Li, Beijing Jiaotong University, China; Gang Zhu, Beijing Jiaotong University, China; Siyu Lin, Beijing Jiaotong University, China; Qian Gao, Beijing Jiaotong University, China; Shengfeng Xu, Beijing Jiaotong University, China; Lei Xiong, Beijing Jiaotong University, China

5 Spectrum and Energy Efficient Relaying Algorithms for Selective AF-OFDM Systems
Yang Zhang, Xidian University, China; Lihua Pang, Xi'an University of Science and Technology, China; Guangliang Ren, Xidian University, China; Fengkui Gong, Xidian University, China; Xiao Liang, Southeast University, China; Daixian Zhu, Xi'an University of

Science and Technology, China; Jian Huang, Xi'an University of Science and Technology, China

Wednesday, 18 May 2016 14:00-15:30 VIP

9C: Modulation I

Chair: Ananthanarayanan Chockalingam, Indian Institute of Science, Bangalore, India

1 **Coded Index Modulation for Non-DC-Biased OFDM in Multiple LED Visible Light Communication**
S. P. Alaka, Indian Institute of Science, Bangalore, India; T. Lakshmi Narasimhan, National Instruments Private Limited, Bangalore, India; A. Chockalingam, Indian Institute of Science, Bangalore, India

2 **A Quad State-Paired QPSK Modulation For Higher Data Rate Communication**
Zheng Hui, Ernest Tan, Nanyang Technological University, Singapore; Anoop Kumar Krishna, Airbus Group Innovations, Singapore

3 **Joint Space-Shift Keying and Orthogonal Shift-Keying Modulation for Energy-Efficient Signal Transmission**
Lie-Liang Yang, University of Southampton, United Kingdom; Jingru Chen, University of Southampton, United Kingdom

4 **Efficient Evaluation and Design of Interleaving Strategy for Communication Systems**
Wen Yan, Southeast University, China; Shiwen He, Southeast University, China; Yongming Huang, Southeast University, China; Luxi Yang, Southeast University, China

5 **Performance Analysis of Chaotic Sampling and Detection in CS-DCSK UWB System**
Zhi Lin, Xiamen University, China; Zhi Lin, Xiamen University, China; Lin Wang, Xiamen University, China; Eryk Dutkiewicz, University of Technology,Sydney, Australia

Wednesday, 18 May 2016 14:00-15:30 Wan Da

9D: Scheduling, Load Balancing and Content Delivery Network

Chair: Quoc-Tuan Vien , Middlesex University, UK

1 **Optimal and Practical Algorithms for Implementing Wireless CDN Based on Base Stations**
Jiayi Liu, Xidian University, China; Qinghai Yang, Xidian University, China; Gwendal Simon, Telecom Bretagne, France

2 **Study on Mobile Data Offloading in High Rise Building Scenario**
Sa Zhang, Beijing University of Posts and Telecommunications, China; Zhuyan Zhao, Nokia, China; Hao Guan, Nokia, China; Hongwen Yang, Beijing University of Posts and Telecommunicaions, China

3 **Load balancing and aggregation algorithms for LTE dual connectivity**
Peter Legg, Huawei Technologies Sweden AB, Sweden; Panagiotis Fotiadis, Huawei Technologies Sweden AB, Sweden; Pablo Soldati, Huawei Technologies Sweden AB, Sweden

4 **Cognitive Cellular Content Delivery Networks: Cross-Layer Design and Analysis**
Yining Zhang, Xiamen University, China; Hai Lu, Xiamen University, China; Haowen Wang, Shanghai Research Center for Wireless Communications, China; Xuemin Hong, Xiamen University, China

5 **Multi-Point Single-User MIMO Transmission Scheme for Communication Systems beyond LTE-Advanced**
Alexei Davydov, Intel, Russian Federation; Gregory Morozov, Intel, Russian Federation

Wednesday, 18 May 2016 14:00-15:30 Krabi +Pattya

9E: Navigation and Positioning I

Chair: Xianqing Yi, National University of Defense Technology, China

1 **LOcal interferenCe compensATion (LOCATe) for GNSS-based Lane-Specific Positioning of Vehicles**
Brian Niehoefer, TÜV Informationstechnik GmbH - ITS, Germany; Florian Schweikowski, TU Dortmund University, Germany; Christian Wietfeld, TU Dortmund University, Germany

2 **Performance Analysis on Delay-multiply Acquisition for Space-borne GNSS Receivers**
Jiabo Wang, Tsinghua University, China; Xi Chen, Tsinghua University, China; Zhen Huang, Tsinghua University, China; Te Wei, Tsinghua University, China

3 **Sub-Nyquist Sampling based Low Complexity Fast AltBOC Acquisition**
Wei Wang, KAIST, Korea, Republic of; Binhee Kim, KAIST, Korea, Republic of; Seung-Hyun Kong, KAIST, Korea, Republic of

4 **Terrain-based Vehicle Localization Using Low Cost MEMS-IMU Sensors**
Hamad Ahmed, Muhammad Tahir, Lahore University of Management Sciences, Pakistan

5 **A Semidefinite Relaxation Approach to Positioning in Hybrid Sensor Networks**
Yueyue Zhang, National Mobile Communications Research Laboratory, Southeast University, China; Yaping Zhu, National Mobile Communications Research Laboratory, Southeast University, China; Lianfeng Shen, National Mobile Communications Research Laboratory, Southeast University, China

Wednesday, 18 May 2016 14:00-15:30 Liu He

9F: Physical Layer Techniques

Chair: Yao Ma, National Institute of Standards and Technology

1 **Performance Optimization of M-APSK in AWGN and Oscillator Phase Noise with Annular-Sector Detection**
Qian Wang, Tianyu Song, Pooi-Yuen Kam, National University of Singapore, Singapore

2 **A Method for Constructing Localized Pulse Shapes under Length Constraints for Multicarrier Modulation**
Yan Guo, Zhao Zhao, Ronald Boehnke, Huawei European Research Center, Germany

3 **Active Digital Cancellation of Transmitter Induced Modulated Spur Interference in 4G LTE Carrier Aggregation Transceivers**
Ram Sunil Kanumalli, Andreas Gebhard, Johannes Kepler University Linz, Austria; Ahmed Elmaghraby, Intel Mobile Communications GmbH, Germany; Andreas Mayer, DMCE GmbH & Co KG, Austria; Dan Schwartz, Intel Corporation, United States; Mario Huemer, Johannes Kepler University Linz, Austria

4 **Complex Baseband Myriad Filtering and Maximum Likelihood MSK Demodulation under Symmetric alpha-stable Noise**
Guosheng Yang, Jun Wang, Guangrong Yue, Shaoqian Li, University of Electronic Science and Technology of China, China

5 **Error Performance of Sparse Code Multiple Access Networks with Joint ML Detection**
Jinchen Bao, Southwest Jiaotong University, China; Zheng Ma, Southwest Jiaotong University, China; Ming Xiao, KTH Royal Institute of Technology, Sweden; Zhongliang Zhu, Southwest Jiaotong University, China

Wednesday, 18 May 2016 14:00-15:30 Ballroom 1

9G: Heterogeneous Networks I

Chair: Khairi Hamdi, University of Manchester, UK

1 **Geometric Programming Based Distributed Resource Allocation in Ultra Dense Hetnets**
Shaoyi Xu, Beijing Jiaotong University, China; Haiyan Liu, Beijing Jiaotong University, China; Kyung Sup Kwak, Inha University, Korea, Republic of

2 Performance Analysis of Enhanced Dynamic Point Selection CoMP Scheme for Heterogeneous Networks
Suresh Kalyanasundaram, Nokia, India; Richa Gupta, Nokia, India; Balamurali Natarajan, Northwestern University, United States; Moushumi Sen, Nokia, India

3 Unsynchronized Small Cells with a Dynamic TDD System in a Two-Tier HetNet
Ali Mahbas, Huiling Zhu, Jiangzhou Wang, University of Kent, United Kingdom

4 Weighted Sum Throughput Maximization in Heterogeneous OFDMA Networks
Diky Siswanto, Li Zhang, University of Leeds, United Kingdom; Keivan Navaie, Deepak G. C., Lancaster University, United Kingdom

5 Performance Analysis of Multi-Antenna HetNets
Arman Shojaeifard, Khairi Hamdi, Emad Alsusa, Daniel So, Jie Tang, University of Manchester, United Kingdom

Wednesday, 18 May 2016 16:00-17:30 Jin Ling + Mo Ling

10A: MAC in Vehicular Networks

Chair: Feng Yan, Southeast University, China

1 A TDMA Based Cooperative Communication MAC Protocol for Vehicular Ad Hoc Networks
Tianjiao Zhang, Qi Zhu, Nanjing University of Posts and Telecommunications, China

2 MA-TDMA: A Migration-based Adaptive TDMA MAC for Reducing Packet Collisions in VANET
Xiaoxiao Jiang, University of Minnesota, United States; David H.C. Du, University of Minnesota, United States

3 p-Persistent Scheme for Slot Allocation in Vehicular Networks
Yiwei Mao, National Mobile Communications Research Laboratory, Southeast University, China; Lianfeng Shen, National Mobile Communications Research Laboratory, Southeast University, China

4 Packet Relay Assisted V2V Communication with Multiple Sectorized Relay Stations
Tien Trien Le, Yasushi Yamao, The University of Electro-Communications, Japan

5 A Framework for Protocol Sequence Allocation in Vehicular Ad Hoc Networks
Yiwei Mao, National Mobile Communications Research Laboratory, Southeast University, China; Lianfeng Shen, National Mobile Communications Research Laboratory, Southeast University, China

Wednesday, 18 May 2016 16:00-17:30 Jian Kang + Ye Cheng

10B: Green Wireless Communications II

Chair: G. G. Md. Nawaz Ali, NTU, Singapore

1 A Game-Theoretical Approach for Green Power Allocation in Energy-Harvesting Device-to-Device Communications
Zhenyu Zhou, North China Electric Power University, China; Guifang Ma, North China Electric Power University, China; Chen Xu, North China Electric Power University, China; Zheng Chang, University of Jyvaskyla, Finland

2 Sleep Modes for Enhanced Battery Life of 5G Mobile Terminals
Mads Lauridsen, Aalborg University, Denmark; Gilberto Berardinelli, Aalborg University, Denmark; Fernando M.L. Tavares, Aalborg University, Denmark; Frank Frederiksen, Nokia, Denmark; Preben Mogensen, Aalborg University, Denmark

3 Energy-Efficient Resource Allocation for DifferentQoS Requirements in Heterogeneous Networks
Yuanshuang Wang, The 28th Research Institute of China Electronics Technology Group Corporation, China; ning zhao, The 28th Research Institute of China Electronics Technology Group Corporation, China; Xia Wang, Xi'an Jiaotong University, China; Guowang Miao, KTH, Royal Institute of Technology, Sweden

4 Access Strategy in Super WiFi Network Powered by Solar Energy Harvesting: A POMDP Method
Tingwu Wang, Jian Wang, Chunxiao Jiang, Jingjing Wang, Yong Ren, Tsinghua Univerisity, China

5 A Network Graph Approach for Network Energy Saving in Small Cell Networks
Tao Chen, Xianfu Chen, VTT Technical Research Centre of Finland, Finland; Roberto Riggio, CREATE-NET, Italy

Wednesday, 18 May 2016 16:00-17:30 VIP

10C: Modulation II

Chair: Xiliang Luo, ShanghaiTech University, China

1 Performance of Subcarrier PSK Systems Using PSAM Maximum Likelihood Estimation in Lognormal Turbulence Channels
Changming Xu, Tsinghua University, China; Julian Cheng, The University of British Columbia, Canada; Hongming Zhang, Tsinghua University, China

2 Ring-type Magnitude Modulation for OQPSK: Enabling NL-Amplification of Spectral Efficient Signals
António Simões, Pedro Bento, Marco Gomes, Instituto de Telecomunicações, University of Coimbra, Portugal; Rui Dinis, Instituto de Telecomunicações, FCT-UNL, Portugal; Vitor Silva, Instituto de Telecomunicações, University of Coimbra, Portugal

3 SNR Estimation for FM-DCSK System over Multipath Rayleigh Fading Channels
Guofa Cai, Xiamen University, China; Lin Wang, Xiamen University, China; Long Kong, University of Quebec, Canada; Georges Kaddoum, University of Quebec, Canada

4 A Phase Increment-Based Frequency Estimator for General PSAM in Burst Communications
Zhongyang Yu, Xidian University, China; Jinhua Sun, Xidian University, China; Baoming Bai, Xidian University, China; Xiaojun Wu, Chang' an University, China

5 Code-aided Joint Carrier Phase Estimation and Ambiguity Resolution for APSK Signals
Desheng Shi, Nan WuHua Wang, Tianfeng Cheng, Jingming Kuang, Beijing Institute of Technology, China

Wednesday, 18 May 2016 16:00-17:30 Wan Da

10D: Cooperative Communications

Chair: Chen Chen Peking University, China

1 A Novel Graph-based Topology Control Cooperative Algorithm for Maximizing Throughput of Disaster Recovery Networks
Thuan Ngo, Tohoku University, Japan; Hiroki Nishiyama, Tohoku University, Japan; Nei Kato, Tohoku University, Japan; Satoshi Kotabe, NTT Corporation, Japan; Hiroshi Tohjo, NTT Corporation, Japan

2 Clustered Multiuser Detection for the Uplink of 5G Systems
Filipe Casal Ribeiro, ISCTE-IUL, Portugal; Rui Dinis, FCT-UNL, Portugal; Francisco Cercas, ISCTE-IUL, Portugal; Adão Silva, UA, Portugal

3 Delay Analysis for Distributed Opportunistic Cooperative Communication Under Strong Interference Channel
Haixia Cui, South China Normal University, China; Victor C. M. Leung, The University of British Columbia, Canada; Daru Pan, South China Normal University, China; Hongjiang Wang, South China Normal University, China

4 Heuristic Coordinated Beamforming for Heterogeneous Cellular Network
Obinna Oguejiofor, Li Zhang, University of Leeds, United Kingdom

5 A Prefiltering C-RAN Architecture with Compressed Link Data Rate in Massive MIMO
Wenting Chang, Intel Mobile Communications Technology (Beijing) Ltd, China; Tian Xie, Tsinghua University, China; Feng Zhou, Intel

Lab China, China; Jiansong Tian, Intel lab China, China; Xu Zhang, Intel Lab China, China

Wednesday, 18 May 2016 16:00-17:30 Krabi +Pattya

10E: Navigation and Positioning II

Chair: Xianqing Yi, National University of Defense Technology, China

1 Fundamental Bounds on Position Estimation Using Proximity Reports
Feng Yin, Yuxin Zhao, Fredrik Gunnarsson, Ericsson, Sweden

2 Gaussian Process for Propagation Modeling and Proximity Reports Based Indoor Positioning
Yuxin Zhao, Ericsson, Sweden; Feng Yin, Ericsson, Sweden; Fredrik Gunnarsson, Ericsson, Sweden; Mehdi Amirijoo, Ericsson, Sweden; Gustaf Hendeby, Linköping University, Sweden

3 Path Intelligence GSM Sensor: A Novel EnablingTechnology for Retail Mobile Location Analytics
Ziming He, John Wilson, Path Intelligence Limited, United Kingdom

4 Distance and Vehicle Speed Estimation Using a Uniform Circular Array Antenna
Ahmad El Assaad, Novero GmbH, Germany; Markus Krug, Munich University of Applied Sciences, Germany; Georg Fischer, University of Erlangen-Nuremberg, Germany

5 Localization of Emission Source in Urban Environment Based on the Doppler Effect
Jan Kelner, Cezary Ziółkowski, Leszek Nowosielski, Marian Wnuk, Military University of Technology, Poland

Wednesday, 18 May 2016 16:00-17:30 Liu He

10F: Emerging Communications Systems

Chair: Xin Wang, Fudan University, China

1 Secure Transmission in Cognitive Wiretap Networks
Tao Zhang, PLA University of ScienceTechnology, China; Yueming Cai, PLA University of ScienceTechnology, China; Yuzhen Huang, PLA University of ScienceTechnology, China; Caijun Zhong, Zhejiang University, China; Weiwei Yang, PLA University of ScienceTechnology, China; George K. Karagiannidis, Aristotle University of Thessaloniki, United Arab Emirates

2 Resource Allocation in Multi-Carrier Full-Duplex Amplify-and-Forward Relaying Networks
Na Li, Yong Li, Mugen Peng, Wenbo Wang, Beijing University of Posts and Telecommunication, China

3 Optimization of Simultaneous Wireless Information and Power Transfer in Cloud Radio Access Networks
Yingna Ma, Beijing University of Posts and Telecommunication, China; Mugen Peng, Beijing University of Posts and Telecommunication, China; Zhongyuan Zhao, Beijing University of Posts and Telecommunication, China; Zheng Zhou, Beijing University of Posts and Telecommunication, China

4 Performance of Analog Network Coding based Two-Way EH Relay with Beamforming
Modem Sudhakar, Shankar Prakriya, Indian Institute of Technology, Delhi, India

5 Robust Transceiver Optimization for MISO SWIPT Interference Channel: A Decentralized Approach
Tao Peng, Fudan University, China; Feng Wang, Fudan University, China; Yongwei Huang, Guangdong University of Technology, China; Xin Wang, Fudan University, China

Wednesday, 18 May 2016 16:00-17:30 Ballroom 1

10G: Heterogeneous Networks II

Chair: Jing Zhang, Huazhong University of Science & Technology, China

1 Optimal Uplink Power Control for Dual Connected Users in LTE Heterogeneous Networks
Andrijana Popovska Avramova, Technical University of Denmark, Denmark; Hua Wang, Aalborg University, Denmark; Lars Dittmann, Technical University of Denmark, Denmark; Klaus Ingemann Pedersen, Nokia - Bell Labs, Denmark

2 Joint Power and Resource Allocation for Non-Uniform Topologies in Heterogeneous Networks
ShangZhang Zou, Nan Liu, Zhiwen Pan, Xiaohu You, National Mobile Communications Research Laboratory, Southeast University, Nanjing, China

3 Cell Identification Performance Optimization in Co-Channel Heterogeneous Cellular Networks Employing CRE Based on a Hierarchical Synchronization Signal Structure
Manabu Mikami, Sourabh Maiti, Hitoshi Yoshino, Softbank Corp., Japan

4 Uplink Power Control for Heterogeneous Small Cell Networks
Jing Zhang, Yan Liao, Yili Xin, Huazhong University of Science & Technology, China

5 An Experimental Evaluation on Network-Listening Based Synchronization with Loop-Back Interference Avoidance
Mitsukuni Konishi, Softbank Corp., Japan; Sho Nabatame, Softbank Corp., Japan; Daigo Ogata, Softbank Corp., Japan; Atsushi Nagate, Softbank Corp., Japan; Teruya Fujii, Softbank Corp., Japan