

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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Resource Allocation for Multi-cell Device-to-Device Communications Underlying Cellular Networks

by

Prof. Jun HUANG

Professor

*School of Communication and Information Engineering, Chongqing University of Posts
and Telecommunications, China*

Date : **15 December 2015 (Tuesday)**
Time : **11:00 – 12:00**
Venue : **E11-G015**

ABSTRACT

With the rapid development of wireless communication technology, mobile communication has been an indispensable part of people's daily life. It is predicted by ITU that, the mobile traffic in 2020 will be 33 times that of in 2010, mobile devices will play a more important role. Device-to-Device communications, which is a key component of 5G technology, has attracted a great interest. With D2D, the system throughput can be improved, the load of base station can be alleviated, and the transmitting power of mobile terminal can be reduced. However the employment of D2D technology brings new challenges to the cellular system. First, when a D2D pair non-orthogonally reuses the current in-use spectrum, it will generate strong interference to cellular users. Second, when there are multiple D2D users reuse the same spectrum, they will interfere each other. Resource allocation is the initial step to address the above interference. Therefore, how to design an effective resource allocation mechanism is a challenging issue in implementing D2D. This talk will comprehensively cover the resource allocation for multi-cell D2D communications with complete and incomplete information assumptions based on the game theory.

BIOGRAPHY

Jun Huang received Ph.D. degree (with honor) from the Institute of Network Technology, Beijing University of Posts and Telecommunications, China, in 2012. He is currently a Full Professor at School of Communication and Information Engineering, Chongqing University of Posts and Telecommunications.

Dr. Huang was a visiting researcher at Global Information and Telecommunication Institute, Waseda University, Tokyo, from Sept. 2010 to Sept. 2011. A postdoctoral research fellow at Electrical and Computer Engineering, South Dakota School of Mines and Technology, USA,

from Dec. 2013 to Dec. 2014. He received a runner-up of best paper award from ACM SAC 2014 and a best paper award from AsiaFI 2011. He has published more than 70 refereed papers including prestigious journal/conference such as IEEE TBC, TVT, TETC, IoTJ, TCC, IWQoS, SCC, ICCCN, GLOBECOM, ICC, ACM SAC, RACS. His current research interests include network optimization and control, Quality-of-Service etc.

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Ref: FST/SEM/00058/2015

Trend of the Smart Grid Development

by

Prof. Wei Jun LEE

*Professor and Director Energy Systems Research Center,
The University of Texas at Arlington, Texas, USA*

Date : 18 June 2015 (Thursday)
Time : 10:15 – 10:45
Venue : Library Auditorium, Wu Yee Sun Library

ABSTRACT

The electrical power system in the US has been named as "the supreme engineering achievement of the 20th century" by the National Academy of Sciences. While the power system is a technological marvel, it is also reaching the limit of its ability to meet the nation's electricity needs. In addition, our nation is moving into the digital information age that demands higher reliability from the nation's aging electrical delivery system.

The modernization of the electricity infrastructure leads to the concept of "smart grid". A comprehensive smart grid design should cover both top-down and bottom-up approaches. For the current centralized generation and transmission system, upgrading the power delivery infrastructure, enforcing the system security requirement, and increasing interoperability are well known techniques to improve the reliability and the controllability of the power system. For the bottom-up approach, one of the most important features is its ability to support a more diverse and complex network of energy technologies. Specifically, it will be able to seamlessly integrate an array of locally installed, distributed power sources with smaller CO2 footprint, such as fuel cells, photovoltaic, and wind generation, into the power system.

This presentation discusses the opportunities and challenges for the development of Smart Grid, highlights the smart grid related researches and developments. The presentation concludes with the listing of issues needed to be addressed to ensure successful integration procedures that will eventually create new structures of efficient, modular and environmentally responsive electricity infrastructure that will have an impact nationally as well as globally.



BIOGRAPHY

Wei-Jen Lee received the B.S. and M.S. degrees from National Taiwan University, Taipei, Taiwan, R.O.C., and the Ph.D. degree from the University of Texas, Arlington, in 1978, 1980, and 1985, respectively, all in Electrical Engineering.

In 1985, he joined the University of Texas at Arlington, where he is currently a professor of the Electrical Engineering Department and the director of the Energy Systems Research Center.

He has been involved in the revision of IEEE Std. 141, 339, 551, 739, and dot 3000 series development. He is the Chair of the IEEE/IAS, Industrial & Commercial Power Systems Department (ICPSD), associate editor of IEEE/IAS and guest editor of IEEE Transactions on Smart Grid. He is the project manager of IEEE/NFPA Collaborative Research Project on Arc Flash Phenomena.

Prof. Lee has been involved in research on utility deregulation, renewable energy, smart grid, microgrid, arc flash and electrical safety, load forecasting, power quality, distribution automation and demand side management, power systems analysis, online real time equipment diagnostic and prognostic system, and microcomputer based instrument for power systems monitoring, measurement, control, and protection. He has served as the primary investigator (PI) or Co-PI of over ninety funded research projects. He has published more than three hundred and twenty journal papers and conference proceedings. He has provided on-site training courses for power engineers in Panama, China, Taiwan, Korea, Saudi Arabia, Thailand, and Singapore. He has refereed numerous technical papers for IEEE, IET, and other professional organizations.

Prof. Lee is a Fellow of IEEE and registered Professional Engineer in the State of Texas.

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