



香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

IE - ITCSC Joint Seminar

**Economics of Cooperative Spectrum Sharing: Bargaining,
Contract, and Auction**

By

Prof. Jianwei Huang, Department of Information Engineering, CUHK

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3:00pm – 4:00pm

Room 1009, William M. W. Mong Engineering Building, CUHK

Abstract: With the explosive development of wireless services and networks, spectrum is becoming more congested and scarce. Cooperative spectrum sharing allows primary (licensed) and secondary (unlicensed) users to exchange communication resources in order to improve the performance of both sides. The successful implementation of cooperative spectrum sharing, however, requires many innovations in technology, economics, and policy. This talk focuses on the economic considerations of efficient sharing mechanism design, which encourages primary users to open licensed spectrum for sharing and secondary users to utilize the spectrum opportunities despite of the potential costs. We will start by talking about the dynamic bargaining between one primary user and one secondary user, and then the contract-based sharing between one primary user and a group of secondary users. We will also briefly mention about auction design for many to many sharing. The common design challenge in all models is the performance optimization with incomplete information in a dynamic network environment. This is a joint work with Lingjie Duan and Lin Gao at CUHK, and Jing Wang, Yang Yan, Xiaofeng Zhong, and Ming Zhao at Tsinghua University.

Biography: Jianwei Huang is an Assistant Professor in the Department of Information Engineering at the Chinese University of Hong Kong. He received the PhD degree from Northwestern University in 2005, and worked as a Postdoc in Princeton University during 2005-2007. He currently leads the Network Communications and Economics Lab (ncel.ie.cuhk.edu.hk), with main research focus on nonlinear optimization and game theoretical analysis of communication networks, especially on network economics, cognitive radio networks, and smart grid. He is the recipient of the IEEE Marconi Prize Paper Award in Wireless Communications in 2011, the IEEE GLOBECOM Best Paper Award in 2010, the IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award in 2009, Asia-Pacific Conference on Communications Best Paper Award in 2009, and Walter P. Murphy Fellowship at Northwestern University in 2001.

Dr. Huang has served as Editor of IEEE Journal on Selected Areas in Communications - Cognitive Radio Series, Editor of IEEE Transactions on Wireless Communications, Guest Editor of IEEE Journal on Selected Areas in Communications special issue on "Economics of Communication Networks and Systems", Lead Guest Editor of IEEE Journal of Selected Areas in Communications special issue on "Game Theory in Communication Systems", and Guest Editor of several other journals. Dr. Huang has served as Vice Chair of IEEE MMTC (Multimedia Communications Technical Committee) (2010-2012), the TPC Co-Chair of IEEE WiOpt 2012, the TPC Co-Chair of GameNets 2009, the TPC Co-Chair of IEEE GLOBECOM Wireless Communications Symposium 2010, the TPC Co-Chair of IWCMC Mobile Computing Symposium 2010, and TPC member of conferences such as INFOCOM, MobiHoc, ICC, GLBOECOM, DySPAN, WiOpt, NetEcon, and WCNC.

***** ALL ARE WELCOME *****