

学术报告会

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Jamming-Resistant Collaborative Broadcast In Wireless Networks

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Abstract:

We propose a collaborative broadcast scheme for wireless networks, which is based on the Uncoordinated Frequency Hopping (UFH) technique and exploits the node cooperation to achieve higher communication efficiency and stronger jamming resistance. In the collaborative broadcast, nodes that already obtain the broadcast message help forward the message to other nodes. Relying on the sheer number of relay nodes, which grows with time surely, our scheme is fundamentally more powerful than most recent attempts for anti-jamming broadcast. Potential applications include emergency alert broadcast and distribution of key system information in the presence of jamming. We provide three relay channel selection strategies for collaborative broadcast, analyze the corresponding successful packet reception rates for both synchronous and asynchronous scenarios, and present the corresponding cooperation gain. Simulation results in a practical setting show that our scheme significantly reduces broadcast delay and energy consumption against the most powerful jamming, – responsive-sweep jamming.

Biography:

Dr. Liang Xiao received the B.S. in communication engineering in 2000 from Nanjing University of Posts & Telecommunications, China, the M.S. in electrical engineering in 2003 from Tsinghua University, China, and the PhD degree in electrical engineering from WINLAB, Rutgers University, NJ, in 2009. She is currently an associate professor in the Department of Communication Engineering, Xiamen University, Fujian, China. From 2003 and 2004, she was with North Carolina State University, NC. She held research internships at Bell Labs and Inter Digital in 2007 and 2008, respectively. Her research interests include wireless communications, wireless security, and signal processing, especially PHY-security, localization, cognitive radio, and radio resource managements.