ECE Distinguished Lecture Series

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Spectrum Sharing for 5G and Beyond: A Network Economics View

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Abstract:
The evolution of commercial wireless networks to 5G and beyond will continue to increase the demands for wireless spectrum. Traditionally, commercial wireless service providers have utilized spectrum that is exclusively licensed to them. Moving forward, these networks will increasingly operate in spectrum that is shared including utilizing unlicensed spectrum and the tiered sharing approach recently adopted for the Citizens Broadband Radio Service (CBRS) adopted for sharing the 3.5 GHZ band with incumbent users. The success of these approaches is in turn tightly coupled to the economic impact they have on the competition between wireless service providers. In this talk we will discuss a framework for gaining insight into these impacts based on game theoretic models for competition with congestible resources. We will utilize this framework to illustrate potential impacts of different emerging sharing scenarios.

Biography:
Randall Berry joined Northwestern University in 2000, where he is currently the Chair and John A. Dever Professor in the Department of Electrical and Computer Engineering. His research interests span topics in wireless communications, computer networking, network economics, and information theory. Dr. Berry received the M.S. and PhD degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology in 1996 and 2000, respectively, where he was part of the Laboratory for Information and Decision Systems. His undergraduate education was at the University of Missouri-Rolla, where he received the B.S. degree in Electrical Engineering in 1993. In 1998 he was on the technical staff at MIT Lincoln Laboratory in the Advanced Networks Group. Dr. Berry is the recipient of a 2003 NSF CAREER award and an IEEE Fellow. With his co-authors, he has received best paper awards at the IEEE Workshop on Smart Data Pricing in 2015 and 2017 and at the 2016 WiOpt conference. He has served as an Editor for the IEEE Transactions on Wireless Communications and the IEEE Transactions on Information Theory and is currently a division editor for the Journal of Communications and Networks and an Area editor for the IEEE Open Journal of the Communications Society.