报告人: 沈渊(清华大学)

题　目: Robust Resource Optimization for Network Localization

时　间: 11 月 10 日(周一)14:00-15:00

地　点: 电院群楼 2-530

邀请人: 王易因

Abstract:

Real-time and reliable location information of mobile network nodes is a key enabler for many emerging commercial, public safety, and military applications. Such information can be obtained via network localization and navigation (NLN), a new paradigm in which nodes exploit both spatial and temporal cooperation to infer their positions. After a brief introduction of the framework for NLN, this talk will focus on the resource allocation problem for NLN, as it affects the localization accuracy in addition to the lifetime and throughput of mobile networks. In particular, we propose a robust power allocation formulation that guarantees the localization accuracy in the presence of parameter uncertainty. We obtain some important functional properties and bounds of the worst-case localization accuracy metric. These properties and bounds allow to transform the robust formulation into a sequence of second-order cone programs (SOCPs) that yields asymptotically optimal solutions. We also develop an efficient near-optimal SOCP-based algorithm using a relaxation method. The efficiency and robustness of the proposed schemes are validated by simulation results.

Bio:

Yuan Shen received the B.E. degree in EE from Tsinghua University, China, in 2005, and the S.M. degree and the Ph.D. degree in EECS from the Massachusetts Institute of Technology (MIT), Cambridge, in 2008 and 2014, respectively. Since June 2014, he is an Associate Professor with the Department of Electronic Engineering at Tsinghua University, Beijing. Prior to that, he was a research assistant and then postdoctoral associate with the Laboratory for Information and Decision Systems (LIDS) at MIT (2005-2014). His research interests include statistical inference, network science, communication theory, and information theory. His current research focuses on network localization and navigation, network optimization for localization, inference techniques, and intrinsic wireless secrecy. Dr. Shen served as a TPC member for the IEEE Globecom, ICC, WCNC, ICUWB, and ICCC since 2009. He was a recipient of the China' s Youth 1000-Talent Program (2014), the Marconi Society Young Scholar Award (2010), the Chinese Government Award for Outstanding Self-financed Students Abroad (2011), the MIT EECS Ernst A. Guillemin Best S.M. Thesis Award (2008), and the MIT Walter A. Rosenblith Presidential Fellowship (2005). His papers received the IEEE Communications Society Fred W. Ellersick Prize (2012) and three Best Paper Awards from the IEEE Globecom (2011), the IEEE ICUWB (2011), and the IEEE WCNC (2007).