数学与系统科学研究院

计算数学所学术报告

报告人： Prof. Wei Yu

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报告题目：

Sparse Activity Detection for Massive Random Access with Massive MIMO

邀请人： 刘亚锋 副研究员

报告时间： 2019 年 8 月 19 日（周一）

上午 10:00-11:00

报告地点： 科技综合楼三层

311 报告厅

Abstract：

This talk considers a massive device activity detection problem in which a large number of devices need to connect to a base-station, but user traffic is sporadic so that at any given coherence time only a subset of users are active. We make an observation that in the massive multiple-input multiple-output (MIMO) regime, where the BS is equipped with a large number of antennas, a covariance based scheme that solves a maximum likelihood estimation problem for detecting the device activity, is more effective than the approximate message passing (AMP) based compressed sensing approach that tries to both detect the device activities and estimate the channels. We then provide an analytic framework capable of accurately predicting the performance of the covariance based scheme in terms of the probabilities of false alarm and missed detection, and further show that the method can be used for a joint user activity and data detection problem for massive machine-type communications.

Biography:

Wei Yu received the B.A.Sc. degree in Computer Engineering and Mathematics from the University of Waterloo, Waterloo, Ontario, Canada in 1997 and M.S. and Ph.D. degrees in Electrical Engineering from Stanford University, Stanford, CA, in 1998 and 2002, respectively. He is now Professor and holds a Canada Research Chair (Tier 1) in Information Theory and Wireless Communications in the Electrical and Computer Engineering Department at the University of Toronto, Canada. Prof. Wei Yu is currently the Second Vice President of the IEEE Information Theory Society. He was an IEEE Communications Society Distinguished Lecturer (2015-16), and currently is an Area Editor for the IEEE Transactions on Wireless Communications. He chaired the Signal Processing for Communications and Networking Technical Committee of the IEEE Signal Processing Society (2017-18). Prof. Wei Yu received the IEEE Marconi Prize Paper Award in Wireless Communications in 2019, the IEEE Communications Society Award for Advances in Communication in 2019, the IEEE Signal Processing Society Best Paper Award in 2017 and 2008, the Journal of Communications and Networks Best Paper Award in 2017, an IEEE Communications Society Best Tutorial Paper Award in 2015, and an ICC Best Paper Award in 2013. Prof. Wei Yu is recognized as a Highly Cited Researcher. He is a Fellow of IEEE and a Fellow of Canadian Academy of Engineering.

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