



ACADEMIC LECTURE

Topic: Polite Water-filling for Interference Networks

Time: 2012年6月8日 (周三) 上午10:00-11:30

Venue: 信电大楼-215学术厅

**Speaker: Associate Professor
Youjian Liu,
(University of Colorado, USA)**



Biography

Dr. Youjian Liu received the Ph.D. and M.S. degrees in Electrical Engineering from The Ohio State University in 2001 and 1998 respectively, the M.S. degree from Peking University in 1996, and the B.E degree from Beijing University of Aeronautics and Astronautics in 1993. Since August 2002, he has been an Assistant Professor with Department of Electrical and Computer Engineering, University of Colorado at Boulder. From January 2001 to August 2002, he worked on 3G mobile communication systems as a Member of Technical Staff in Wireless Advanced Technology Laboratory, Lucent Technologies, Bell Labs Innovations, New Jersey. His research interests include network communications, information theory, and coding theory. He has regularly served as reviewer and Member of Technical Committee for all major IEEE journals and conferences on communications. He is a recipient of the 2005 Junior Faculty Development Award at University of Colorado.

Abstract

The work is on generalized MIMO interference networks, such as cooperative cellular networks. It is well known that the water-filling is the optimal input structure for single-user MIMO systems. What is the optimal Gaussian input structure for MIMO interference networks? The problem baffled researchers for more than a decade. As a result, single-user water-filling is sometimes used iteratively in networks with mediocre results. We give a polite water-filling structure that is optimal for general interference networks. It is polite because it strikes an optimal balance between reducing interference to others and maximizing a link's own rate. Employing it, the related optimizations can be vastly simplified by taking advantage of the structure of the problems. Extensions to the work will also be discussed.