

Title: Information Flow in Wireless Networks

Abstract:

Wireless communication problems with multiple sources and destinations have been studied extensively over the last decade. However, optimal transmission and reception schemes for a large class of these problems have not been obtained. For example, finding the maximum information rate possible in a general relay network (with more than 2 nodes) with one source and one destination is still an unsolved problem even after significant progress has been made. Fewer results are available for wireless networks with multiple source-destination pairs or multiple flows. In this tutorial, we will first review some important results on network information flow in wired networks starting from the max-flow min-cut theorem. We will also point out important differences between wired and wireless networks. Then, we will review recent results on information flow in wireless networks.

Bio:

Srikrishna Bhashyam received his B.Tech. in Electronics and Communication Engineering from IIT Madras in 1996, and his M.S. and Ph.D. degrees in Electrical and Computer Engineering from Rice University, Houston, Texas, USA in 1998 and 2001 respectively. Between June 2001 and March 2003, he was a Senior Engineer at Qualcomm CDMA Technologies, Campbell, California, USA. Since May 2003, he has been with the Department of Electrical Engineering, IIT Madras, where he is currently Associate Professor. His current research interests are in resource allocation, adaptive transmission, code design, and information theory for multi-terminal wireless communication systems. He has been on the Editorial board of the IEEE Transactions on Wireless Communications since July 2009.