TITLE: Theory of Codes in Network and Inference Problems

SPEAKER: Arya Mazumdar

DATE: Friday, November 6, 2015

PLACE: Jack Keil Wolf Auditorium

TIME: 11:00 AM. Lecture

HOSTS: Professor Paul H. Siegel & Professor Young-Han Kim

Abstract: Due to applications in large-scale distributed storage systems, local encoding and repair properties of codes have recently earned a lot of attention. In the first part of the talk, we show that generalized locality properties of codes lead to the notion of a graph capacity that is fundamental in the study of network flow problems. Furthermore, this capacity is closely related to the steady-states of graph dynamical systems, and thus steer us towards applications in neural auto-associative memories and consensus-based community detection algorithms.

In the second part of the talk we will address another general application of codes motivated by the pseudo-random behavior of code-words distribution. We will show how this basic principle is used to provide deterministic construction of structured matrices for applications such as sparse recovery and low-rank approximation.

Biography: Arya Mazumdar is an assistant professor in University of Minnesota-Twin Cities since January 2013. Form Aug 2011 to Dec 2012, he was a postdoctoral scholar at the Massachusetts Institute of Technology (MIT). He received his Ph.D. degree from University of Maryland, College Park, in 2011.

Arya is a recipient of 2014-15 NSF CAREER award and the 2010 IEEE ISIT Student Paper Award. He is also the recipient of the Distinguished Dissertation Fellowship Award, 2011, at the University of Maryland. He spent the summers of 2008 and 2010 at the Hewlett-Packard Laboratories, Palo Alto, CA, and IBM Almaden Research Center, San Jose, CA, respectively. Arya's research interests include Information and Coding Theory, their applications to distributed and networked systems, and learning.