



TECHNICAL ENRICHMENT MATRIX

The TECHNICAL ENRICHMENT MATRIX, sponsored by the Science Advisory Board Associates, is a series of technical seminars covering topics of interest to Motorola engineers.



Date, Time & Place

Subject & Speaker

Call In

Friday, July 10, 2009
10:00 AM – 11:00 AM CDT

Northwest Conference Room
IL02
Schaumburg, IL.

Fundamental Limits of Cognitive Networks: Tutorial and Tour

Professor Natasha Devroye
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Teleconference Number
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<http://compass.mot.com/go/sch.tem/>

Abstract:

Behind every wireless system lies a theoretical goal and an immense amount of work to achieve this goal. As the technology behind wireless communication becomes increasingly flexible and capable, researchers and engineers are left with a large number of possible directions in which to set their goals. With all these advances and opportunities, the question of “What is theoretically possible?” becomes more and more relevant. In this talk I will attack this question in relation to networks of intense current interest: cognitive and cooperative networks. Cognitive networks are networks in which a number of wireless devices, some of which may be cognitive radios, relays or base stations, wish to communicate. This talk will first highlight some key information theoretic measures and metrics for the limits of communication in multi-terminal networks. That is, given a probabilistic model of a network, information theory will, for example, allow us to characterize at what rates the nodes may reliably communicate, how the sum-rate of the network will scale with the number of nodes, or how cooperation between nodes may improve overall performance. Then I will proceed on an intuitive tour of the current state of the art in cognitive and cooperative networks from an information theoretic perspective.

Biography:

Natasha Devroye is an Assistant Professor in the Department of Electrical and Computer Engineering at the University of Illinois at Chicago since January 2009. From July 2007 until July 2008 she was a Lecturer at Harvard University. Natasha obtained her PhD in Engineering Sciences from the School of Engineering and Applied Sciences at Harvard University in 2007, an M.Sc from Harvard University in 2003 and a Honors B. Eng in Electrical Engineering from McGill University in 2001. She has worked as a research intern at Intel Corporation, Santa Clara, CA as well as Mitsubishi Electric Research Labs, in Cambridge, MA. Her interests include multi-user information theory, wireless communications, and scheduling. She is particularly focused on information theoretic limits of cognitive and cooperative communications.