



INDIAN INSTITUTE OF SCIENCE
BANGALORE

Cordially invites you to the

INSTITUTE COLLOQUIUM
(Electrical Sciences)
By

Professor A Chockalingam

On

Department of Electrical Communication Engineering

Towards Fiber Speeds in Wireless Communications

Date : Wednesday, 3rd April 2013

Venue : Faculty Hall, Main Building

Time : 4-00 p.m

Professor P. Balaram, Director
will preside

Tea: 5-00 p.m

ALL ARE WELCOME

ABSTRACT

Gigabit rate transmissions over wireless channels are becoming increasingly common. A recent field experiment has demonstrated 10 Gbps (Gigabits per second) transmission rate at 9 Km/hr mobile speed in an urban environment. A key technology behind achieving such high transmission speeds in wireless is multi-antenna technology - often referred to as multiple-input multiple-output (MIMO) technology. Theory has shown that wireless channel capacity increases linearly with the minimum of the number of transmit and receive antennas in rich scattering environments. In this talk, we will focus on large-MIMO wireless systems, an area where IISc has made early contributions. In large-MIMO systems, communication terminals (e.g., base stations, access points, laptops, set-top boxes, TVs, user terminals) employ tens to hundreds of antennas. This talk will highlight the opportunities and technological challenges in realizing large-MIMO systems. Tools and algorithms from artificial intelligence and machine learning, which have played a crucial role in enabling large-MIMO signal processing at low complexities, will be highlighted.

This talk will also provide a glimpse on project NAVA, a Gigabit rate large-MIMO technology demonstrator project that IISc is working on jointly with DRDO and private industry.