

**13 June 2014 (Friday)**

Time: 1800 hrs

Venue: Faculty Hall, Indian Institute of Science, Bengaluru.

## **WIRELESS TECHNOLOGIES FOR 5G**

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Cellular mobile communications started with the analog mobile phone system (AMPS) – referred to as the first-generation (1G) cellular system -- introduced by the Bell Labs in the 1980s. Since then a new mobile generation has appeared approximately every 10th year: 2G in 1990, 3G in 2000, and 4G in 2010. In terms of services, things have moved from simple analog voice- only service in 1G to high-speed mobile Internet services in 4G. Several interesting physical layer techniques (advanced modulation, multiple access, error control coding, and multi-antenna schemes: e.g., TDMA, CDMA, OFDM, MIMO, turbo/LDPC codes) have enabled such enriched wireless transmission capabilities.

India's participation/contribution in developing 1G to 4G standards is rather minimal (almost nil in 1G, 2G and some participation in 3G, 4G). The wireless industry worldwide has already initiated discussions on 5G, aiming to rollout the technology by 2020. Given our experience in large-scale deployment and operations in 2G/3G, increasing demand and popularity of smart phones/mobile apps, and increasing maturity of the R & D efforts in Indian wireless industry and academia, will we be able to play a more active and gainful role in 5G standardization/development?

This talk will present a broad evolutionary view of 1G to 5G, the new capabilities envisioned in 5G, the new technologies that are expected to be instrumental in achieving these enhanced capabilities, the associated emerging research areas, and the strengths and opportunities for India in defining/developing 5G.