

Institute Lecture

Prof. Siddharth Ramachandran

Boston University, USA

Space: the less explored dimension of light



@ 6.15 pm | Wednesday, February 19, 2020

Venue: L 16 (LHC)

About the Talk

The talk will describe the generation, propagation and manipulation of light that manifests spatial complexity. In free space and bulk media, such higher order eigenstates of light possess intriguing characteristics such as the ability to carry spin and orbital angular momentum and the ability to self-heal.

Upon confinement, either by focusing them, or by guiding them in fibers, even more exotic behaviour, akin to spin-orbit interactions of confined electrons in atomic and molecular systems, is observed – light's polarisation as well as phase and group velocities become dependent on the intrinsic as well as extrinsic geometric path that the light beam takes. Such attributes have spawned applications as diverse as super-resolution microscopy, deep-tissue imaging, DNA sorting, classical and quantum communications, remote sensing and directed-energy defence strategies.

This talk will describe recent applications, after elucidating the fundamental phenomena that make singular light beams behave dramatically differently from commonly encountered, conventional, Gaussian-shaped beams of light.

About the Speaker

Prof. Siddharth Ramachandran obtained his PhD in Electrical Engineering from the University of Illinois, Urbana-Champaign, in 1998. Thereafter, he joined Bell Labs as a Member of Technical Staff and subsequently continued with its spin-off, OFS Labs. After a decade in industry, Dr. Ramachandran moved back to academics in 2010, and currently he is a Professor in the Depts. of Electrical Engineering and Physics, and the Division of Materials Science, at Boston University. Prof. Ramachandran's research focuses on the optical physics of guided waves. For his contributions, he was named a Distinguished Member of Technical Staff at OFS (2003), a fellow of OSA (2010), IEEE (2019) and SPIE (2019), an IEEE Distinguished Lecturer (2013-2015), a Distinguished Visiting Fellow of the UK Royal Society of Engineering (2016), and a Vannevar Bush Faculty Fellow (2019). He serves the optics community in several capacities, including, currently, as a topical editor for *Optica*.

All are invited to attend

Dean of Research and Development