

IEEE Distinguished Lecturer

Electro-Optics
and

Electrical & Computer Engineering

Distinguished Speaker Colloquia Series

Light that *Twists* inside fibers



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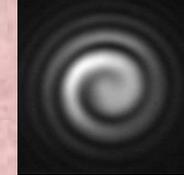
KL 407, 1:30 PM – 3:00 PM

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Refreshments are available

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Siddharth Ramachandran, Boston University



In the last decade, one of the most extensively studied complex light beams are optical vortices, which possess phase or polarization singularities. These beams are interesting because they resemble the emission patterns of single molecule dipoles, or because they potentially represent an infinite set of eigenstates that can be constructed with light. Their use has been demonstrated in, or proposed for, several applications such as higher-dimensional quantum encryption, information capacity scaling, single-molecule spectroscopy and nano-scale imaging.

A recently developed fiber that has a ring-shaped core has enabled their stable generation and propagation in optical fibers for distances of up to kilometres. Since fibers are well known for their ability to offer nonlinear and dispersive tailoring of light, this additionally opens the door to studying and exploiting nonlinear phenomena with such beams. This talk will discuss recent results and intriguing possibilities enabled by fiber propagation of beams that have long been considered interesting, but hitherto unstable in nature.

Biography

Dr. Siddharth Ramachandran obtained his Ph.D. in Electrical Engineering from the University of Illinois, Urbana-Champaign, in 1998. Thereafter, he joined Bell Laboratories as a Member of Technical Staff and subsequently continued with its spin-off, OFS Laboratories. After a decade in industry, Dr. Ramachandran moved back to academics in 2010, and is now a Professor in the Department of Electrical Engineering at Boston University.

Prof. Ramachandran's research focuses on the optical physics of guided waves. He has authored over 200 refereed journal and conference publications, more than 45 invited talks, plenary lectures and tutorials, 3 book-chapters, edited one book, and has been granted 37 patents. For his contributions in the field of fiber-optics, he was named a Distinguished Member of Technical Staff at OFS Labs in 2003, a fellow of the *Optical Society of America* (OSA) in 2010, and an IEEE Distinguished Lecturer for 2013-2014. He served as a topical editor for *Optics Letters* from 2008-2011, and is currently an associate editor for the *IEEE Journal of Quantum Electronics*, in addition to serving on numerous conference and grant-review committees in the field of optics and applied physics.