

Curriculum Vitae

Vivek Venkataraman

Research Associate in Applied Physics
Harvard University
Cambridge, MA, USA

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Education

- **PhD** in Applied Physics, **Cornell University**, Ithaca, NY, USA Aug 2012
Dissertation Title: *Few-Photon Nonlinear Optics in Photonic Bandgap Fibers*
Advisor: Prof. Alexander L. Gaeta
Committee: Prof. Michal Lipson, Prof. Farhan Rana
- **MS** in Applied Physics, **Cornell University**, Ithaca, NY, USA Feb 2010
Advisor: Prof. Alexander L. Gaeta
Committee: Prof. Michal Lipson, Prof. Farhan Rana
- **BTech** in Electrical Engineering, **IIT Delhi**, India May 2006
Minor: Physics
Senior Thesis: *Modeling and Simulation of Strained Silicon MOSFETs for Nanoscale Applications*
Advisor: Prof. M. Jagadesh Kumar

Research Experience

- Laboratory for Nanoscale Optics, **Harvard University**, Cambridge, MA, USA
Research Associate Sep 2015-present
Postdoctoral Fellow Sep 2012-Aug 2015
 - Quantum and nonlinear nanophotonics in diamond and other novel materials for applications in spectroscopy, metrology, sensing and optical information processing.
Principal Investigator: Prof. Marko Lončar
- Quantum and Nonlinear Photonics Group, **Cornell University**, Ithaca, NY, USA
Graduate Research Assistant May 2007-Aug 2012
 - Ultralow-power nonlinear optics with atomic vapor confined to hollow-core optical fibers for all-optical switching and quantum computing applications.
Principal Investigator: Prof. Alexander L. Gaeta
- Department of Electrical Engineering, **IIT Delhi**, India
Undergraduate Thesis Research Jul 2005-May 2006
 - Modeling and simulation of strained silicon MOSFETs (Metal Oxide Semiconductor Field Effect Transistors) for nanoscale electronic integrated circuit applications.
Principal Investigator: Prof. M. Jagadesh Kumar
- Samtel Center for Display Technologies, **IIT Kanpur**, India
Visiting Research Student May 2005-Jul 2005
 - Simulation and experimental study of transient electro-luminescence in single layer OLEDs (Organic Light Emitting Diodes) to yield a compact, analytical, physics-based model of operation.
Principal Investigator: Prof. Bacquer Mazhari

Teaching Experience

- Teaching Assistant, **Cornell University**, Ithaca, NY, USA
 - *Fiber and Integrated Optics* Spring 2007
 - *Lasers and Optical Electronics* Fall 2006

Tutored weekly recitations, prepared and graded homework assignments, proctored and graded examinations, held weekly office hours to discuss student doubts.

Selected Journal Publications

- P. Latawiec, V. Venkataraman, M. J. Burek, B. J. M. Hausmann, I. B. Bulu and M. Lončar, *On-chip diamond Raman laser*, *Optica* 2, 924 (2015).
- B. J. M. Hausmann, I. B. Bulu, V. Venkataraman, P. B. Deotare and M. Lončar, *Diamond nonlinear photonics*, *Nature Photonics* 8, 369 (2014).
- V. Venkataraman, K. Saha and A. L. Gaeta, *Phase modulation at the few-photon level for weak-nonlinear-based quantum computing*, *Nature Photonics* 7, 138 (2013).
- V. Venkataraman, K. Saha, P. Londero and A. L. Gaeta, *Few-photon all-optical modulation in a photonic band-gap fiber*, *Physical Review Letters* 107, 193902 (2011).
- V. Venkataraman, P. Londero, A. R. Bhagwat, A. D. Slepko and A. L. Gaeta, *All-optical modulation of four wave mixing in an Rb-filled photonic band-gap fiber*, *Optics Letters* 35, 2287 (2010).
- P. Londero, V. Venkataraman, A. R. Bhagwat, A. D. Slepko and A. L. Gaeta, *Ultralow-power four-wave mixing with Rb in a hollow-core photonic band-gap fiber*, *Physical Review Letters* 103, 043602 (2009).

Selected Talks

- *On-chip nonlinear photonics with novel materials: diamond, silicon-on-sapphire, lithium niobate*
SPIE Photonics North, Ottawa, ON, Canada. Jun 2015
- *Diamond photonics*
SPIE Optics + Photonics, San Diego, CA, USA. Aug 2014
- *An on-chip optical parametric oscillator in diamond*
OSA Nonlinear Optics Meeting, Kohala Coast, Hawaii, USA. Jul 2013
- *Phase modulation at the few-photon level for weak-nonlinear-based quantum computing*
OSA Frontiers in Optics, Rochester, NY, USA. Oct 2012
- *Nonlinear optics at the few-photon level in photonic bandgap fibers*
SPIE Photonics West, San Francisco, CA, USA. Jan 2012
- *Few photon switching in Rb-filled photonic bandgap fibers*
APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, USA. Jun 2011
- *Two-photon absorption at milliwatt powers with Rb in photonic band-gap fibers*
OSA Frontiers in Optics, Rochester, NY, USA. Oct 2010

Other Authorship

- Science research articles for popular media
 - *Diamond: a new platform for nonlinear photonics*
SPIE Newsroom: Lasers and Sources, Jun 2014.
 - Several articles reporting recent scientific breakthroughs for Cornell University campus news publication *Cornell Chronicle*, Sep 2011-May 2012.
 - Scientific research news blog, *Sciencebyte* - <http://sciencebyte.wordpress.com/>
- Book chapter
 - V. Venkataraman, S. K. Gupta and M. J. Kumar, *Laser Processing of Materials in Nanotechnology*, Encyclopedia of Nanoscience and Nanotechnology (Ed. H. S. Nalwa), 2nd Edition, Vol. 15, pp. 331-355, American Scientific Publishers, CA, USA, 2011.

Student Honours and Awards

- Certificate of Appreciation at Cornell Engineering Research Conference, Ithaca, NY, USA. 2009
- Outstanding Student Presentation finalist at Frontiers in Optics (FiO), Rochester, NY, USA. 2008
- Sole INLAKS Foundation Merit Scholar in 2006 UG batch at IIT Delhi, India. 2003-2006
- 2nd highest GPA and Merit Certificate for outstanding academic performance at IIT Delhi. 2002-2006
- National Talent Search Examination (NTSE) Scholar. 2000-2002
- Awards in State, Regional and Indian National Mathematics Olympiads. 2000-2002

References

Prof. Marko Lončar

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Prof. Alexander L. Gaeta

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Prof. Michal Lipson

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Prof. M. Jagadesh Kumar

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