Curriculum Vitae

Avinash Rustagi

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Education

- Ph.D. in Physics, University of Florida (Spring 2016) - dissertation titled "Optical and Transport Properties of Zero Gap and Finite Gap Semiconductors" and supervised by Prof. Christopher J. Stanton.
- M.Sc. in Physics, Indian Institute of Technology, Kanpur, (2010).
- B.Sc. in Physics, St. Stephens College, Delhi, (2008).

Research Interests

- **Transport properties of semiconductors:** Semiclassical modeling as well as Monte Carlo techniques. Studied non-equilibrium velocity fluctuations in graphene (Hot-electron noise) using the Boltzmann Green function formalism.
- **Magneto-optical properties of semiconductors:** Studied the circular polarization and chemical potential dependence of cyclotron resonance absorption between Landau quantized levels in graphene.
- **Coupled plasmon-phonon mode dynamics in polar semiconductor heterostructures:** Studied coherent plasmon-phonon dynamics in bulk Gallium Phosphide and Gallium Phosphide film on Silicon substrate aimed towards understanding interaction between non-equilibrium plasma and lattice vibrations for opto-electronic device applications.
- **Terahertz generation mechanisms in semiconductor heterostructures:** Studied the contribution of accelerating photoexcited carriers in graphene in presence of an external electric field towards Terahertz generation.

Publications

- K. Ishioka, K. Brixius, A. Beyer, **A. Rustagi**, C. J. Stanton, W. Stolz, K. Volz, U. Hofer and H. Petek "Coherent phonon spectroscopy characterization of electronic bands at buried semiconductor heterointerfaces." **Appl. Phys. Lett. 108, 051607 (2016)**.

- K. Ishioka, K. Brixius, U. Höfer, **A. Rustagi** , E. Thatcher, C. J. Stanton and H. Petek "Dynamically Coupled Plasmon-Phonon Modes in GaP; an Indirect-Gap, Polar Semiconductor." **Phys. Rev. B 92, 205203 (2015)**.
- **A. Rustagi** and C. J. Stanton "Hot-electron noise properties of graphene-like systems." **Phys. Rev. B 90, 245424 (2014)**.
- L. G. Booshehri, C. H. Mielke, D. G. Rickel, S. A. Crooker, Q. Zhang, L. Ren, E. H. Hroz, **A. Rustagi**, C. J. Stanton, Z. Jin, Z. Sun, Z. Yan, J. M. Tour, and J. Kono "Circular polarization dependent cyclotron resonance in large-area graphene in ultrahigh magnetic fields." **Phys. Rev. B 85, 205407 (2012)**.
- **A. Rustagi** and C. J. Stanton "Terahertz radiation from accelerating charge carriers in graphene under ultrafast photoexcitation." **Arxiv 1607.02486 (2016)**.

Honors and Awards

Travel Awards

- 5^{th} International Symposium on Terahertz Nanoscience, Martinique, Dec 2014

Student Awards — University of Florida, Graduate School

- College of Liberal Arts and Sciences (CLAS) Dissertation Fellowship funded by Threadgill Scholarship Program, Spring 2016.
- Certificate of Outstanding Achievement for Academic Excellence, 2010–2014
- Center for Condensed Matter Sciences (CCMS) Summer Fellowship, 2011

Student Awards — Indian Institute of Technology, Kanpur, India, M.Sc.

- General Proficiency Medal for Academic Excellence, 2008–2010
- Academic Excellence Award, 2009-2010

Student Awards — St. Stephens College, Delhi, India, B.Sc.

- University Gold Medal for First Rank in B.Sc. Physics Examinations, 2005–2008
- The Sumitomo Corporation-St. Stephens College Scholarship, 2005-2008

Conferences attended and talks

- "Coupled Plasmon Phonon Dynamics in GaP: an indirect gap polar semiconductor", *contributed talk* at APS March Meeting 2016, Baltimore, MD
- "THz radiation from accelerating photo-excited carriers in graphene", *contributed talk* at 5^{th} International Symposium on Terahertz Nanoscience 2015, Martinique

- "Terahertz radiation from accelerating carriers in graphene", *contributed talk* at APS March Meeting 2014, Denver, CO
- "Noise properties of graphene like systems", *contributed talk* at APS March Meeting 2013, Baltimore, MD

Teaching Experience

Teaching Assistant Fall 2010–Spring 2011, PHY 2053 Lab, Department of Physics, University of Florida.

Computational experience

Experience in C++, Python, MATLAB, FORTRAN, Mathematica and Origin.

References

Prof. Christopher J. Stanton
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