Rohan Bhandari

1801 Lerner Hall, 2920 Broadway
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(732) 241-7666

EDUCATION

University of California, Santa Barbara—Physics Doctoral Candidate 2013-Present

Columbia University—Physics Major Class of 2013

AWARDS

Yzurdiaga Graduate Fellowship 2013

Broida Fellowship 2013

NSF Graduate Research Fellowship Program – Honorable Mention 2013

I.I. Rabi Scholar 9/09-5/13

- A designation only awarded to a few undergraduates per class who demonstrate exceptional promise in scientific research
- Provides annual funding for scholars to conduct research throughout the school year and summer throughout their undergraduate careers

Gertrude and William P. Schweitzer Scholarship in the Sciences 2012-2013

RESEARCH EXPERIENCE

ATLAS Experiment—Professor John Parsons **Columbia University, New York, NY**

- Currently analyzing data for signs of Supersymmetry using non-prompt, non-pointing photons (see Publication 1) 10/11-Present
- Precision offline calibration of the Liquid Argon Calorimeter of the ATLAS detector, achieving a timing resolution of ~300 ps
- Timing calibration turned into an ATLAS-wide tool to allow for analyses requiring sensitive timing to be conducted (see Internal Note 1)
- Worked at CERN over the 2012 summer

Columbia University Engineers Without Borders - Uganda 9/10-Present

- Technical lead for the Multifunction Platform (MFP) Pilot Program
- Researching the sustainability and efficacy of using MFPs to raise the standard of living for communities and women in rural Uganda
- Lead weekly meetings to get updates on the different facets of the program, discuss future steps, and ensure the project is moving efficiently
- Collaborated in obtaining/renewing large grants from the US Environmental Protection Agency and National Geographic
- Traveled to Uganda on two extended trips to implement a rainwater harvesting system, install an exhaust system, and assess the MFP Pilot Program
- Worked on the design, paperwork, and prototyping of an exhaust system for installed multifunction platforms

Microelectronics Sciences Laboratory—Professor Richard Osgood, Jr. 5/10-10/11

- Characterized the image potential states of a graphene-iridium bilayer to better understand its electronic properties (see Publication 2)
- Took measurements using two photon photoemission with an ultra-high vacuum (UHV) system, used techniques such as LEED and chemical vapor deposition
- Operated the UHV system, created the graphene/iridium sample and maintained the sample quality
- Analyzed the resulting data using original MATLAB programs

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Bioelectronic Systems Laboratory—Professor Kenneth Shepard 1/10-5/10

- Exploited CMOS microelectronics in the design of a low-cost, portable, self-contained "gene chip" technology for nucleic acid measurement and detection
- Developed an equation to model the rate of evaporation of a drop of water as a function of the hydrophobisity of the surface the drop is placed on, temperature, and relative humidity.
- Gain cleanroom certification and performed photolithography and PDMS molding

PUBLICATIONS

1. *Non-Pointing Photons*, ATLAS Collaboration, Phys. Rev. D, arXiv:1304.6310 (added under exceptional authorship)
2. *Trapping Surface Electrons on Graphene Layers and Islands*, D. Niesner, Th. Fauster, J. I. Dadap, N. Zaki, K. R. Knox, P.C. Yeh, **R. Bhandari**, R. M. Osgood, M. Petrović, and M. Kralj, Phys. Rev. B 85, 081402 (2012)

INTERNAL NOTES

1. *Utilizing Precision Liquid Argon Timing Information in Physics Analyses with the 2011* pp *Data*, **R. Bhandari**, D. Hu, N. Nikiforou, and J. Parsons (2012)
2. *Search for Non-Pointing Photons in the Diphoton and* E_T^{miss} *Final State in* $\sqrt{s} = 7\ Tev$ pp *Collisions at the LHC Using the ATLAS Detector*, F. Alonso, **R. Bhandari**, S. Burdin, M. Cooke, T.Dova, H. Hayward, O. Jinnouchi, A. Lehan, S. Maxfield, N. Nikiforou, S. Maxfield, J. Parsons, and N. Readioff, ATL-COM-PHYS-2012-1226 (2012)

PRESENTATIONS

1. Presented *Increasing the Timing Precision of the Liquid Argon Calorimeter of the Large Hadron Collider*, Columbia University Science Research Symposium & 2012 Rabi Scholar Symposium, October 8, 2012 & October 12, 2012; New York, New York.
2. Presented *Observation of the Interlayer State in Graphene on Ir(111)*, Columbia University Science Research Symposiums, April 16, 2012 & April 23, 2012; New York, New York
3. *Trapping Image State Electrons on Graphene Layers and Islands*, American Physical Society, February 27-March 2, 2012; Boston, Massachusetts
4. Presented *Observation of the Interlayer State in Graphene on Ir(111)*, 2011 Rabi Scholar Symposium, September 23, 2011; New York, New York
5. *Observation of Image States in Graphene on Ir(111) by Two-Photon Photoemission*, Conference on Lasers and Electro-Optics, May 1-6, 2011; Baltimore, MD
6. *Characterization of Image States in Graphene on Ir(111)*, American Physical Society, March 21-25, 2011; Dallas, Texas
7. *2PPE Characterization of Image-Potential States of Graphene/Ir(111)*, 7th Symposium on Ultrafast Surface Dynamics, August 22-26, 2010; Brijuni Islands, Croatia
8. Presented *2PPE Characterization of Image-Potential States of Graphene/Ir(111)*, 2010 Rabi Scholar Symposium, October 8, 2010; New York, New York

WORK EXPERIENCE/ACTIVITES

Emerging Leaders in Technology and Engineering **New York, NY**

- Will be coordinating teachers for a new program in Harlem starting next semester 7/11-Present
- Developed a curriculum on basic Electricity and Magnetism concepts to be taught in Jamaica, Tanzania, and Ghana
- Developed a curriculum on energy sources that will be used to teach young students in Ghana to help foster knowledge and skill in the application of scientific concepts

PRESS

- *In Uganda, Villages Reap Benefits of "Machine" Energy*. NationalGeographic.com
- *Harvesting Energy in Eastern Uganda.* NationalGeographic.com
- *Modified Diesel Engines Power Electrical Grids and Tools in Uganda*. EngineeringForChange,org