

Sajid Ali

*PhD Candidate
Applied Physics
Northwestern University*

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Education

- 2016–Present **Northwestern University, Evanston, IL,**
Ph.D., Applied Physics,
Computational x-ray optics, Technique development for X-ray Microscopy.
- 2011–2016 **IIT Madras, Chennai, India,**
Masters of Tech. in Microelectronics and VLSI Design Electrical Engg.,
Master's Thesis : Impurity induced magnetism in Graphene.
- 2011–2016 **IIT Madras, Chennai, India,**
Bachelors of Technology, Electrical Engg.,
Minor: Physics.

Research Experience

- 2018–Present **X-Ray Wave Propagation,**
X-Ray Microscopy Group, Northwestern University, PI: Prof Chris Jacobsen.
 - Developing parallelized computer codes for large scale wave propagation.
 - Implemented finite difference based wave propagation in PETSc.
- 2016–2019 **Zone Plate Testing,**
X-Ray Microscopy Group, Northwestern University, PI: Prof Chris Jacobsen.
 - Tested high aspect ratio zone plates for efficiency and tilt tolerance at APS and NSLS.
 - Developed code to simulate the effect of tilt misalignment.
- 2015–2016 **Magnetism in Graphene,**
Computational Condensed Matter Group, IIT Madras, PI: Prof Ranjit Nanda.
 - Investigated the magnetic properties of intercalated bilayer graphene using DFT.
 - Performed stability analysis for those which exhibited a non-trivial magnetic moment.
- Summer 2015 **A preliminary DFT Study on the stability of cathode materials,**
Center for Automotive Energy Materials, ARCI IITM Research Park, PI: Dr Sahana MB.
 - Studied the relative stability of three structural phases of a novel cathode material for Li-ion batteries.
 - Created complex heterostructures and studied their electronic structure using DFT.

Teaching Experience

- 2018 **Dept. of Physics & Astron., Northwestern University, Evanston, IL,** Teaching Assistant.
 - Undergraduate Lab methods course for calculus based EM
 - Led laboratory sections to demonstrate and facilitate experiments.
 - Held discussion hours to facilitate learning by one-on-one discussion of homework problems.
- 2015 **Dept. of Electrical Engg., IIT Madras, Chennai, India,** Teaching Assistant.
 - Introduction to the basics of scientific computing using C and Python.
 - Facilitated lab sessions, held office hours and graded assignments.

Publications

- 2020 **Effect of tilt on circular zone plate performance** Sajid Ali and Chris Jacobsen *Journal of the Optical Society of America A* (accepted for publication, <https://doi.org/10.1364/JOSAA.380925>)
- 2018 **Zone Plate Performance as a Function of Tilt Analyzed via Multislice Simulations** Syed Sajid Ali, Kenan Li, Michael Wojcik and Chris Jacobsen *Vol 24, Suppl. S2 (Proc. of the 14th Intl. Conf. on X-ray Microsc. 2018)* pp. 298-299
- 2016 **Magnetism in intercalated graphene** Sajid Ali, BRK Nanda *AIP Conference Proceedings* 1731, 130040

Conference & Workshops

- 2019 **PEARC19**, Chicago, USA,
Award : Most Outstanding Student Modeling Challenge Presentation.
- 2019 **PETSc User Meeting**, Atlanta, USA,
Talk: X-Ray Wave Propagation in PETSc,
Panel: Simulation Beyond PDEs (Can PETSc do more?).
- 2018 **X-Ray Microscopy**, Saskatoon, Canada,
Poster: Zone Plate Performance as a Function of Tilt Analyzed via Multislice Simulations.
- 2016 **DAE Solid State Physics Symposium**, New Delhi, India,
Poster: Magnetism in Intercalated Graphene.
- 2014 **Strongly correlated systems: From models to materials**, Bengaluru, India,
Workshop on theoretical and computational tools to study strongly correlated electron systems.

Outreach, Volunteer and Leadership Experience

- 2019–Present XSEDE Student Champion at NU
- 2019–Present Literature Review volunteer at NumFOCUS DISC
- 2018–Present Contributor to open source software
- 2018 Taught a class on Emergence for Splash at NU
- 2013 Graphic Designer for Saarang, IIT Madras
- 2013 Coordinator for Shaastra Symposium, IIT Madras
- 2012–2013 Coordinator for Colloquium, IIT Madras

Computer Skills

- Programming Python, C, Matlab, Bash
- Software PETSc, Scientific Python, QuantumEspresso
- Perf. Eng. Intel VTune, Intel APS
- Sys. Admin. Spack, Environment Modules, yum, dnf, apt
- Soft. Eng. Git, Travis CI, Codecov, Flake8, GNU Debugger
- Platforms Linux (CentOS, RHEL, Fedora, Ubuntu), Windows