

# Sajid Ali

*Applied Physics,  
Northwestern University*

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## Education

- 2016–Present **Northwestern University, Evanston, IL,**  
Ph.D., Applied Physics,  
Computational x-ray optics, New Techniques 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

- 2016–Present **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.
  - Developing parallelized computer codes for high resolution x-ray optics simulation to model tilt misalignment effects.
- 2015–2016 **Magnetism in Graphene,**  
*Computational Condensed Matter Group, IIT Madras, PI: Prof Ranjit Nanda.*
- Investigating the magnetic properties of functionalized monolayer and intercalated bilayer graphene using Density Functional Theory.
  - Studied a range of candidates for intercalation and 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  $\text{Li}_{1:15}(\text{Mn}_{:54}\text{Ni}_{:23}\text{Co}_{:08})\text{O}_2$ , a novel cathode material for Li-ion batteries.
  - Created complex heterostructures and studied their electronic structure using Density Functional Theory.

## Teaching Experience

- 2018 **Department of Physics, Northwestern University, Evanston, IL, Graduate 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 **Department of Electrical Engineering, IIT Madras, Chennai, India**, Graduate Teaching Assistant.
- The course has a C-language and Python-language component and serves as an introduction to the basics of scientific computing.
  - Facilitated lab sessions, held office hours and graded assignments.

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## Publications

- 2018 **Zone Plate Performance as a Function of Tilt Analyzed via Multislice Simulations** Syed Sajid Ali, Kenan Li, Michael Wojcik and Chris Jacobsen *Volume 24, Suppl. S2 (Proc. of the 14th Intl. Conf. on X-ray Microscopy) pp. 298-299*
- 2016 **Magnetism in intercalated graphene** Sajid Ali, BRK Nanda *AIP Conference Proceedings 1731, 130040*

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## Outreach, Volunteer and Leadership Experience

- 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

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## Computer Skills

- Languages Python, C, Matlab
- Software PETSc, Scientific Python, QuantumEspresso
- Platforms Linux (CentOS, RHEL, Fedora, Ubuntu), Windows
- Soft. Eng. Git, Travis CI, Codecov, Flake8, GNU Debugger