

# Arka Prava Sarkar

*M.Sc Physics*

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DOB: 25th of July, 1994



## Education

- July 2019–Present **Junior Research Fellow, *Computational Materials Science*, Indian Institute of Technology, Kharagpur, Coursework GPA : 8.26.**  
Skills: Theoretical knowledge of Time Independent and Time Dependent Density Functional Theory, Monte Carlo and Molecular Dynamics Simulations and 2D Materials; Working knowledge of Quantum Espresso for calculating different properties of Materials (Up to Phonon properties); Limited Knowledge of Machine Learning, Bash Scripting, CP2K, and LAMMPS
- 2016–2018 **M.Sc Physics, *Indian Institute of Technology (ISM), Dhanbad, OGPA–9.06.***  
Core Courses: Mathematical Physics, Classical Mechanics, Electrodynamics, Atomic and Molecular Physics, Statistical Mechanics, Quantum Mechanics (Basic and Advanced), Nuclear and Particle Physics, Condensed Matter Physics (Basic and Advanced), Laser Physics, Thin films.  
Electives: Astrophysics and Cosmology, High Energy Physics and Computational Physics
- 2012–2016 **B.Sc Honours, *Asutosh College, Kolkata, Percentage–60.00%.***  
Physics Honours, Mathematics and Computer Science  
Courses: Mathematical Physics, Classical Mechanics, Electrodynamics, Quantum Mechanics, Waves and Optics, Atomic, Nuclear, Molecular and Particle Physics, Solid State Physics, Statistical Mechanics, Electronics; Basic and Advanced (Abstract and Linear) Algebra, Coordinate Geometry, Basic and Advanced Mathematical Analysis, Numerical Analysis, Linear programming; Operating Systems concepts, C and C++ programming, Algorithms, Data Structures, Boolean Algebra.
- 2011–2012 **XIIth Board, *Kendriya Vidyalaya Ordnance Factory, Dum Dum, Percentage – 87.00%.***  
Maths, Physics, Chemistry and Computer Science

## Projects

- Title ***Monte Carlo Simulations of Soft Sphere Potentials***
- Supervisors **Dr. Pankaj Mishra, Associate Professor**
- Description We have done a thorough study of the basic simulation techniques such as Monte Carlo and Molecular Dynamics Simulations. Then we applied the Classical NVT Monte Carlo Simulations in truncated 2.5 Lennard Jones Potential and studied its properties using the radial distribution curve. Then we investigated the properties of one component plasma system (Coulomb like interactions) using a brief study of Nematic Liquid Crystal Phase and Classical NVT Monte Carlo Simulations for both 2D and 3D systems. The radial distribution curve was studied to investigate the properties of the system. This was a computational project work carried out at Indian Institute of Technology (ISM), Dhanbad at the Condensed Matter Theory Laboratory, Department of Applied Physics. Duration: August 2017 to April 2018.

Title ***Applications of Geometric Phases in Condensed Matter Physics***  
Supervisors **Dr. Amit Kundu, Associate Professor and HOD**  
Description We have studied the quantum adiabatic theorem and the introduction of Berry's phase and its importance in quantum mechanical systems. The complete formalism of Berry's Phase was then studied (Up to Generalized Berry's Phase). Then we studied the applications of various geometric phases in different condensed matter systems and its application in Quantum Hall Effect. This was a theoretical project work carried out at the Department of Physics, Indian Institute of Engineering Science and Technology, Shibpur. Duration: May to July 2017.

## Conferences and Workshops

- 20th International Workshop on Computational Physics and Materials Science: Total Energy and Force Methods.  
Organized by International Centre for Theoretical Physics  
Duration : February 2021
- National Conference on Advancements in Spectroscopic Techniques and Materials.  
Organized by Department of Applied Physics, IIT (ISM) Dhanbad  
Duration: March 2018
- National Conference on Liquid Crystals.  
Organized by Department of Applied Physics, IIT (ISM) Dhanbad  
Duration: December 2016
- Attended workshop on night sky watching organized by Department of Physics, Kalyani University using modern technology based reflecting telescope. Duration: February 2013 and October 2013.

## Work Experience

- 2017–2019 **Online Mentoring, IL & FS Education**, Kolkata, Subject: Science.  
Helping students of secondary level (Class 8, 9 and 10) of CBSE Board via Geneo App for Physics subject; creating and editing MCQ and subjective questions of CBSE pattern; AI text curation, MCQ curation; Creating/editing sample papers and solving questions according to the latest pattern CBSE class 10 board exam papers of science subject.
- 2018-2019 **Expert Q and A, Chegg India Pvt. Ltd**, India, Subject: Advanced Physics.  
Solving questions of Advanced Physics (Undergraduate and Graduate Level) of US based universities.

## Achievements

- GATE 2019 **Subject : Physics, Marks : 32.00**, GATE Score : 467, All India Rank : 939.  
Valid upto 2022
- IELTS **Academic, 2019**, Overall: 8.0, CEFR Level: C1.

## Area of Interest

- Computational Materials Science
- Two Dimensional Materials
- Condensed Matter Physics and Computational Physics
- Quantum Mechanics
- Statistical Mechanics
- Mathematical Physics

## Personal Skills

- Quick Learner.
- Able to handle situations of extreme pressure.
- Can manage time effectively
- Good Computer handling skills.

## Computer skills

category 1 Microsoft Office

category 2 C and C++ Programming

category 3 XmGrace

category 4 OVITO

category 5 LaTeX

category 6 GnuPlot

## Languages

Bengali Mother tongue

English Intermediate

*Conversationally good*

## Other Interests

- Football
- Cricket
- Travelling
- Shooting
- Music

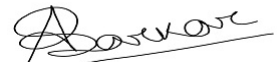
## References

- Dr. Sandeep Kumar Reddy  
Email : skreddy@iitkgp.ac.in
- Dr. Divya Nayar  
Email : Divya.Nayar@mse.iitd.ac.in
- Dr. Pankaj Mishra  
Email : mpankajg@gmail.com
- Dr. Rajsekhar Bhattacharyya  
Email : rbhattacharyya@gmail.com
- Dr. Amit Kundu  
Email : amit.iop@yahoo.com

## Declaration

I hereby declare that the above mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of the above mentioned particular.

**Place:** Kolkata



*Arka Prava Sarkar*