

RUMAN MOULIK

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RESEARCH INTEREST

Computational Condensed Matter Physics

Breakthroughs in development of new materials is of importance and can help in developing upgrades of currently used materials in various fields. A lot of work needs to be done on characterising various structures. Their ground state, density of states and phonon spectra can be measured to estimate their properties and figure out their usage. There are also a lot of modern approaches and heuristics being used in the computational field that can be used to make the algorithms currently used in physics research much more efficient or new ones developed altogether.

EDUCATION

- Master of Science (Research) in Physics Major, Indian Institute of Science, 2020
- Bachelor of Science (Research) in Physics Major, Indian Institute of Science, 2020 (integrated with the Master's degree)
- Completed High School from BDMI, Kolkata affiliated to CBSE Board (96% overall, 97% score in Physics)
Subjects: Physics, Chemistry, Maths, Computer Science, English, Hindi

PAST PROJECTS

- **Bachelor's and Master's Project:** Contributions to a python library of Density Functional Perturbation Theory to calculate the phonon spectra of solids
- **Summer Project** on basic Monte Carlo Simulations to solve Ising model
- **Summer Project** on Kabsch Algorithm and developing a BLOSUM-like matrix for dihedral angles of proteins

RELEVANT SKILLS

- **Computer proficiency:** Able to work on a cluster environment
- **Coding:** Experience in writing algorithms, breaking them step-by-step and know how to code in C/C++, Python, Perl and FORTRAN
- **Extra courses** outside my regular curriculum on Computer Science and algorithms through open courses and resources from institutes of repute

TEACHING AND MENTORING EXPERIENCE

- Regularly held doubt clearing sessions for juniors
- Gave two lectures at a local school near college, part of an initiative to spread literacy and quality education to poor children

SCHOLARSHIP

- Rank 17 in CSIR-UGC NET June 2020 and eligible for fellowship
- KVPY Fellow from 2015-2020 for the duration of my college education