

Curriculum Vitae



► Hello...
Myself Soumya Ghorai

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Please go through my CV. Thank you.

Personal Information

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Gender : Male

Language(s)

- My mother tongue is Bengali – Good in all skills.
- Besides Bengali I know English – Good in reading, writing , understanding & speaking.
- Another language is Hindi – Good in understanding & speaking.

Research Interest(s)

From the academic years superconductivity effect of the materials really fascinates me and currently just knowing the what is topological effects also seems to be very interesting to me. And from the project work at IISER-K, DFT is one of my research interest.

Work Experience(s)

I worked as *JRF (INSPIRE)* at IACS Kolkata on Beyond Born-Oppenheimer Theory and its Applications. The well-familiar theoretical framework of Born-Oppenheimer (BO) treatment appears to be the starting point for studying chemical processes over almost a century. Though BO approximation can satisfactorily explain some of the ground state chemical processes, its breakdown is frequently observed due to significant electron-nuclear (nonadiabatic) coupling among the ground and other excited electronic states, Such electron-nuclear couplings, known as nonadiabatic coupling terms (NACTs) exhibit singular behaviour at the degenerate or near-degenerate point(s)/seam(s) over the nuclear configuration space (CS) as depicted by Hellmann-Feynman theorem. Hence, a transition to beyond Born-Oppenheimer (BBO) regime is necessary to include the singular kinetic couplings in the form of smooth functions of nuclear coordinates whenever excited states are involved and sometimes for ground state molecular processes too. Over one and half decades, the first principle based BBO theory has been widely employed to construct theoretically “exact” and numerically “accurate” diabatic potential energy surfaces (PESs) followed by quantum dynamics calculation, and the theoretical findings exhibit reasonably good agreement with

experimental photoelectron spectra for spectroscopic systems and cross-sections/rate constants for triatomic scattering processes.

I was also worked as *Junior Research Fellow (Project)* in BRNS funded project at IISER Kolkata for approximately one year after completing my M.Sc. degree. I was mainly involved in the field of static/dynamic electronic response properties of atoms and molecules through the in-house program InDFT.

I also worked on *Electric response properties calculation of atoms and molecules through Cartesian-grid using Hybrid Functionals*.

Laboratory Skill(s)

I have a very good experience of working in laboratory environment. As our college is one of the oldest college in this area (established on 15th july, 1926), a good number of instruments in our departmental laboratory are age old. Though sometimes it is frustrating, but most of the times it teaches some new lessons. It helps me to find pleasure in having a good result after solving the problems in the instruments. It certainly help me to understand how the instruments could behave in a better way and also to build a good experimental mind.

Programming Skill(s)

I am capable of handling Quantum Chemistry Packages.

- **GAMESS**

I have basic **HTML** coding knowledge and designed my IISER-K project supervisor's group webpage.

I have a good exposure to **LINUX** operating system.

I am also capable of handling Microsoft Windows operating system & MS office and also learned basic skills of programming language and some softwares like :

- **Python**
- **C++**
- **Fortran**
- **Gnuplot**
- **Mathematica**
- **Origin**
- **Image J**
- **HTML**
- **PHP**

I also learned the basic idea of parallel programming using **OpenMP**.

Scholarship & Award(s)

- ▶ Qualified **Joint CSIR UGC Net Dec-2020**.
- ▶ Qualified Graduate Aptitude Test in Engineering (**GATE**) in **Physics- 2021**.
- ▶ Received **INSPIRE Fellowship-2019**.
- ▶ Received Scholarship for Higher Education (SHE) component of the scheme, **Innovation in Science Pursuit for Inspired Research (INSPIRE)** from Ministry of Science & Technology, Govt. of INDIA during 3 years Bachelor Degree Course.

- ▶ Received the same **INSPIRE** Scholarship during my 2 years Masters Degree Course from the same authority.
- ▶ Received State Level Scholarship (from Higher Secondary to Masters level) from Govt. of West Bengal, INDIA.

Seminar/Conference(s) Participation

I attended an international conference :

- ▶ International conference on “Structure and Dynamics of Molecular and Condensed Matter Systems, **ICSD - 2020**” organized by IISER Kolkata at Puri, Odisha.

During Project JRF at IISER Kolkata I have attended various seminars, colloquium, few talks of Nobel Laureates.

During my course of study I attended various seminars, which were organized by our college authority or department. Some of those are given below :

- ▶ “Workshop on Computer Programming & Applications (WCPA 18)” organized by Dept. of Physics (UG & PG), P. K. College, Contai.
- ▶ UGC Sponsored National Seminar on “Recent Trends in Chromatographic Separation” organized by P. K. College, Contai.
- ▶ A seminar on Cosmology organized by Dept. of Physics, P. K. College, Contai.

Project Work(s)

- ▶ During my M.Sc. course, I have performed a project work entitled “Capillary rise of liquid : Beyond Jurin’s law.” under the guidance of Dr. Syed Minhaz Hossain, Associate Professor, Dept. of Physics, IEST, Shibpur, West Bengal, INDIA.
- ▶ During my B.Sc. course, I have performed a project work entitled “Investigation of Inductance in AC circuits and measurement of mutual inductance between two coils using L-R circuit.” under the guidance of Dr. Goutam Manna, Assistant Professor, Dept. of Physics, P. K. College, Contai, West Bengal, INDIA.

Educational Qualification

Course name	Board/ University	Subjects	Percentage of marks	Year of passing
Secondary Examination	W.B.B.S.E	Language group, Science Group, History, Geography	89.86%	2012
Higher Secondary	W.B.C.H.S.E	Physics, Chemistry, Math., (Biology as optional subject)	89%	2014
B.Sc.	Vidyasagar University	Physics as Honours, Chemistry, Mathematics	64.25% (Only Hons.)	2017
M.Sc.	Vidyasagar University	Physics with Solid State Physics as special paper	72.5%	2019