# CHAKRADHAR RANGI

## CONTACT

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Date of Birth: April 18th, 1997

## EDUCATION

**BS-MS Dual Degree, Major in Physics**　　　　　　　　　　**May 2020**
Indian Institute of Science Education and Research(IISER)　　Grade Point: 8.59/10
Bhopal, Madhya Pradesh, India

**12th Grade**　　　　　　　　　　　　　　　　　　　　**May 2015**
Kendriya Vidyalaya RWF, Bangalore, India　　　　　　　Percentage: 95.6
Central Board of Secondary Education　　　　　　　　　Physics: 95/100

**10th Grade**　　　　　　　　　　　　　　　　　　　　**May 2013**
Kendriya Vidyalaya RWF, Bangalore, India　　　　　　　CGPA: 10.0/10.0
Central Board of Secondary Education　　　　　　　　　Physics: 10.0/10.0

## INTERNSHIPS AND PROJECTS

**MS Thesis**　　　　　　　　　　　　　　　　August 2019 - June 2020
Indian Institute of Science Education and Research Bhopal, India
**Title:** Development of a Python code for modelling Trajectory Surface Hopping on Ab Initio Potential Energy Surfaces.
**Supervisor:** Dr. Varadharajan Srinivasan, Associate Professor, IISER Bhopal

- The project aimed at developing a highly efficient python wrapper for Time-Dependent Density Functional theory based Trajectory Surface Hopping algorithm on top of an electronic structure calculation package 'NWCHEM' to simulate Non-Adiabatic Dynamics for large molecular systems.

**Skills achieved:** Many advanced concepts in Electronic Structure theory, atomic & molecular physics, time-dependent quantum mechanics, large scale computing.

**Summer Internship**　　　　　　　　　　　　　May 2019 - July 2019
Jawaharlal Nehru Centre for Advanced Scientific Research(JNCASR),
Bangalore, India
**Title:** Time evolution of Kitaev-Chain under piece-wise noise using Transfer Matrix Method.
**Supervisor:** Dr. Vidhyadhiraja N.S., Associate Professor, JNCASR

- The project aimed at understanding the decoherence/revival of Majorana zero modes(MZMs) in a Kitaev Chain subjected to a piecewise noise with amplitude that retains in the same topological/trivial phase by calculating the Loschmidt Echo using Transfer Matrix Method.

**Skills achieved:** Got introduced to topics including graduate quantum mechanics, Topological phases and Dynamical quantum phase transitions.

**Summer Internship**　　　　　　　　　　　　　May 2018 - July 2018
Indian Institute of Science Education and Research Bhopal, India
**Title:** Machine Learning for applications in Physics
**Supervisor:** Dr. Nirmal Ganguli, Assistant Professor, IISER Bhopal

- The project aimed at understanding Machine learning algorithms such as Neural Networks and its practical implementations using popular libraries such as Keras and PyTorch. To realise its application in physics, I read research article related to Self-Learning Monte Carlo method.

**Skills achieved:** Basics of Machine Learning, Various algorithms in Machine learning including Multivariate Regression, Classification and Neural Networks, Self-Learning Monte Carlo method.

## TEACHING EXPERIENCE

**Teaching Assistant, Introduction to Programming, EECS102**    Jan 2018 - April 2018
IISER Bhopal

· Worked as a Teaching assistant for an introductory course on programming in C offered by the department of Electrical engineering & Computer Science(EECS) for the freshman at IISER Bhopal.

**Teacher, Early Bird Physics Program**    March 2018 - August 2018
Cheenta Ganit Kendra(Online Platform)

· Was part of the teaching community at Cheenta Ganit Kendra, an online platform for young and motivated high-school students.

## EXTRA CURRICULAR ACTIVITIES

**Secretary, Sports Council**    March 2018 - March 2019
Student Activity Council, IISER Bhopal

**Captain, IISER Bhopal Sports Team**    December 2018
Inter IISER Sports Competition(IISM) 2018, Bhubhaneswar, India

**Cricket Coordinator, Sports Council**    January 2016-December 2017
Sports Council, IISER Bhopal

**Member, Organising Committee**    January 2018
Enthuzia 18, Cultural Festival of IISER Bhopal

**Member, Organising Committee**    Jan 2017 - Dec 2017
Student Astronomy Club, IISER Bhopal

## SKILLS

| | |
|---|---|
| **Computing** | Python, C, C++, Git, LaTeX, HTML |
| **Libraries & Tool** | Numpy, Matplotlib, PyTorch, Keras, VPython, QuTiP |
| **Operating System** | Linux, Windows |
| **Interpersonal Skills** | Leadership, Event Management, Knowledge sharing, Mentoring |

## AWARDS AND ACHIEVEMENTS

**Silver Medal, Cricket**    December 2018
Inter IISER Sports
Meet held at Bhubhaneswar, India.

**IISM Championship Trophy**    December 2018
Led the IISER Bhopal Sports team to victory at Inter IISER Sports
Meet held at Bhubhaneswar, India.

**Certificate of Appreciation** — 2016 & 2017
from the Student Senate for my contribution as Cricket Coordinator,
Sports Council, IISER Bhopal

**Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship** — August 2015
Department of Science and Technology, Government of India

**Certificate of Merit** — August 2015
Top 1.5% of Kendriya Vidyalaya Sanghatan(1225 Schools across India)
Students in the 12th grade examination conducted by Central Board
of Secondary Education, India.

## CONFERENCES AND SUMMER SCHOOLS ATTENDED

**QMAT, 2nd Annual Conference on Quantum Condensed Matter** — July 2019
Indian Institute of Science, Bangalore, India

**Light and Beyond** — June 2020
International Center for Theoretical Sciences, Bangalore, India

**Qiskit Global Summer School** — July 2020
Qiskit Community, IBM Quantum