

Kaling Vikram Singh

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EDUCATION

National Institute of Science Education and Research (NISER)

Masters of Science in Physics

Aug 2020 - May 2025

Jatani, Odisha, India - 752050

- Currently in Final year of 5-year programme with a CGPA of 8.57.
- Completed a Minor in Computer Science (6 courses in Algorithms, Automata theory and ML)
- Completed courses in Classical, Statistical and Quantum mechanics, and Computation Physics.
- Set up and improved the experiment to study phase transition at Nèels temperature using strain gauge in Advanced Physics Lab.

DAV Public School, Chandrasekharpur, India - 761016

Senior School Certificate examination (CBSE board)

April 2020

(95.4%)

Delhi Public School, Lucknow, India - 226025

Secondary School Certificate Examination (CBSE board)

April 2018

(94.6%)

RELEVANT COURSEWORK

- Classical Mechanics I,II
- Quantum Mechanics I,II
- Statistical Physics
- Many body theory
- Computation Physics
- Non linear optics
- Advanced solid state physics
- Quantum computation & info
- Experimental Techniques
- Solid State lab
- Advance Physics lab
- Machine learning
- Parametrized algorithms
- Automata Theory
- Discreet Structures & Algorithms

PROJECTS

Masters thesis on proximity studies on exfoliated NbSe₂

National Institute of Science Education and Research

April 2024 - Present

Odisha, India

- Pursuing Masters thesis project under Dr Kartik Senapati at Superconductivity lab, NISER to study proximity effects in exfoliated NbSe₂ on Si/SiO₂ substrates.
- Currently working on optimising contacts for transfer studies at cryogenic temperature.
- Standardized the procedures for sample preparation such as exfoliation, photolithography, contacts printing, viscoelastic stamp preparation.
- Characterised samples using PPMS for transport studies, Raman spectrometer, SEM.
- Constructed a N₂ environment glovebox using CAD software in the NISER workshop.

Research Project on Nanoparticle synthesis using microfluidics

Alabama State University

May 2023 - August 2023

Montgomery, United States

- Under supervision of Dr Vida A Dennis, synthesized sub 100 nm protein encapsulated PLGA(polymer) nanoparticles using microfluidics.
- Standardized the procedure for synthesis of encapsulated nanoparticles.
- Characterised nanoparticle sizes using DLS based zeta sizer.
- Report can be found at: [Report](#)

Research Project on Anti-Corrosive Coatings on copper substrates

Indian Institute of Technology

May 2022 - August 2022

Bhubaneswar, Odisha, India

- Under supervision of Prof Saroj Kumar Nayak, synthesized Graphene Oxide coated copper substrates to reduce their corrosion rates.
- Studied various aspects of coating parameters, such as pH, temperature, time and concentration dependences.
- Achieved reduction in corrosion rates by 3 times.
- Report can be found at: [Report](#)

Term Project on Thermal Spike model

NISER

Jan 2024 - April 2024

Bhubaneswar, Odisha, India

- Under supervision of Dr Pratap Kumar Sahoo, computationally designed and coded the thermal spike model of a gold substrate on high energy Xe ion irradiation, as part of computational physics coursework.

- Used python and SRIM (2013) to model the 3D temperature dynamics with respect to position and time coordinates.
- Report can be found at: [Report](#)

Term Project on Irradiated Luttinger semimetal - Weyl semi metals
NISER

Aug 2023 - Dec 2023
Bhubaneswar, Odisha, India

- Under supervision of Dr Kush Saha, theoretically studied the effect of light irradiation on luttinger semi metals and synthesis of Weyl semi metals .
- Understood various topological properties of Weyl semi metals.
- Studied about floquet theory, K.P perturbation theory, Semi metals, topological insulators.
- The presentation can be found at: [Presentation](#)

Term Project on Perovskite Crystal structure prediction using ML
NISER

Jan 2023 - April 2023
Bhubaneswar, Odisha, India

- Under supervision of Dr Shubhankar Mishra, designed a ML model to predict the crystal structure of perovskites based on physical properties such as electronegativity, potentials, magnetization, and metallic nature.
- The accuracy of the model was 94.10% with AUC-ROC of 0.98.
- Report can be found at: [Report](#)

TECHNICAL SKILLS

Characterization techniques and instrumentation: X-Ray Diffraction (XRD), Scanning electron microscope (SEM), Photolithography, PPMS, Raman Spectroscopy, DLS based Zeta Sizer, Microfluidics, DC and RF Sputtering/ion milling, step profilometry, etc .

Languages: Python, LabView, C/C++.

Technologies/Frameworks: Linux, GitHub, CAD software.

AWARDS AND ACHIEVEMENTS

Disha Scholar

2020 - Present

- Government funded scholarship for undergraduate and masters studies.

National Children Science Congress

2017

- Represented Odisha state in the national child science congress with the idea of pond bins.

Junior Maths Olympiad (JMO)

2016

- Qualified JMO, conducted by Institute of Mathematics and Applications(IOMA) and attended their summer camp.

LEADERSHIP / EXTRACURRICULAR

Hostel Executive Committee
Mess Secretary

August 2024 - Present

- Elected as the mess Secretary for hostel canteen in NISER.
- Managed college dorm operations, guaranteeing efficient operations and student contentment.

Hostel Executive Committee
Maintainance Secretary

November 2022 - July 2023

- Elected as the maintainance Secretary for hostels in NISER.
- Uplifted the hygiene standards in the hostels.

Tvisha Core Committee
Core Member

March 2023

- Appointed as a member of the core organising committee of Tvisha, NISER's yearly fest.
- Looked after funding, organisation of events and star nights.

National Cadet Corps (NCC)
Platoon Commander

2016 - 2017

- Appointed as the platoon Commander for the school NCC wing.

Cricket player
Player

2016 - present

- Played cricket and represented college in inter IISER - NISER sports meets.