

Estuti Shukla

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EDUCATION

IISER KOLKATA

2016-2021 | Kolkata, India

BS-MS DUAL DEGREE

Indian Institute of Science

Education and Research

Masters in Physics

Cum. GPA: 8.75 / 10.0

Major GPA: 9.03 / 10.0

SARDAR PATEL VIDYALAYA

Grad. May 2016 | Delhi, India

SENIOR SECONDARY EXAMINATION XIITH (CBSE)

Percentage- 95 %

RESEARCH INTERESTS

General Relativity,
Gravitational Physics,
Numerical Relativity, Cosmology

SKILLS

PROGRAMMING

Advanced

- Python(Numpy, Scipy)

- \LaTeX • C/C++

Intermediate

- Mathematica • R • MATLAB

Familiar:

- HTML

OPERATING SYSTEMS

- GNU/Linux • Windows

OTHERS

- Git/GitHub • GNUplot • Origin

COURSEWORK

Advanced Statistical Mechanics,
Research Methodology,
High Energy Physics,
General Relativity,
Condensed Matter Physics,
Quantum Field Theory,
Non-linear Dynamics,
Electrodynamics, Optics
Thermodynamics,
Classical Mechanics,
Astrophysics (intro),
Computational Physics,
Data Structures and Algorithms,
Space Astronomy, Linear Algebra

WORK EXPERIENCE

ICTS-TIFR BANGALORE | VISITING STUDENT RESEARCHER

August 2021 - Present | Prof. Prayush Kumar | Bangalore

- Project Description- As part of the Long Term Visiting Students Program, I will be working on dynamical horizons.

IIT MADRAS | RESEARCH INTERN

June 2021 - Present | Prof. Chandra Kant Mishra | Remote

- Project Description- SNR analysis of IMRIs for the proposed space-based detector DECIGO.

IISER KOLKATA | MASTER'S THESIS

July 2020 - July 2021 | Prof. Rajesh Kumble Nayak | Kolkata, India

- Thesis Title- Static Stars in Cosmological Backgrounds
- Project Description- Studying model of stars in Einstein and de Sitter universe using TOV equations modified as per the background universe. We are studying various mass-radius relationships and searching for the possibility of black hole mimickers.

JOHNS HOPKINS | RESEARCH INTERN

Oct 2020 - Present | Prof. Emanuele Berti | Remote

- Project Description- Studied second-order non linearities of quasinormal modes associated with merger-ring down phase of binary black holes.

UMASS DARTMOUTH | SUMMER RESEARCH INTERN

Jun 2020 - Sep 2020 | Prof. Gaurav Khanna and Prof. Scott Field | Remote

- Project Description- I added functionalities such as remnant Bondi mass and kick velocity to the EMRI surrogate model developed by the gravity group at UMassD. Added as a contributor to the open-source model.

IISER KOLKATA | INDEPENDENT STUDY

July 2020 - Dec 2020 | Prof. Dibyendu Nandi | Kolkata, India

- Study Description- Learnt the fundamentals of magneto-hydrodynamics and plasma.

IUCAA PUNE | WORKSHOP AND HACKATHON

Dec 2019 - March 2020 | LIGO India | Pune, India

- Workshop and Hackathon Description- My two-member team won the FINESSE (Frequency domain INTERferometer Simulation SoftwarE) hackathon. After being selected for a three months mentorship workshop for designing gravitational wave detectors using the FINESSE software, we competed to improvise a design of the interferometer and successfully increased its sensitivity in the frequency range of NS-NS mergers.

IISER MOHALI | SUMMER RESEARCH INTERN

May 2019 - July 2019 | Prof. Jasjeet Singh Bagla | Mohali, India

- Project Description- Learnt ray tracing method to simulate "image" of black hole and null geodesics in Schwarzschild metric.

IIT INDORE | SUMMER RESEARCH INTERN

May 2018 - July 2018 | Dr. Bhargav Vaidya | Indore, India

- Project Description- Studied shock waves in MHD framework. Learnt about Rankine Hugoniot conditions and simulated shock waves in python.

LANGUAGES

English, Hindi

OTHER INTERESTS

Long distance running,
Playing Ukulele,
Trekking,
Public speaking,
Playing badminton,
Theater

TEACHING EXPERIENCE

IISER KOLKATA | TEACHING ASSISTANT

Jan 2021 - | General Theory of Relativity and Cosmology | Kolkata, India

- Teaching assistant for PH4205 General Relativity course under the guidance of Prof. Rajesh Nayak.

IISER KOLKATA | TEACHING ASSISTANT

July 2020 - Dec 2020 | Intermediate Quantum Mechanics | Kolkata, India

- Teaching assistant for PH3102 Quantum Mechanics course under the guidance of Prof. Soumitro Banerjee.

TALKS/PRESENTATION

- 3rd Sep'20 Talk on computing remnant mass of binary black hole mergers using EMRI surrogate model at UMass Dartmouth's Physics Colloquia
- 11th Mar'20 Group presentation on probing neutron stars merger with LIGO interferometer for FINESSE Hackthon at IUCAA Pune.

SEMINARS/WORKSHOPS/CONFERENCES

- Dec'20 31st meeting of the Indian Association for General Relativity and Gravitation (IAGRG), IIT Gandhinagar (Virtual)
- Sep-Dec'20 Semester Program on Advances in Computational Relativity by ICERM, Brown University (Virtual)
- Sep'20 Vienna Summer School on Gravitational Quantum Physics by University of Vienna (Virtual)
- Aug'20 North American Einstein Toolkit Workshop by LSU (Virtual)
- May'20 BHP Toolkit Spring Workshop 2020 (Virtual)
- May'20 Gravitational Wave Summer School on Numerical Relativity by ICTS Bangalore (Virtual)
- Dec'19 Hackathon and Mentorship Workshop on LIGO Finesse at IUCAA.
- Nov'19 Indo-Swiss Round Table on Women in AI conducted by Swiss Embassy, Vigyan Samagam Mega Science Exhibition, Kolkata
- Nov'19 Data Science in Astrophysics GW research at IIIT Allahabad
- Oct'19 Bootcamp by NVIDIA on High-performance computing at IISERK
- Nov'16 National Science (Vijyoshi) Camp by DST, Gov. of India at IISERK

AWARDS AND RECOGNITION

- 2021 One out of 7 people selected for the prestigious LTVSP program (ICTS)
- 2020 Won FINESSE Hackathon and was supposed to be hosted as an intern in a GW institution in Europe (cancelled due to pandemic)
- 2016 DST Inspire Scholarship by Govt. of India
- 2016 Top 1 % in CBSE Board Class XIIth Examination in India

EXTRA CURRICULAR

- 2020-21 Established IKQRAAR, the official LGBTQ+ support platform at IISERK
- 2019-20 Founder and Secretary of Trekking and Adventure Club, IISERK
- 2019-20 Founding Member and Coordinator of Student Alumni Cell, IISERK
- 2018-19 Secretary of Aarshi, Dramatics Club, IISERK
- Dec'18 Event Organiser at 1st Inter-IISER Cultural Meet (IICM)'18
- Jul'18 Member of Anti-Ragging Committee
- 2017-18 Sponsorship Head, Core Committee, Inquivesta, college fest of IISERK