SANKET AJAY MUNISHWAR

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EDUCATION

Sanjuba High School, Nagpur, Maharashtra
10^{th}

St. Paul Junior College, Nagpur, Maharashtra
11^{th}-12^{th}

Indian Institute Of Science Education And Research, Tirupati
BS-MS (Integrated Master's in Science, 5 year course), Physics major

ACADEMIC PERFORMANCE

Matriculation, 2016: 95.60%

Intermediate, 2018: 89.38%

BS-MS, 2023: Cumulative GPA: 8.1 out of 10 (BS, MS)

Click here to see the list of courses that I have taken at IISER Tirupati and also the grades obtained in those courses.

COMPUTER SKILLS

Programming: Python, C++, Fortran 90/95, ROOT Framework, Basics of data science, Linux, Javascript (Beginner), HTML (Beginner), Django (Python Web Framework)(Beginner), Parallel Programming in Python (Multiprocessing module)

Software and Packages: Latex, Origin, Matplotlib, Numpy, Pandas, THERMUS (Root Framework based package), PyCBC (Gravitational Wave Data Analysis package), Git, Github

AREAS OF INTEREST

- Gravitational Wave Data Analysis
- Astrophysics and Astronomy
- Data Science and applications

PUBLICATIONS

Prompt sky localization of compact binary sources using meshfree approximation. Lalit Pathak, **Sanket Munishwar**, Amit Reza, Anand Sengupta, https://arxiv.org/abs/2309.07012 (*Current Status: under review*)

PROJECTS

Statistical Hadronization Model (online)
This project was done in third year summer break. This was a computational project and this was done under supervision of **Prof. Chitrasen Jena** from IISER Tirupati, India. I analyzed the centrality dependence of chemical freeze-out thermal parameters (Temperature, Baryon chemical potential, Strangeness chemical potential). The model that I employed for this project is the Statistical Hadronization Model, which assumes hadrons as non-interacting particles and uses statistical mechanics formalism to calculate the thermal parameters. To perform this, I used Root Framework and THERMUS C++ package.

Bayesian Neural Network (online)
This was a semester project. This project was done under the supervision of **Prof. Arunima Banerjee** from IISER Tirupati, India. This was also a reading project where I read about Bayesian neural networks (BNN) which are relatively new and more powerful tool than standard neural networks. In this project, I also read the research paper which uses BNN as a tool to predict instability times of compact planetary systems. I tried reproducing their results and testing their model SPOCK on solar system planets using REBOUND N-body simulator.

Protein Master Toolkit: ASSAP (offline)
This was a semester project. This was done under the supervision of **Prof. Hussain Bhukya** from IISER Tirupati. In this project, I had to create the front end of the protein toolkit which analyzes the given input structure or sequence of a protein. In this project, I had to use Javascript, HTML and Django (Python's web development framework)

Rapid Sky Localization of Electromagnetic Counterparts in GW Astronomy (offline)
This is my master's thesis project. This project is part of my master's thesis. This is being done under the supervision of **Prof. Anand Sengupta** from IIT Gandhinagar, India. This project was in collaboration with two other collaborators (apart from my supervisor): Lalit Pathak (PhD student, IIT Gandhinagar) and Amit Reza (NIKHEF, Netherlands). In this, we are extending the method for network likelihood calculation for GW parameter estimation (PE). This technique uses the Radial Basis Functions (RBF) interpolation technique and speeds up the likelihood calculation process compared to the traditional PE method. Currently, the manuscript is submitted to Arxiv.

PRESENTATIONS

Prompt sky localization of compact binary sources using mesh- free approximation (Slides)
LIGO India Telecon Presentation

Rapid Sky Localization of Electromagnetic Counterparts in GW Astronomy (Slides)
Master's Thesis Presentation

Statistical Hadronization Model (Slides)
Summer Project Presentation

Bayesian Neural Network (Slides)
Semester Project Presentation

Protein Master Toolkit: ASSAP (Slides)
Semester Project Presentation

PROJECT REPORTS

Statistical Hadronization Model (link)
Third Year Summer Break (May - July 2021)
Supervisor: Prof. Chitrasen Jena, Associate Professor, Indian Institute of Science Education and Research (IISER), Tirupati, India

Bayesian Neural network (link)
Semester Project (7^{th} sem) end sem report (August - November 2022)
Supervisor: Prof. Arunima Banerjee, Associate Professor, Indian Institute of Science Education and Research (IISER), Tirupati, India

Protein Master Toolkit: ASSAP (link)
Semester Project (8^{th} sem)(January - April 2022)
Supervisor: Dr. Hussain Bhukya, INSPIRE Faculty, Indian Institute of Science Education and Research (IISER), Tirupati, India

Rapid Sky Localization of Electromagnetic Counterparts in GW Astronomy (link)
Master's Thesis (May 2022 - April 2023)
Supervisor: Prof. Anand Sengupta, Associate Professor, Indian Institute of Technology (IIT) Gandhinagar, Gujarat.

ACADEMIC ACHIEVEMENT

- Eligible for INSPIRE (Innovation in Science Pursuit for Inspired Research) Fellowship by DST (Department of Science and Technology, Government of India). Certificate
- Cleared IISER Aptitude test to get admission into IISER Tirupati.

SCIENCE CAMPS AND WORKSHOPS

- Participated in VIJYOSHI CAMP (National Science camp) at IISc Bangalore. Certificate
- ICTS-TIFR summer school on Numerical Relativity 2023 (online participant).

PERSONAL DETAILS

-Date of Birth: 13/08/2000
-Hobbies: Playing cricket, Swimming
-Nationality: Indian
-Language Known: English, Hindi and Marathi

DECLARATION

I do hereby declare that the above information is true to the best of my knowledge.