ADITHYA A RAO

adithyarao3132001@gmail.com adithyarao3103.github.io github.com/adithyarao3103/

Education

5-year Integrated MSc | *Physics*

National Institute of Technology, Surat, India 2019 - 2024

- Masters Thesis - *Gribov Problem and Stochastic Quantization*
- Advisors - Prof. Laurent Baulieu & Dr. Vikash K. Ojha
- CGPA - 9.77 /10 ($\equiv$ 97.7%)
- University Gold Medalist

High School | *Physics, Chemistry, Mathematics, Computer Science*

Karnataka State Board of Secondary Education 2017 - 2019

Jnanaganga PU College, Udupi

- Grade - 97.5%
- Rank - 10 in Karnataka
- Top 1 percentile in India

Publications

V. K. Ojha, **A. A. Rao**, and S. D. Pathak, "Estimating the Age of Universe via Scalar Field," in Proceedings of the XXV DAE-BRNS High Energy Physics (HEP) Symposium 2022, 12-16 December, Mohali, India, vol. 304, S. Jena, A. Shivaji, V. Bhardwaj, K. Lochan, H. K. Jassal, A. Joseph, and P. Khuswaha, Eds., Singapore: Springer Nature Singapore, 2024, pp. 1015-1016. doi:10.1007/978-981-97-0289-3_272.

V. K. Ojha, **A. A. Rao**, and S. D. Pathak, "Interacting tachyonic scalar field II," 2023, doi: 10.48550/ARXIV.2305.00277. (**arXiv Preprint**)

Conference Presentations

V. K. Ojha, **A. A. Rao**, and S. D. Pathak. (2022), *"Estimating the Age of Universe via Interacting Tachyonic Scalar Field"*. XXV DAE-BRNS High Energy Physics Symposium 2022. Poster presentation.

Honors and Awards

2024 Young Scientist Participant, 73rd Lindau Nobel Laureate Meeting in Physics, one of 640 international young scientists.

2023 DAAD-WISE award, fully funded research project at FSU Jena, one of 130 Indian students.

2021 IASc, INSA, NASI - SRFP award, fully funded research project at PRL Ahmedabad, one of 100 Indian students.

2019 Department of Science and Technology, Government of India - INSPIRE award, for exceptional performance in high school examinations. Awarded to top 1% students of the country.

Relevant Technical Skills

Programming Languages: C++, C, MATLAB, FORTRAN, Python (ML/DL using PyTorch, NumPy, TensorFlow)

Data Analysis Tools: ROOT

Computer Algebra Systems: Mathematica, SymPy

Typesetting Tools: LaTeX, Microsoft Office

Version Control: Git, GitHub

Research Projects

Gribov Ambiguity and Stochastic Quantization (Master's Thesis) [Aug 2023 - May 2024]

External Supervisor: Prof. Dr. Laurent Baulieu, Sorbonne University, Paris
Internal Supervisor: Dr. Vikash K. Ojha, SVNIT, Surat.
Links: [Thesis][Certificate]

BFSS Model on the Lattice (DAAD-WISE project) [May 2023 - Jul 2023]

Supervisor: Dr. habil. Georg Bergner, Friedrich-Schiller-Universität Jena, Germany
Links: [Report][Project]

Particle Dark Matter: Existence And Constraints [May 2022 - Jul 2022]

Supervisor: Dr. Ranjan Laha, Center for High Energy Physics, Indian Institute of Science, Bangalore, India.
Links: [Report][Certificate]

Lepton Oscillations (IASc, INSA, NASI - SRFP project) [Jun 2021 - Dec 2021]

Supervisor: Prof. Srubabati Goswami, Senior Professor, Physical Research Laboratory (PRL), Ahmedabad, India.
Links: [Report][Certificate]

Statistical and Thermodynamic properties of Quark Gluon Plasma [Apr 2021 - Jun 2021]

Supervisor: Dr. Arvind Kumar, Dr. B R Ambedkar National Institute of Technology, Jalandhar, India.
Links: [Report]

Institute Mini-Projects

Research conducted as a part of the *mini-project* in the course curriculum.

Interacting Tachyonic Scalar Field as Dark Energy Candidate [Aug 2022 - Dec 2022]

Supervisor: Dr. Vikash K Ojha, Sardar Vallabhbhai National Institute of Technology, Surat, India.
Links: [Preprint]

Magnetic Monopoles [Jan 2022 - Apr 2022]

Supervisor: Dr. Vikash K Ojha, Sardar Vallabhbhai National Institute of Technology, Surat, India.
Links: [Report]

Dynamical Symmetries of the Kepler System [Aug 2021 - Dec 2021]

Supervisor: Prof. K N Pathak, Sardar Vallabhbhai National Institute of Technology, Surat, India.
Links: [Report]

Outreach Activites

2021-22 Head, **Physics Club of NIT Surat** (Member 2020-24), a club actively conducting events to impart knowledge and inculcate interest in physics in the young minds and the general public. (I also created the website for the club)

2020- Author, **thehavok.com**, writing science articles to make the scientific jargon accessible to even a non-academic.

References

Prof. Dr. Laurent Baulieu [baulieu@lpthe.jussieu.fr]
Sorbonne University, Paris, France

Dr. habil. Georg Bergner [georg.bergner@uni-jena.de]
Friedrich Schiller Universität Jena, Germany

Dr. Vikash K. Ojha [vko@phy.svnit.ac.in]
Sardar Vallabhbhai National Institute of Technology, Surat