Amresh Verma

Curriculum Vitae

Department of Physics
Ariel University, Ariel, Israel
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Email: amreshverma702@gmail.com
Nationality : Indian
Date of Birth: 12 December 1998

Education

2023-Present **Ph.D. Physics**

Ariel University, Israel
Thesis title: *Phenomenological Aspects of Cosmology.*
Thesis Advisor: Dr. Ido Ben-Dayan

2020-2022 **M.Sc. Physics**

Jamia Millia Islamia, New Delhi, India
CGPA : 9.26/10, *First Divison with Distinction.*
Master's thesis: *Study of Dark Matter-Dark Energy Interaction in the Light of Hubble Tension.*
Supervisor: Dr. Somasri Sen

2017-2020 **B.Sc.(Hons.) Physics**

West Bengal State University, Kolkata, India
Marks: 69.07 %, *First Division*

2016 **12th, Central Board of Secondary Education**

SHMD School, Jaigaon, India
Marks: 81.1 %, *First Division*

2014 **10th, West Bengal Board of Secondary Education**

Kalchini Hindi High School, Kalchini, India
Marks: 78.57 %, *First Division*

Skills

Softwares	Mathematica, Maxima
Programming Languages	Python, C, Fortran
Operating system	Linux, Windows
Langauges Known	English, Hindi, Bengali, Nepali

Publications

1. **Ben-Dayan I., Kumar U., Thattarampilly U., Verma A.**, *Probing The Early Universe Cosmology With NANOGrav: Possibilities and Limitations*, PRD, 108(10):103507, 2023

2. **Verma A., Ben-Dayan I. et al**, *Gravitational-wave background in bouncing models from semi-classical, quantum and string gravity*, JCAP, 09 (2024) 058
3. **Ben-Dayan I., Kumar U., Shimon M., Verma A.**, *Impact of Low ell's on Large Scale Structure Anomalies*, JCAP 02 (2025) 069

Conferences

Dec 2023 Oral presentation at Current Trends in Cosmology and High Energy Physics, CCSP, SGT University.

Apr 2024 Oral presentation at The 69th Annual Meeting of the Israel Physical Society.

Jul 2024 Poster presentation at CosmoVerse@Krakow 2024, Anomalies and Tensions in Cosmology.

Feb 2025 Flash Talk and Poster presentation at High Energy and the Cosmos Workshop, AGASS, Ariel University

Research Interest

My research interest is in Computational Cosmology. My research focuses mainly on Gravitational Waves, Inflation, Bouncing Models, etc. I am well-versed in Data Analysis techniques and I am also planning to incorporate Machine Learning in my research in future.

Internships/Workshops

July 2022 **IASTRO Summer Internship**, Instituto de Astrofísica e Ciências do Espaço (IA), Lisbon.

In this program we developed a research project as well as science communication projects, accompanied by researchers from the IA and the Faculties of Sciences of the Universities of Lisbon or Porto.

June 2022 **Machine Learning in Solar Physics and Space Weather**, IISER, Kolkata.

The workshop was an outcome of the Indo-Swedish SPARC project and was conducted in hybrid mode. The focus of this workshop was to introduce the application of advanced machine learning tools to the solar physics and space weather community.

Feb 2024 **SIGRAV International School 2024 - Measuring Gravity**, Vietri sul Mare, Italy.

The Italian Society for General Relativity and Gravitational Physics (SIGRAV) International School was dedicated to a comprehensive exploration of precision measurements in gravitational research. This school gave me a thorough overview of recent experiments and cutting-edge detection techniques across various gravitational measurement domains ranging from atoms up to the cosmos.

Master's Research Projects

A. **Study of Dark Matter-Dark Energy Interaction in the Light of Hubble Tension.**

I studied a cosmological model that involves interacting Dark Matter & Dark Energy where coupling between DE-DM is proportional to the density of DE and calculated the value of Hubble Constant in order to see if the Hubble Tension is somewhat alleviated.

Supervisor: Dr. Somasri Sen, Jamia Millia Islamia, New Delhi.

B **Exploring The Impact of Modifications of Gravity Law on Cosmological Observables.**

In this project, I studied the basis of linear cosmological theory of gravity with application to modified gravity and got familiarised with EB code, MGCAMB and also investigated the deviations from the standard cosmological model of a specific modified gravity model.

Supervisor: Dr. Noemi Frusciante, IA and Ciências ULisboa.

Certificates

2022 Data-driven Astronomy, The University of Sydney (Coursera).

2020 Advanced Course on Special Theory of Relativity by Prof. H.C. Verma, IIT Kanpur, India (Online Mode).

2014 Regional Science Olympiad, First Position.

Hobbies

Music, Programming, Philosophy
Art History, Mythologies, Poetry