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EVENT ORGANIZED BY DEPARTMENT OF PHYSICS
2025-2026 (EVEN SEM)

Guest Lecture Report

The **Department of Physics** organised a Guest Lecture titled **From Stargazing to Radio Astronomy: A Physicist's Guide** on **30/05/2026** at **10:00 am**, in the M.V. Jayaraman Auditorium.

[Dr. Arvind Balasubramanian: Starting the lecture]

On 30th May 2026, the Department of Physics organised a day of activities for students. In the morning session, a guest lecture titled *"From Stargazing to Radio Astronomy: A Physicist's Guide"* was held at the M.V. Jayaraman Auditorium and was attended by ~340 students. Mr Arun Kumar Panda gave the guest introduction. The talk was delivered by Dr Arvind Balasubramanian, a researcher at the Astrophysics department at the Indian Institute of Astrophysics (IIA), Bangalore. He shared valuable insights into the basics of observational astronomy; astrophysical transient studies, including FRBs, X-ray and gamma-ray bursts; gravitational-wave astronomy from binary black hole mergers; and the application of engineering knowledge in astronomy. The session ended at 12:15 pm with an interactive Q&A, making the day both inspiring and informative for all participants. A vote of thanks was given by Mrs Kavitha V, followed by club activity events and prize distribution for the club activity award winners by the guest.

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[Students of first year B.E. (ECE, ME, CH, CV, EEE, AE, AS Streams) attending the guest lecture]

Objectives of the Event

The primary objectives of the event were:

- To provide students with foundational knowledge of how systematic sky observations evolve into advanced astrophysical research.
- To familiarise students with phenomena such as FRBs, X-ray and gamma-ray bursts, and gravitational waves from binary black hole mergers.
- To demonstrate the relevance of engineering disciplines, viz. electronics, VLSI, IIoT, aerospace, mechanical, civil, and chemical, in advancing astronomical instrumentation and data analysis.
- To encourage students to see the connections between physics and engineering, fostering collaboration across domains.
- To motivate students to pursue innovative projects and future research opportunities in astronomy and astrophysics.

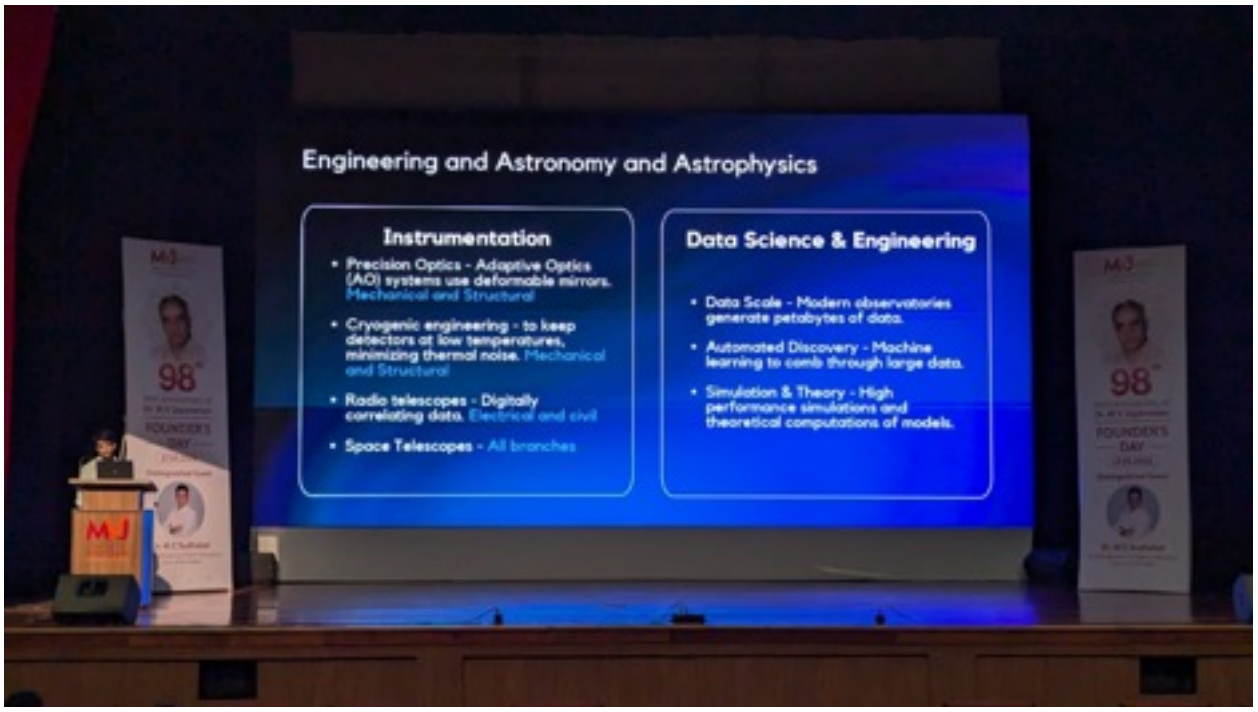
Event Overview

Morning Session: Guest Lecture on Stargazing to Radio Astronomy: A Physicist's Guide

The guest lecture held on 30th May 2026 provided a scientifically rich exploration of astronomy and its intersections with engineering. Dr Arvind Balasubramanian, researcher at the Indian Institute of Astrophysics (IIA), Bangalore, began by introducing the fundamentals of observational astronomy, laying the groundwork for understanding how systematic sky observations evolve into advanced astrophysical studies. He then delved into astrophysical transients such as fast radio bursts (FRBs), X-ray and gamma-ray bursts, and gravitational wave astronomy arising from binary black hole mergers, highlighting their importance in probing extreme cosmic events.

Some of the key points of the talk were;

1. **Foundations of observational astronomy:** Students gained an understanding of how systematic sky observations form the basis of modern astrophysical research.



[Dr. Arvind is discussing the potential applications of engineering knowledge in astronomy

2. **Astrophysical transients:** The lecture introduced phenomena such as fast radio bursts (FRBs), X-ray and gamma-ray bursts, and their role in probing extreme cosmic events.
3. **Gravitational wave astronomy:** Insights were shared on how binary black hole mergers produce detectable gravitational waves, opening new windows into the universe.
4. **Multispectral imagery applications:** Students learned how imaging across different wavelengths enhances data analysis and connects astronomy with engineering technologies.

[Discussion on the GW170817 detection due to a binary black hole merger]

5. **Engineering relevance:** The session highlighted how disciplines like electronics, VLSI, IIoT, aerospace, mechanical, civil, and chemical engineering contribute to telescope design, signal processing, and detector development.
6. **Interdisciplinary perspective:** The talk emphasised collaboration between physics and engineering, inspiring students to apply their technical skills to scientific discovery.
7. **Future outlook:** Students were encouraged to explore emerging trends in astronomy and astrophysics, aligning their learning with upcoming research opportunities.
8. **Student Involvement:** The session concluded with motivational guidance on how students can contribute - through academic research, internships, entrepreneurship, and interdisciplinary collaboration.

Outcomes and Impact

This lecture offered students a valuable glimpse into the future of astrophysical observations and encouraged them to explore roles in advancing astronomical instrumentation. The basic objectives that were met;

- **Strengthened scientific foundation:** Students gained clarity on observational astronomy and astrophysical transients such as FRBs, X-ray/gamma-ray bursts, and gravitational waves, enhancing their conceptual understanding of cosmic phenomena.
- **Interdisciplinary integration:** The lecture demonstrated how engineering knowledge in electronics, imaging, materials, and structural design directly supports astronomical research, making the content relevant across multiple branches.
- **Applied perspective:** By connecting multispectral imagery and radio astronomy with engineering applications, students learned how theoretical physics translates into practical systems and devices.
- **Research inspiration:** The interactive session motivated students to explore interdisciplinary projects and future research opportunities, fostering curiosity and innovation.

Conclusions

The guest lecture on *"From Stargazing to Radio Astronomy: A Physicist's Guide"* by Dr Arvind Balasubramanian effectively connected astronomy with engineering, offering students insights into observational techniques, astrophysical transients, and gravitational wave studies while emphasising the role of engineering in advancing these fields. The session inspired curiosity, highlighted interdisciplinary applications, and encouraged students to see their technical knowledge as a pathway to contributing meaningfully to frontier scientific research.

Report by:
Mr Arun Kumar Panda
Assistant Professor,
Department of Physics,

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