



ST JOSEPH'S UNIVERSITY, BENGALURU, 26-29 OCTOBER 2026

Organised by



Research Cell,
St. Joseph's University
Bengaluru

In Association With



**UNDER THE CORE RESEARCH GRANT OF
ANRF, INDIA**
(formerly DST/SERB)

Mentors

Prof. Arun Varma Thampan
Prof. Poulose Poulose

4 Day Workshop for Masters and Advanced Bachelor Students

Modern physics explores nature across vast length and energy scales: from the smallest fundamental particles to the largest structures in the universe. This workshop introduces students to key ideas in particle physics, astronomy, and cosmology, and highlights how these fields are deeply connected.

Programme

DAY 1 - 26 October 2026
How Do We Know What We Cannot See?
Evidence, measurement, and inference in modern physics.

09:30 - 11:00	Smallest vs largest scales, astrophysics and cosmology.
11:00 - 11:30	Tea Break
11:30 - 13:00	Physics at Small Scales: Matter particles, forces, symmetries
13:00 - 14:00	Lunch
14:00 - 16:00	Solar System - Stellarium: Descriptions - Hands-on
16:00 - 16:15	Tea Break
16:15 - 17:30	Particle Scattering Experiments - Preliminaries - Tutorials
17:30 - 18:30	Group discussion and reflection - An interactive session encouraging participant presentation, questions, discussion, and reflection.

DAY 2 - 27 October 2026
Learning from Data Part 1
Patterns in data as evidence for underlying physical processes.

09:00 - 11:00	Particle Physics Experiments - Part 1 Accelerators and Detectors; Interpretation of particle physics results
11:00 - 11:30	Tea Break
11:30 - 13:30	Stars and Galaxies: Details and Demos Part 1
13:30 - 14:30	Lunch
14:30 - 16:30	Particle Physics Hands on: Data Analysis Part 1
16:30 - 16:45	Tea Break
16:45 - 18:00	Particle Physics Experiments - Part 2 Signal vs Background



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Programme (continued)

DAY 3 - 28 October 2026

Learning from Data Part 2

Patterns in data as evidence for underlying physical processes.

09:00 - 11:00	Hands on - Stars and Galaxies - Data Analysis
11:00 - 11:30	Tea Break
11:30 - 13:30	Particle Physics Hands on: Data Analysis Part 2
13:30 - 14:30	Lunch
14:30 - 16:30	Stellar Graveyard: Compact objects /
16:30 - 16:45	Tea Break
16:45 - 18:00	The Standard Model of Particle Physics: Experimental Status

DAY 4 - 29 October 2026

Connecting the Smallest and Largest Scales

The interface between particle physics and cosmology

09:00 - 11:00	Hands-on - Counting Galaxies
11:00 - 11:30	Tea Break
11:30 - 13:30	The early Universe: Particle Physics in Cosmology Big Bang / Inflation/BBN/CMBR
13:30 - 14:30	Lunch
14:30 - 15:30	Particle Physics in Cosmology: BAU / Dark Matter
15:30 - 17:00	Hands-on - Darkmatter/Compact Objects/Lensing
17:00 - 17:30	Summing up and Valedictory
17:30 - 18:00	Tea and closing