

Indo - Japan Workshop on Extreme Plasma Phenomena in Universe

11th - 12th March 2025, ARIES Nainital

The first Indo-Japan workshop on Extreme Plasma Phenomena in the Universe at ARIES aims to build a platform to discuss multi-messenger astrophysics. The talks will cover the multi-messenger properties of transient objects such as supernovae and their remnants, cataclysmic variables, gamma-ray bursts, pulsars, pulsar wind nebulae, and outflow properties of cosmic rays. The energetics of charged particles and their relativistic outflows play a crucial role in producing broadband emission in these objects and also help us to explore the Galactic origin of cosmic rays. Relativistic outflows can create cosmic ray distributions on galactic scales and also lead to feedback mechanisms in galaxies.

Participation is by invitation only.

SOC

Shuta Tanaka
Jagdish C. Joshi
Wataru Ishizaki
Jeewan Pandey
Kuntal Misra

LOC

Jagdish C. Joshi
Jeewan Pandey
Kuntal Misra
Khushboo sharma
Ankita Khanra



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Program

Day 1 Tuesday March 11th

Session 1 (Chair: Jeewan Pandey)

09:50 – 09:55 **Shuta J. Tanaka**, Aoyama Gakuin University

“Opening”

09:55 – 10:00 **Manish K. Naja** (Director of ARIES), ARIES

“Opening”

10:00 – 10:45a **Jagdish C. Joshi**, *ARIES

“Pulsar Wind Nebulae as Ultra-high Energy Gamma-ray Sources”

10:45 – 11:30a **Shuta J. Tanaka**, Aoyama Gakuin University

“Stochastic Acceleration Model of Pulsar Wind Nebulae as a Solution to the Pair Multiplicity Problem”

11:30 – 12:15a **Wataru Ishizaki**, Tohoku University

“TBA”

Lunch break 75 min.

Session 3 (Chair: Jagdish C. Joshi)

13:30 – 14:15a **Kuntal Mistra**, ARIES

“VHE emission in GRBs”

14:15 – 14:30c **Anshika Gupta**, ARIES

“Multi-wavelength modeling of GRB 190829A”

Tea break 30min.

Session 2 (Chair: Kuntal Mistra)

15:00 – 15:45a **Tanima Mandal** (online), **IIT-KGP

“Joint Detection Prospects of Binary Neutron Star Mergers using CTA and Gravitational-Wave Detectors”

15:45 – 16:00c **Dhruv Jain**, ARIES

“Constraining the Rates and Beaming Angles of Gamma-Ray Bursts associated with Compact Binary Coalescences”

a. (40+5) min, b. (15+5) min, c. (12+3) min

*ARIES = Aryabhata Research Institute of Observational Sciences

**IIT-KGP = Indian Institute of Technology, Kharagpur

16:00 – 16:15c Sharma Khushboo, ARIES
“Prompt Emission phase in Gamma-Ray Bursts”

Day 2 Wednesday March 12th

Session 3 (Chair: Shuta Tanaka)

09:30 – 10:15a Jeewan Pandey, ARIES
“Magnetic Cataclysmic Variables”

10:15 – 10:35b Gurpreet Singh, ARIES
“X-ray Flares of Solar Type Stars”

Tea break 20 min.

Session 4 (Chair: Wataru Ishizaki)

10:55 – 11:40a Naveen Dukiya, ARIES

“Understanding the CSM asymmetries of Interacting Supernovae ASASSN-14il and 2021foa”

11:40 – 12:00b Monalisa Dubey, ARIES

“Unravelling the Progenitor's Properties of Long-plateau Supernovae”

12:00 – 12:20b Bavya Ailawadhi, ARIES

“Early Flash Ionization Signatures in Type IIP Supernovae”

Lunch break 70 min.

Session 5 (Chair: Jagdish C. Joshi)

13:30 – 14:15a Mahavir Sharma, *IIT-Bhilai

“Cosmic Ray Feedback in Galaxies”

Tea break 15min.

Session 6 (Chair: Mahavir Sharma)

14:15 – 15:00a Abhijit Roy (online), **GSSI

“Galactic Powerhouses: The Quest for High-Energy Cosmic Ray Origins”

15:00 – 15:45a Martina Cardillo (online), ***IAPS,

“PeVatron Fiction (Everything Everywhere All at PeV)”

15:45 – 15:50 Jagdish C. Joshi, ARIES

“Closing”

*IIT-KGP = Indian Institute of Technology, Bhilai

**GSSI = Gran Sasso Science Institute

***IAPS = Institute for Space Astrophysics and Planetology

SOC: *Shuta Tanaka, Jagdish C. Joshi, Wataru Ishizaki, Jeewan Pandey & Kuntal Misra*

LOC: *Jagdish C. Joshi, Jeewan Pandey, Kuntal Misra, Khushboo Sharma, & Ankita Khanra*

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