First Announcement

IUCAA International Conference
"Stellar Variability: Taking the Pulse of the Universe"

November 24-28, 2025

Venue: Inter-University Centre for Astronomy & Astrophysics (IUCAA)

Pune, Maharashtra, India

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Dear Colleagues,

We are pleased to announce the IUCAA International Conference entitled: "Stellar Variability: Taking the Pulse of the Universe", to be held at IUCAA, Pune, Maharashtra, India, between November 24-28, 2025.

Stellar variability, both intrinsic as in pulsating stars and extrinsic as caused by binary motions, plays a crucial role in a wide range of topics in modern astrophysics and near-field cosmology. This conference will explore the astrophysics of stellar variability and the use of variable stars as stellar population tracers and distance indicators. It will provide a broad overview of the field as well as bring networking opportunities for Indian astronomers with the international community to fully exploit the large astronomical datasets from the recent and upcoming wide-field variability surveys.

Important Dates:

Registration Form deadline: **June 30, 2025**
Abstract submission deadline: **June 30, 2025**
Registration Fee portal opens: **May 15, 2025**
Program announcement: **July 31, 2025**
Registration fee deadline: **August 15, 2025**
Hotels/Guest House booking deadline: **August 15, 2025**

Conference website: **https://web.iucaa.in/ws/~SVTPU2025/index.html**

Conference email: **stars@iucaa.in**

Register now: https://web.iucaa.in/ws/~SVTPU2025/registration.html

Registration Fees: There will be a registration fee for this conference, which will cover all meals and conference dinner.

Foreigners : 10,000 INR

Indian Faculties : 10,000 INR

University Associates: 5,000 INR

Indian Students/Postdocs: 2,500 INR

Confirmed Invited Speakers:

Richard I. Anderson (EPFL, Switzerland)

Earl P. Bellinger (Yale University, USA)

Aru Beri (IISER Mohali, India)

Giuseppe Bono (University of Rome Tor Vergata, Italy)

Santi Cassisi (INAF Teramo, Italy)

Márcio Catelan (Pontificia Universidad Católica De Chile, Chile)

Gisella Clementini (INAF Bologna, Italy)

Laurent Eyer (University of Geneva, Switzerland)

Caroline Huang (CfA Harvard, USA)

Željko Ivezić (University of Washington, USA)

Amanda Karakas (Monash University, Australia)

Barry Madore (Carnegie Inst. Observ., USA)

Marcella Marconi (INAF Capodimonte, Italy)

Clara E. Martínez-Vázquez (NOIRLab, USA)

Stanimir Metchev (University of Western Ontario, Canada)

László Molnár (Konkoly Observatory, Hungary)

Joe P. Ninan (TIFR, India)

Grzegorz Pietrzyński (CAMK, Poland)

Zdenek Prudil (ESO, Germany)

Saurabh (ARIES, India)

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Nitin Ohol

Ramesh Karagani

Rajesh Parmar

Varsha Surve

Alok Mishra

Prashant Nishad

Scientific Rationale:

Massive time-domain astronomical surveys in the last decade have revolutionised our knowledge of the properties, physical nature, and the very existence of several different classes of variable stars known to date. Stellar variability, both intrinsic as in pulsating stars and extrinsic as caused by binary motions, plays a crucial role in a wide range of topics in modern astrophysics and near-field cosmology. Variable stars have been extensively used to explore various aspects of star-planet formation and evolution, applied to Galactic and extragalactic archaeology studies and have played the key role in establishing the cosmic distance scale. Thanks to wide-field variability surveys (e.g. Gaia, TESS, OGLE, ASAS-SN, CRTS, ZTF, VVV , VMC), the numbers of variable stars have increased exponentially, providing both opportunities for new discoveries as well as challenges associated with dealing with a plethora of data. The latest Gaia Data Release 3 (DR3) has published light curves of more than 10 million variable sources and DR4, expected in late 2026, will increase the number statistics by at least a factor of two. At the same time, Vera C. Rubin Observatory's Legacy Survey of Space and Time (LSST) will have started operations further expanding the parameter space for multi-wavelength variable stars studies to fainter magnitudes and larger distances. Stellar variability studies will undoubtedly be at their zenith in the next few years making this conference very timely.

The conference will explore the astrophysics of stellar variability and the use of variable stars as stellar population tracers and distance indicators. It will provide the opportunity for young researchers to get a broad overview of this exciting field, and connect Indian astronomers with the international community providing new networking opportunities to fully exploit these unprecedentedly large astronomical datasets on the horizon.

Topics to be covered:

- Stellar variability across the Hertzsprung-Russell diagram
- Stellar evolution and Pulsation physics - structure and atmospheric dynamics
- Stellar models and numerical simulations
- Stellar multiplicity – binary stars and physical parameter determinations
- Galactic archaeology and near-field cosmology with variable stars
- Extragalactic distance scale with variable distance indicators
- Upcoming large surveys and observational facilities for variable star research

Please forward this announcement to your colleagues who may be interested in this conference.

Best regards – Marina Rejkuba, Devendra K. Ojha, Anupam Bhardwaj