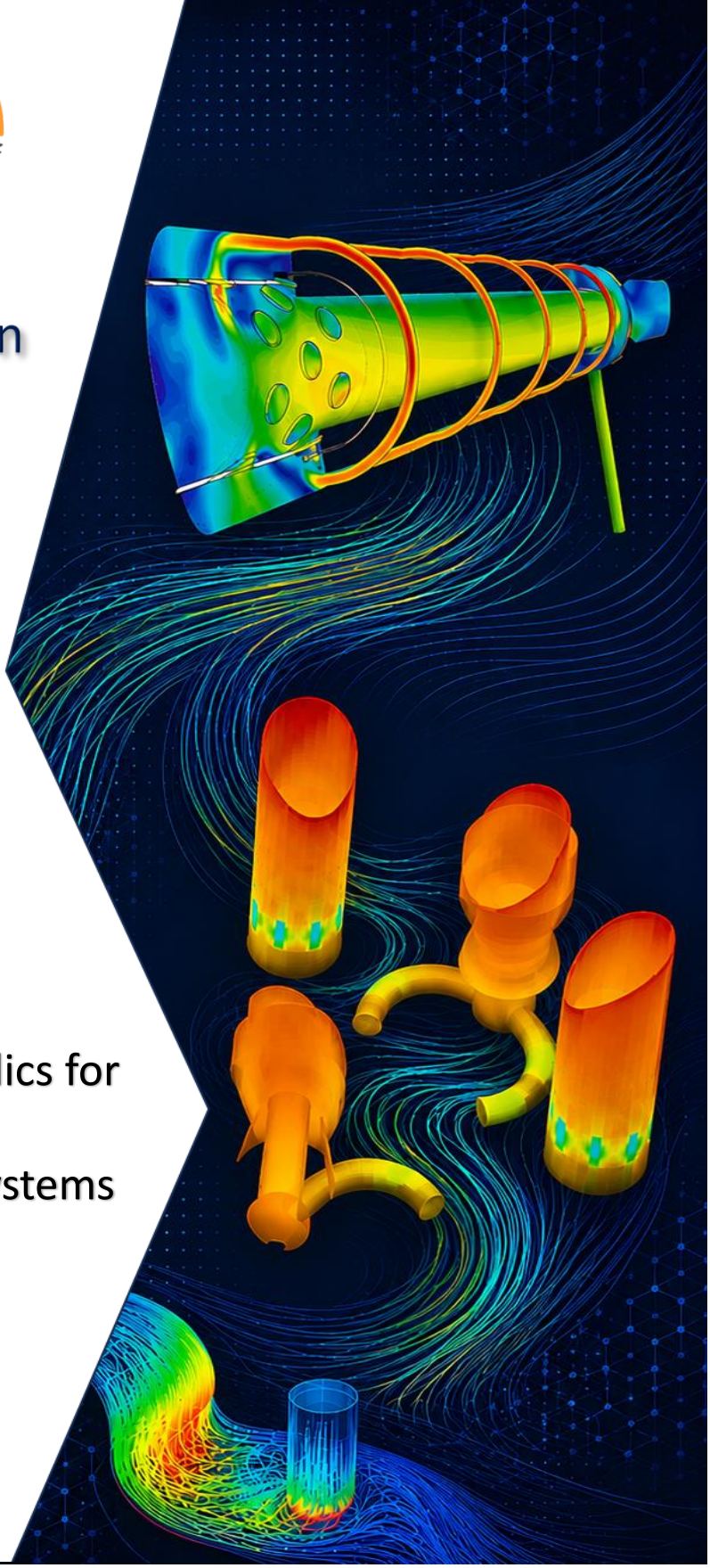
National Conference on

Advances in Reactor Thermal Hydraulics (ARTH-2027)

Advancing Thermal-Hydraulics for Safe, Sustainable and Next-generation Nuclear Systems



17-19 February, 2027

DAE Convention Centre, Anupuram, Tamil Nadu

Sponsored by

In association with

Organized by

Indira Gandhi Centre for Atomic Research, Kalpakkam
Department of Atomic Energy, Govt of India

Invitation to ARTH-2027

It gives us immense pleasure to extend a warm and cordial invitation to you to the **2nd National Conference on Advances in Reactor Thermal-Hydraulics (ARTH-2027)**.

Thermal-hydraulics is at the heart of every nuclear reactor, governing the movement of heat and fluids that underpin safe, reliable, and efficient operation. With rapid advances in computation, experimental diagnostics, artificial intelligence, and innovative reactor concepts, the field is entering an exciting new era of discovery and innovation.



ARTH-2027 provides a premier platform for scientists, engineers, academicians, students, regulators and industry professionals to exchange ideas, present cutting-edge research and strengthen collaborations in reactor thermal-hydraulics and allied disciplines.

The conference will feature keynote lectures, invited talks, technical paper presentations, poster sessions, and discussions on multidisciplinary topics covering the latest developments in nuclear thermal hydraulics, reactor safety, computational modeling, experimental techniques and advanced reactor technologies.

We look forward to your esteemed presence and active participation in making ARTH-2027 a grand success and a memorable scientific gathering.



Chairman
Shri Sreekumar G Pillai
Director, IGCAR



Convenor
Dr U Partha Sarathy
Associate Director,
Nuclear Systems Design Group,
RDG, IGCAR

Technical Tracks

Track 1 — Fundamental Phenomena and Modelling

- Two-phase flow regimes and heat transfer
- Boiling and condensation
- Critical heat flux, DNB and post-CHF
- Interfacial area transport and closure relations
- Turbulence and heat transfer modelling including low-Prandtl number fluids
- Flow instabilities and nonlinear dynamics
- Natural circulation and scaling philosophy
- Fluid–structure interaction
- Flow and heat transfer in process equipment
- Multiphase flow in complex geometries.

Track 2 — Computational Thermal Hydraulics, Verification, Validation and uncertainty quantification

- System code development and application
- Subchannel analysis
- Single-phase CFD
- Multiphase CFD and interface-capturing methods
- Multiscale coupling of CFD and system codes
- Surrogate and reduced-order models
- Multiphysics coupling (neutronics–TH–structural)
- HPC, GPU acceleration and advanced numerics
- Verification and Validation
- International benchmarks and collaborative validation exercises
- Uncertainty methodology development

Track 3 — Experimental Facilities & Methods

- Measurement techniques and flow visualisation
- Scaling methodologies, separate-effect and integral-effect testing
- High-resolution data for CFD assessment and validation
- Rod bundle and subassembly experiments
- CHF and post-CHF experiments
- Advanced measurement techniques for multiphase flow
- Diagnostics for liquid metals and opaque fluids
- Experimental databases, data preservation and uncertainty quantification

Track 4 — Water-Cooled Reactor Thermal Hydraulics, Operation and Safety

- BWR, PWR and VVER
- PHWR
- Research reactors
- Transient and accident analysis
- Fuel safety, acceptance criteria, accident tolerant fuel and advanced fuel designs
- Passive safety systems: performance and reliability
- Regulatory requirements and licensing practice
- Operating experience and plant life management
- Risk-informed safety analysis and probabilistic safety assessment
- Spent fuel pool thermal hydraulics and safety
- Thermal-hydraulic aspects of plant ageing, uprating and life extension

Track 5 — Liquid Metal and Fast Reactor Thermal Hydraulics

- Core and subassembly TH, wire-wrapped bundles
- Pool hydraulics, thermal stratification and striping
- Free-surface phenomena and gas entrainment
- IHX, steam generators, DHX and sodium–water reaction
- operating experience, safety and future fast reactor systems
- Lead and LBE thermal hydraulics
- Decay heat removal and natural circulation in liquid metal systems

Track 6 — Severe Accidents and Containment

- Scenarios, progression and source term
- In-vessel corium behaviour and retention
- Ex-vessel corium interaction, MCCI and coolability
- Fuel–coolant interaction
- Debris bed formation and coolability
- Containment TH, hydrogen generation, transport, combustion and mitigation
- Severe accidents in fast and advanced reactors
- Fission-product transport and source-term estimation
- Mitigation, management and design features

Track 7 — Advanced and Innovative Nuclear Reactor Thermal Hydraulics

- Thermal hydraulics of SMRs
- High-temperature gas-cooled reactors
- Molten salt reactors
- Supercritical water-cooled systems
- Accelerator Driven Systems
- Microreactors and space reactors
- Fusion blanket and divertor thermal hydraulics
- Integrated energy systems and non-electric applications

Track 8 — Special Topics

- Thermal Hydraulics in H_2 Production/Transport
- ML-augmented closure and turbulence models
- Data assimilation and inverse problems
- Emerging thermal hydraulics issues
- Digital twins, online monitoring and diagnostics
- Other topics

ARTH-2027

Chairman

Sreekumar G Pillai, IGCAR

Co-Chairman

K. Natesan, RDG, IGCAR

Convenor

U. Partha Sarathy, RDG, IGCAR

Co-Convenor

S. Chandramouli, FRTG, IGCAR

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ABSTRACT SUBMISSION

- All extended abstract submissions should conform to the format of the template available in the website https://www.arth2027.in
- The extended abstract should be within 2 to 4 pages.
- All submissions are through email only (arth2027@igcar.gov.in).
- Submission should be original and unpublished work. The similarity index should be less than 20 %. The work should not be under review elsewhere.

Important Dates

Extended Abstract Submission	5th December, 2026
Review and acceptance of the abstract	24th December, 2026
Final Extended Abstract Submission after Review	15th January, 2027
Registration	1st February, 2027

Registration Fees and Payment Details

The registration fee can be paid by Electronic Money Transfer as per the following details:

Category	Fee (INR) including GST
Students	2,000
Academic/Research institutes	8,000
Industries	15,000
DAE units *	NIL
Accompanying person	5,000

Bank/NEFT details
Bank name: Canara Bank
Branch: Kalpakkam, TN
Name: ARTH2027
A/C no: 110342122972
IFSC Code: CNRB0001440
MICR Code: 600015116

The registration fee covers conference kit & proceedings, lunch, and refreshments during the conference period, but does not cover travel and accommodation charges.

* DAE delegates need to register with approval of competent authority at their respective organization.

Registration

Once the payment has been done, the participants need to fill the registration form for their confirmation at the following link. https://forms.gle/QsRMcDaTbtGRhmSr8



Venue

DAE Convention Centre, Anupuram, Tamilnadu

The DAE Convention Centre is located in the secure Anupuram Township near Kalpakkam in Tamil Nadu. During February, the weather is highly pleasant, dry, and comfortable with average temperatures ranging from a cool 21°C to 31°C.

Accommodation

Accommodation in Anupuram DAE guest houses is limited and allocated on a first-come, first-served basis on payment. In addition, there are several star rated hotels in Mahabalipuram, a heritage town, which is ~10 Km from the Conference Venue Registered participants who wish to avail accommodation should write to arth2027@igcar.gov.in with "**Accommodation**" as the subject line and also mention the registration details in the body of the email.

Travel Assistance

Participants are kindly requested to make their own travel arrangements for attending the ARTH-2027

About the venue



Anupuram

Set amidst the serene **Coromandel Coast**, Anupuram offers a distinguished setting for academic, scientific, and technical conferences. Located near the **Kalpakkam campus of the Department of Atomic Energy**, the region brings together scientific excellence, technological endeavour, and the rich cultural heritage of Tamil Nadu.

The venue is conveniently connected to **Chennai**, about **65 km from Chennai International Airport** via the scenic **East Coast Road (ECR)**. **Chennai Central Railway Station** is about **75 km** away, while **Chengalpattu Junction**, the nearest major railhead, is about **25 km** from the venue.

Nearby **Kalpakkam Beach** offers a peaceful setting for relaxation and informal interaction. A short drive away, **Mahabalipuram**, a **UNESCO World Heritage Site**, showcases the architectural legacy of the Pallava era through its iconic **Shore Temple**, **Pancha Rathas**, and remarkable rock-cut monuments.

With its distinctive combination of **scientific heritage, cultural significance, natural surroundings, and convenient connectivity**, Anupuram provides an inspiring setting for meaningful professional interaction and a memorable conference experience.