IAHR
AIRH

International Association for Hydro-Environment Engineering and Research

Hosted by
Spain Water and IWHR, China

IAHR 2024

32nd Symposium on

Hydraulic Machinery and Systems

September 11-14, 2024

175 YEARS OF IIT ROORKEE
Estd. 1847

Department of Hydro and Renewable Energy

Department of Mechanical and Industrial Engineering

Indian Institute of Technology Roorkee, India

Department of Hydro and Renewable Energy and Department of Mechanical and Industrial Engineering are delighted to announce that the 32nd Symposium on Hydraulic Machinery and Systems will be held in Roorkee, India, during September 11 – 14, 2024.

Hydropower is a reliable, versatile, and low-cost source of clean electricity generation and responsible water management. Hydropower plants are helping to accelerate the clean energy transition, providing essential power, storage, flexibility, and climate mitigation services. Hydropower is also a key asset for building secure, clean electricity systems and reaching global net-zero targets. Hydraulic machinery is an essential component of a hydropower plant to generate electricity. It is always vital to share current knowledge on research and development, including numerical analysis, design, operation, and monitoring of hydraulic machinery and systems. Research and development from academia and industry have constantly been improving the hydraulic turbine and components design.

The 32nd symposium on hydraulic machinery and systems offers an opportunity for academic researchers and industrial experts from all over the world to share recent advances in theoretical, experimental, and computational research as well as the challenges faced by the industry.

Feb 10

IMPORTANT DATES

Sept 11 - 14 2024	Symposium Dates
~~Jan 20~~ 2024	Abstract submission deadline
Feb 28 2024	Acceptance notification of abstract
Apr 30 2024	Full length paper submission
May 31 2024	Acceptance notification for oral presentation
Jun 20 2024	Revised full length paper submission
Jul 20 2024	Acceptance notification for revised paper
Jun 01 2024	Registration Opening

Themes

1. **Intake systems**

   Intake systems of a hydropower plant, including diversion structure, intake gate, trash rack, desilting structure, water conductor system, main inlet valve, surge tank, fatigue loading in penstock, hydraulic transient, etc.

2. **Hydraulic turbines**

   Hydraulic turbines, such as spiral casing, stay vane, guide vane, runner, labyrinth seals, and draft tube. The potential areas of interest are design and optimization, multidisciplinary design optimization, unsteady flow phenomena, performance prediction and enhancement, erosion and cavitation flow, etc.

3. **Pump turbines**

   Centrifugal pump, pump as turbines, reversible pump turbines, including its design, optimization, performance, cavitation, vibration, phenomena in pumping and turbine mode, etc.

4. **Hydropower**

   Sustainable development and challenges in the hydropower projects, including small hydropower, mini and micro-hydro, decentralized development, load flexibility, environmentally friendly turbine design, innovations in sustainable hydro, and energy-efficient application, etc.

5. **Multiphase flow**

   Two or more phases of flow study in the hydraulic machinery, including cavitation, erosion, aeration, synergic effect, etc.

6. **Vortex breakdown**

   Vortex breakdown in hydraulic machinery, including trailing edge vortex, leading-edge vortex, inter blade vortex, draft tube, etc.

7. **Recent measurement techniques**

   Recent measurement techniques used in hydropower plants, including measuring efficiency, pressure, velocity, strain, and vibration. The section also focuses on the measurement techniques of suspended sediment and hydro abrasive erosion in the hydraulic machinery.

8. **Computational fluid dynamics (CFD)**

   Related to numerical techniques used in hydraulic machinery. The potential area of interest is high-quality CFD simulations, development of numerical models, turbulence modeling, detached eddy simulations, large-eddy simulations, direct numerical simulations, etc.

9. **Fluid-structure interaction and fatigue loading**

   Experimental or numerical analysis topics, including fluid-solid interaction, vibration, resonance, damping, stress-strain measurement, crack development, estimating fatigue lifetime, finite element method, etc.

10. **Ocean hydro machinery**

    Wave energy, tidal energy, and marine current energy topics. It focuses on the ocean hydro types of machinery mainly used to convert the ocean hydropower into mechanical energy to generate electricity finally.

11. **Energy storage and flexibility**

    Hydropower energy storage, market, scheduling, energy management, transient operations such as load variation, start-stop, load rejection, no-load, runaway. Energy generation and management with multiple turbines, load sharing, ancillary services, load ramping are potential areas of interest.

12. **General topics**

    Not covered in the above sections and are explicitly in the context of hydropower and hydraulic machinery e.g., recent manufacturing techniques for hydraulic turbines, refurbishment, life assessment, turbine testing, calibration method, prototyping, scaling, turbine blade material and metallurgy, data acquisition and data processing.

ABSTRACT AND PAPER SUBMISSION

Review of abstract

The submitted abstract will be reviewed by the organizing and scientific committees. The review criteria are based on the symposium's scope, quality, and depth of the scientific results (expected), methodology, and format guidelines.

Abstract format

- The abstract should describe the background of research work, methods, and expected results.
- The length of the abstract should be limited to 250-400 words.
- The paper size should be A4.
- The font type should be "Times New Roman" with 12pt size and 1.5 paragraph line spacing.
- The abstract should be submitted in *.pdf format before the deadline.

Instruction for full paper submission

The proceedings of the 32nd IAHR Symposium on hydraulic machinery and systems will be published in the Suitable Journal/Conference series.

Preparing paper

Author-supplied PDFs for all online and print publications, shall be according to the journal/conference series guidelines and templates. Authors are asked to prepare their papers using Microsoft Word or LaTeX, and then convert these files to PDF. Instructions on preparing the paper and templates can be found on the symposium Website.

It is important to ensure that while submission, the paper is in its final form, ready for publication, and has been thoroughly proofread. Journal may not copy edit papers and will not send out author proofs before publication. Please note: post-publication changes are not usually permitted unless there are exceptional circumstances; therefore, it is requested to check your paper for errors.

Paper format

When preparing your paper, ensure that you follow the author guidelines, which are as follows:

- The paper size is European A4.
- Margins are 4cm (top), 2.5cm (left and right) and 2.7cm (bottom).
- The paper includes the author's name and affiliation (full address, including country).
- There are no page numbers, or headers and footers, within the paper.
- The PDF is free of formatting errors (e.g., corrupt equations, missing or low-resolution figures), since converting Word to PDF can introduce formatting errors.
- Text is single-spaced, not double-spaced.
- The PDF file is editable and not password protected.
- All pages are portrait (landscape pages should be rotated).
- Reference lists are checked for accuracy. References can only be linked via Crossref if they are correct and complete.
- Figures are placed within the text, not collected at the end of the document.
- A thorough proofread is conducted to check the standard of English and ensure wording is clear and concise.

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- Zulfequar Ahmad (IIT Roorkee, India)

VISA RELATED

Visa

The authors themselves are responsible for obtaining a visa to travel to India. The organizing committee will issue an invitation letter to the authors, who must obtain a visa. Authors must write an email to the organizing committee explicitly indicating the requirement. Authors/participants must check with the Indian embassy in your home country for the required documentation and the invitation letter (if there is a specific format or text requirement). It is also important to indicate/confirm the mode of the invitation letter, e.g., (1) letter via email digitally signed, (2) letter via email – physically signed scan copy, and (3) completely physical letter via post. For option 3, physical letter via post, the author/participant will have to pay the actual postal fees. Postage charges vary from country to country; hence, they will be communicated individually via email during the invitation letter preparation.

Please visit the following websites, which may be helpful for the visa process.

- Ministry of External Affairs (https://www.mea.gov.in/)
- Bureau of Immigration, Ministry of Home Affairs (https://boi.gov.in/)

For more details regarding Visa and travel, please contact:

Lodhi Air Tour & Travels Pvt Ltd.
Email: ajaylodhi@lodhitours.com
Tel: +91-9810307246, +91-1204545375

REGISTRATION FEE

Conference fee

Registration category	Early fee (before July 31, 2024)	Standard fee (Aug 01 – 31, 2024)	Late fee (Sep 01 – 09, 2024)
Delegate (Non IAHR member)	INR 54,000	INR 58,500	INR 63,000
Delegate (IAHR member)	INR 45,000	INR 49,500	INR 54,000
Student/Young Professional	INR 36,000	INR 40,500	INR 45,000

1. Delegates and students/young professionals from SAARC member countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) and low-income countries get a 50% price reduction from the listed fee. Check this list to see if you qualify for "Low-income countries" pricing: IAHR list of regions, countries, and income levels
2. The fee includes participation at all conference sessions, lunch meals, coffee/tea breaks, and Gala dinner.
3. The registration fee for the companions would be INR 9,000.

Travel Information

Roorkee is a city in North India and spread over a flat terrain under Shivalik Hill of Himalayas. The city is developed on the banks of the Ganges Canal, its dominant feature, which flows from north-south through the middle of the city. It is well connected with New Delhi, the capital of India, by train and road. The nearest domestic airport is at Dehradun, about 60 km from Roorkee, while the International (IGI) airport is at New Delhi, about 197 km from Roorkee. A cab takes about four hours to travel from IGI airport to Roorkee and about one and half hours from Dehradun airport to Roorkee.

How to reach Roorkee

International travel by Air : The near by major international airport is New Delhi Airport (IGI Airport New Delhi) Airport Code- DEL which connects New Delhi (India) to world.

The near by domestic Airport is Dehradun Airport – Airport Code- DED

After reaching New Delhi, India delegates/ participants may follow the A or B or C for domestic/ local travel in india.

A. Domestic travel by Air :

New Delhi Airport (IGI Airport New Delhi) Airport Code- DEL to Dehradun Airport – Airport Code- DED

Flight Duration IGI Airport New Delhi to Dehradun Airport - 55 Minutes

Dehradun Airport to Roorkee city Distance by road- 70 km. Duration-1hrs.30 min by Road.

B. By Road-

Distance New Delhi Airport to Roorkee city– 197 km Duration-3 Hrs 20 Minutes

C. By Train-

Travelling to Roorkee is easy thanks to the railway connectivity. The station of the city is named ROORKEE and its station code is RK. The station takes care of all the basic amenities of the passengers. The station is well-connected to India's capital New Delhi

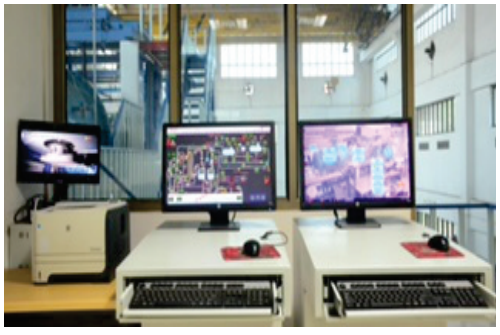
Accomodation at IIT Roorkee and Roorkee City

Limited accommodation in the Guest houses in the IIT Roorkee campus shall also be available.

- NC Nigam Guest house
- KIH Guest house

About Indian Institute of Technology Roorkee (Venue)

Indian Institute of Technology Roorkee is among the foremost institutes of national importance in higher technological education and engineering, basic and applied research. Since its establishment, the Institute has played a vital role in providing the technical workforce and know-how to the country and pursuing research. The Institute ranks amongst the best technological institutions globally and has contributed to all sectors of technological development. It has also been considered a trend-setter in the area of education and research in the field of science, technology, and engineering. The Institute is celebrating its demisemiseptcentennial (175 years) of establishment during 2021-22.

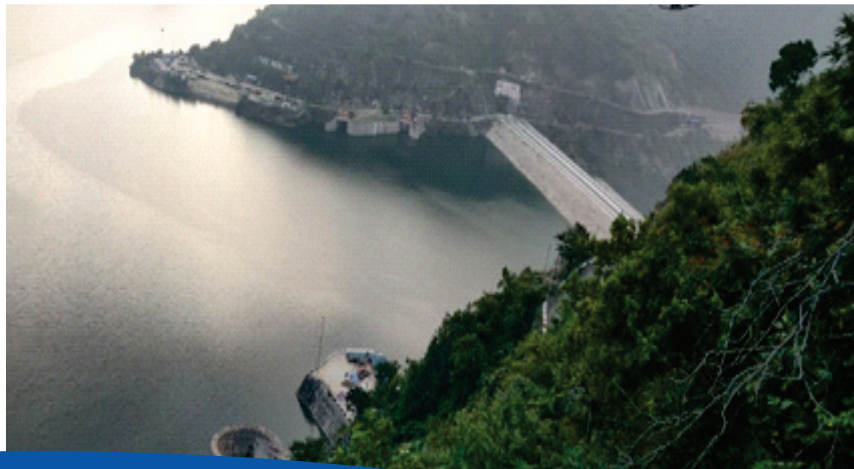


Technical tour

Chilla Hydropower Station

Chilla Hydro Power Station is a run of river scheme constructed on river Ganga 5 km upstream of holy town Hardwar and is situated in District Pauri Garhwal of Uttarakhand state. The scheme consists of a 312 m long, 11.5 m high gated diversion barrage at Pashulok, about 4 km downstream of holy town Rishikesh. Four generating units have vertical Kaplan turbines directly coupled with the synchronous generator. This Power Station was commissioned in the year 1980-81.


Taj Mahal



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