

Application



The target participants are junior as well as experienced scientists and engineers in the broad field of nuclear sciences, engineering and technologies.

The application form should be filled out online at: <http://www.fjohss.eu>

Should there be any problem with the online registration, please contact: fjoh@cea.fr

Application deadline: May 20th, 2024

Full Registration fees: €2200

Information for payment of the fees will be provided after review of the applications.

The fees cover: lectures, class notes, meals and accommodation at Hotel Novotel Pont-de-l'Arc from August 20th evening to August 30th, 2:00 pm.

The fees do not cover travel expenses.

A small number of **fellowships** will be available for qualified candidates. A fellowship covers the amount of €1100, the same amount of €1100 having to be financed by the applicant or his/her employer. These fellowships are primarily intended for candidates from developing countries. Requests should be motivated.

All applicants are required to provide a short curriculum vitae, which will be used for selection purposes.

The FJOH School considers that the 2024 program corresponds approximately to **3-4 ECTS credits** of post graduate-level course work in Nuclear Engineering.

Selection by the FJOH School organizers is final.

Partial participations are not accepted.

Information

Key dates

May 20th, 2024: Application deadline

June 10th, 2024: Notification to applicants

August 20th, 2024, 7:00 pm: Welcome of the participants with a get-together dinner at the Hotel Novotel Pont-de-l'Arc

August 21st, 2024, 9:00 am: Start of the school lectures

August 30th, 2024, 1:00 p.m.: End of school

Location

Aix-en-Provence, FRANCE



For more information, please visit our web site:

www.fjohss.eu

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- **Dr. Harri Tuomisto** (Fortum Power, Finland)
- **Pr. Gert Van den Eynde** (SCK-CEN, Belgium)
- **Dr. Nicolas Waeckel** (EdF retired, France)

2024



"Physics, Fuels and Systems"

Innovative Approaches for Streamlining the Design, Deployment, and Operation of Near-term and Emerging Reactors

Jointly organized by the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (France) and the Karlsruhe Institute of Technology (Germany)

August 21st > 30th, 2024

Photo : réacteur NUWARD SMR / EDF 2021



Questions? Please contact the FJOH Secretariat at fjoh@cea.fr

Programme Outline



See www.fjohss.eu
for an up-to-date version

Lecturers



Objectives



Description



Innovative Approaches for Streamlining the Design, Deployment, and Operation of Near-term and Emerging Reactors

Lectures

1. Introduction

🕒 2 h

The Broad Challenges of Accelerating Research & Innovation to Turn Conceptual Reactors into Operating Reactors

Tbc

2. Reactor Physics

🕒 6 h

2.1 From Legacy to Current LWR Modelling Methods & Industry Practices, Lessons Learned from Plant Data and Operation

M. Ouisloumen (Westinghouse EC)

2.2 Advanced Methods for Fast Reactor Core Simulations: How to Balance Modelling Trade-offs

J.-F. Vidal (CEA)

3. Thermo-Hydraulics

🕒 6 h

3.1 Optimal Strategies for Assessing Safety System Response in LWR Transients: From a Qualitative Phenomenological Description to a Quantitative Evaluation

C. Vazquez-Rodriguez (FZJ)

3.2 Multiphase CFD: A Powerful High-fidelity Tool for Simulating Complex Flow Situations in LWRs

L. Vyskocil (UJV)

3.3 Advantages and Limitations of Coupled-code Simulations for Analysing Accident Scenarios in Water-cooled SMRs

K. Zhang (KIT)

4. Fuel Elements

🕒 6 h

4.1 From Legacy to Current Modelling Methods & Industry Practices and Gaps

R. Largenton (EDF)

4.2 Advanced Methods and High-fidelity Tools

R. Masson, B. Michel (CEA)

4.3 Hybrid Approaches for Acceleration: The Example of Accident Tolerant Fuels (ATF)

P. Xu (INL)

3. Integration, Coupling, Safety, Supply Chain Issues: Expectations and Acceleration Levers for Various Applications

🕒 10 h

5.1 Capitalizing on Existing Knowledge to Speed Up the Design and Deployment of ARCHEOS, a Nuclear Thermal Generator

F. Morin (CEA)

5.2 From the SMART to the i-SMR concept: Relying on Simplifications and on High-Fidelity Multi-Physics Calculations for Optimisation

D. Lee (UNIST)

5.3 Pre-Licensing of the MYRRHA Multipurpose Accelerator Driven System

Tbc (SCK.CEN)

5.4 A Fast-track Approach for Licensing and Building of a Molten Chloride Salt Fast Reactor

L. Tardieu (STELLARIA)

5.5 New Technologies as Acceleration Levers for Nuclear

A. Iuvara (CAELUS)

Seminar

🕒 2 h

Group Activities - Serious Games

🕒 6 h

Technical Visits

The main objective of the FJOH-2024 edition is to provide the school participants with a working knowledge of innovative approaches that can help streamline the design, deployment or operation of new reactors. The lectures will lay emphasis on how classical as well as advanced modelling methods that can be combined, together with expert knowhow, in order to achieve one of these goals while avoiding over-engineering or premature optimisation. Illustrations will be given for various innovative systems.

By the end of the course, the participants should be able to explain how discipline engineers and system engineers make trade-off decisions to balance multiple objectives.

FJOH-2024 includes plenary lectures, seminars, and technical visits.

The FJOH-2024 participants will have the opportunity to practice their freshly-acquired knowledge as part of group activities. Time for these group activities is set aside in the School schedule.

The 29th session of the Frédéric Joliot/Otto Hahn (FJOH) Summer School on “Nuclear Reactors Physics, Fuels, and Systems”, will be dedicated to “Innovative approaches for Streamlining the Design, Deployment, and Operation of Near-term and Emerging Reactors”. It will be held in Aix-en-Provence from **August 21st to 30th, 2024**.

FJOH summer school is an advanced post-graduate-level course aimed at junior as well as experienced scientists and engineers engaged in the broad field of nuclear sciences, engineering and technologies.

The invited speakers are internationally recognized experts from leading universities, research and development laboratories and industry. The School format encourages informal discussions and the exchange of knowledge between lecturers and participants.

The Frédéric Joliot / Otto Hahn Summer School course represents the continuation of the Frédéric Joliot Summer Schools on “Modern Reactor Physics and the Modelling of Complex Systems”, which was created by CEA in 1995 to promote knowledge in the field of reactor physics, in a broad sense, and the international exchange of teachers, scientists, engineers and researchers. Beginning in 2004, the scope of the School was extended to include scientific issues related to nuclear fuels. The venues of the FJOH School sessions alternate between Karlsruhe and Aix-en-Provence.

The program of each School session is defined by the International FJOH Scientific Board.

FJOH is jointly organized by the CEA Energy Division (France) and the Karlsruhe Institute of Technology (KIT, Germany).

