Application deadline: May 15, 2026
Full registration fees: €2400

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**

- Information for payment of the fees will be provided after review of the applications.
  The fees (€2400) cover: lectures, class notes, meals and accommodation at Hotel Novotel Pont-de-l'Arc from August 25 evening to September 4, 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 €1200, the same amount of €1200 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 2026 program corresponds approximately to 3-4 ECTS credits of post graduate-level course work in Nuclear Engineering.

Coordination

Executive Bureau

Dr. Victor Hugo Sanchez Espinoza
Acting School Director
KIT, Germany

Dr. Robert Jacqmin
School Director
CEA, France

Dr. Isabelle Guénot-Delahaie
School Co-Director
CEA, France

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Dr. Valentin Gallican
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Dr. Victor Hugo Sanchez Espinoza
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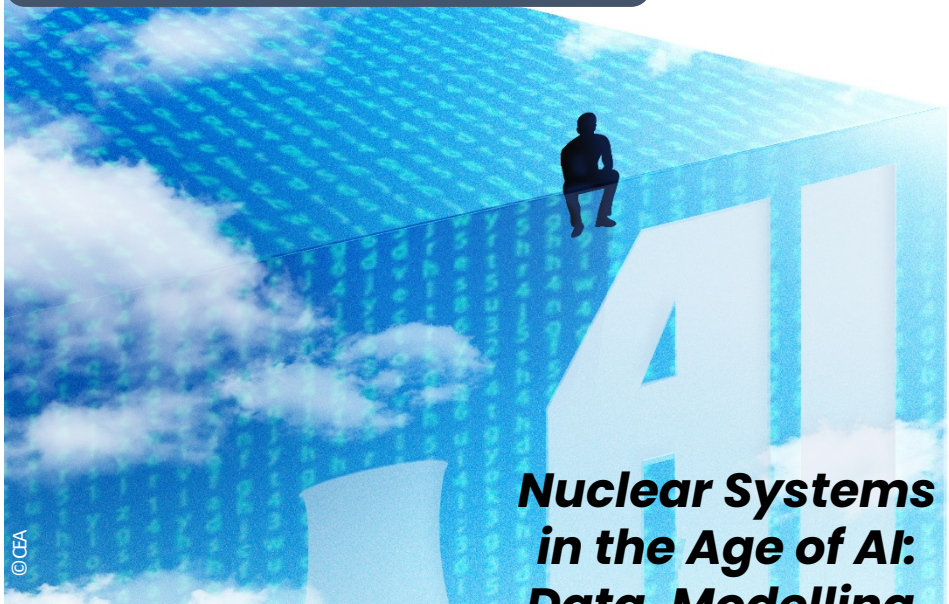
FJOH
FREDERIC JOLIOT / OTTO HAHN
SUMMER SCHOOL ON NUCLEAR REACTORS
2026

"Physics, Fuels and Systems"

August 26 › September 4, 2026
Aix-en-Provence, France



Nuclear Systems in the Age of AI: Data, Modelling, and Experiments

Key dates
May 15, 2026: Application deadline
June 5, 2026: Notification to applicants
August 25, 2026, 7:00 pm: Welcome
August 26, 2026, 9:00 am: Start of the school lectures
September 4, 2026, 2:00 pm: End of school

Location
Hotel Novotel Pont de l'Arc
Av. de l'Arc de Meyran
13100 Aix-en-Provence

Contact
fjoh@cea.fr

Programme outline

Topic 1 – Introduction			
Promise and challenges of data-driven modelling	1 h	**E. Décossin** (EDF)	
Topic 2 – Effective AI integration into R&D: requirements and implications			
The energy vs. information nexus	3 h	**V. Mazauric** (Schneider Electric)	
Machine Learning and Deep Learning: from fundamentals to scientific applications	3 h	**G. Daniel** (CEA)	
Topic 3 – Reactor neutronics and nuclear physics			
Nuclear data: gap filling, data curation, automation…	3 h	**D. Rochman** (PSI)	
Core optimisation using Machine Learning, validation data when there is no experimental data	3 h	**K. Zhang** (KIT)	
Topic 4 – Thermal hydraulics			
Good experimental data (CFD grade), gaps	2 h	**J. Pacio** (SCK CEN)	
CHF predictions – How far can we get with computer simulations?	2 h	**M. Lee** (KAERI)	
Physics-informed neural networks in computational fluid dynamics	2 h	**A. Lintermann** (FZJ)	
Topic 5 – Fuels and materials			
Changes of paradigm in nuclear materials science: how modern digital technologies applied to materials support nuclear energy competitiveness	2 h	**L. Malerba** (CIEMAT)	
Machine Learning-assisted multiscale modeling of materials, application to nuclear fuels	2 h	**J. Tranchida** (CEA)	
Fuel element modelling, good experiments, best practices to get the data	2 h	**G. Robertson** (Westinghouse Electric)	
Topic 6 – Integration, safety, operational data			
Use of Machine Learning techniques in power plant safety studies	2 h	**A. Diab** (Ain Shams Univ.)	
Safety, BEPU, confidence in metamodels and data-driven models, representative experiments	2 h	**J. Baccou** (ASNR)	
Seminar			
AI and humans	2 h	**W. Mackay** (INRIA)	

Group activities on selected scientific topics

Mentors : G. Daniel (CEA), Sacha Muller (CEA), A. Marrel (CEA), B. Iooss (EDF)

Technical visits

Objective

The main objective of the FJOH-2026 edition is to provide the school participants with a working knowledge of AI methods used in the nuclear sector. The lectures will focus on how data-driven methods (using machine learning algorithms) and model-driven methods, combined with human oversight, are impacting and progressively transforming our R&D landscape, helping us develop new insight and unlock new possibilities. These AI-driven methods are increasingly used for high-fidelity reactor and fuel simulations, large dataset analyses, complex design studies or safety analyses; they help to complement, extend, improve, optimize computer simulations for enhanced predictions and better decision making.

The course includes (i) general lectures on AI methods, best practices and limitations, (ii) specialized lectures on reactor physics, thermal hydraulics, fuels and materials; and (iii) lectures and seminars on AI integration in practice. Special attention will be paid to situations where key data are missing or of insufficient quality, and how machine-learning techniques can help bridge these data gaps.

FJOH-2026 includes plenary lectures, seminars, and technical visits. The FJOH-2026 participants will also 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.

By the end of the course, the participants should be able to describe (i) the main AI methods currently available and how they are used in reactor physics, thermal hydraulics, fuels and materials R&D; (ii) the benefits and limitations of these methods.

Description

The 31st session of the Frédéric Joliot/Otto Hahn (FJOH) Summer School on "Nuclear Reactors Physics, Fuels, and Systems" will be dedicated to "*Nuclear Systems in the Age of AI: Data, Modelling, and Experiments*". It will be held in Aix-en-Provence from August 26 to September 4, 2026.

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 (Germany).

Contact : fjoh@cea.fr