

APPLICATION & FEES

All FJOH-2015 school applicants should fill out the on-line form at:

▶ www.fjohss.eu

Should there be any problem with the on-line application, please contact:

Mrs. Ingeborg Schwartz

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▶ ingeborg.schwartz@kit.edu

Deadline for application: May 18, 2015

Full registration fees: € 1900

Reduced Fees: € 950 for fellowship recipients

The fees cover: lectures, class notes, excursions, meals and lodging at the Akademie Hotel Karlsruhe.

The fees do not cover travel expenses.

A limited number of fellowships will be available for qualified candidates. The fellowship covers the amount of €950, which leaves the remaining amount of €950 to be financed by the applicant or his/her employer. These fellowships are primarily intended for candidates from developing countries. Requests should be motivated.

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

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

The FJOH School considers that the 2015 programme corresponds approximately to 3-4 ECTS credits of post graduate-level course work in Nuclear Engineering.

Selection by the FJOH School organizers is final.

INFORMATION

▶ Key dates

The school will start on **August 18, 2015, 7:00 pm** with a get-together-dinner at the Akademie Hotel Karlsruhe and will end on August 28, 2015, 1:00 pm.

Partial participations are not accepted.

Notification to applicants: June 8, 2015



▶ Questions? Please contact:

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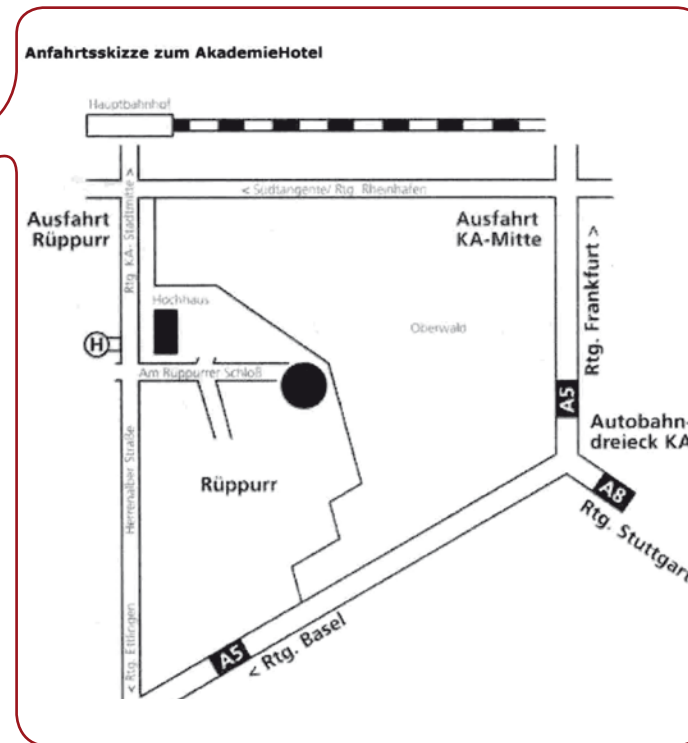
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INFORMATION

▶ Venue

The School will be held at the Akademie Hotel Karlsruhe, located about 4 km from downtown Karlsruhe, Baden-Württemberg, Germany.



The Akademie Hotel is conveniently accessible by tram from the Karlsruhe central train station (Hauptbahnhof).

Frédéric JOLIOT & Otto HAHN

SUMMER SCHOOL ON NUCLEAR REACTORS

“Physics, fuels and systems”

2015



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

ENHANCED REACTOR SAFETY: DESIGN AND SIMULATION OF LWR EVOLUTIONARY CORES

GALETS BIEUS GROUP 04 92 72 27 19



Karlsruhe Germany August 19 > 28

Karlsruhe Germany
August 19 > 28

▶ Deadline for application
May 18, 2015

For more information and for application
www.fjohss.eu



PROGRAMME OUTLINE

ENHANCED REACTOR SAFETY: DESIGN AND SIMULATION OF LWR EVOLUTIONARY CORES

1. Introduction	2 h
Motivation for Enhanced-safety LWRs, and Implications	C. Laville (IRSN - France)
2. Core Physics and Safety	10 h
2.1 State-of-the-art Fuel Inventory and Decay Heat Simulation, Uncertainty Assessment (4 h)	R. Mills (NNL - United Kingdom)
2.2 LWR Core-design Trade-offs for Built-in Enhanced Accident Tolerance (4 h)	J. Gehin (ORNL - USA)
2.3 Robust In-core Instrumentation for Improved Core Performance and Control (2 h)	A. Lyoussi (CEA - France)
3. Thermo-hydraulics and Multi-physics	8 h
3.1 Evolutionary LWR Designs - Progress in Simulation for Multi-physics Analyses and DBA Assessment (4 h)	V. Sánchez-Espinoza (KIT - Germany)
3.2 Validation Experiments & Instrumentation, Demonstrations (2 h + 2 h)	H. Schmidt (AREVA - Germany) and S. Kliem (HZDR - Germany)
4. Clad and Fuels: From Current Designs to Innovative Concepts	12 h
4.1 Requirements for Accident-tolerant Fuel and Clad Properties: a) From the Basic Phenomenology to Candidate Fuels, Clads and Core Components (4 h) b) From Candidate Concepts to the TRL=9 Level (2 h)	S. Bragg-Sitton (INL - USA) Y.-H. Koo (KAERI - Korea)
4.2 Detailed Modelling and Databases of LWR-fuel Degradation in Severe Accident Conditions (2 h)	M. Kurata (JAEA - Japan)
4.3 Modelling and Simulation: Where do we Stand? Gaps, Testing, and Experimental Validation (2 h + 2 h)	M. Steinbrück (KIT - Germany) and B. Michel (CEA - France)
Group Reflection on Selected Scientific Topics	6 h
Organization, Group Assignments (1 h)	FJOH Staff
Parallel Group Work (3 h)	
Synthesis (2 h)	All 6 Groups
Seminar	2 h
Licensing Aspects of Plant Evolution vs. Economics and Performance Issues	M. Moatti (EdF - France)

Technical visits of Karlsruhe Institute of Technology R&D facilities

LECTURERS

COORDINATION

HONORARY DIRECTORS

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Prof. Dr. Massimo Salvatores
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DESCRIPTION

This 21st session of the Frédéric Joliot/Otto Hahn (FJOH) Summer School on “Nuclear Reactors Physics, Fuels, and Systems” will be held in Karlsruhe, Germany, from **August 19 to August 28, 2015**. This session is entitled Enhanced Reactor Safety – Design and Simulation of Evolutionary LWR Cores. It is an advanced course aimed at junior as well as experienced scientists and engineers engaged in the broad field of nuclear sciences, engineering and technologies.

The FJOH-2015 programme covers the following three topics: (i) Core Physics and Safety; (ii) Thermo-hydraulics and Multi-physics; (iii) Clads and Fuels. The overall course will focus on current as well as evolutionary LWR reactors and fuels. The various lectures will illustrate how advances in reactor physics and safety, thermal hydraulics, materials, fuels, and multi-physics modelling can help achieve more robust core behaviour in accidental situations, while preserving performance in normal operation. Basic physics phenomena, state-of-the-art methods and modelling techniques will be described, as well as validation experiments. A dedicated seminar will address licensing aspects and economics issues. The FJOH-2015 objective is to help the school participants develop a good understanding of the requirements and R&D challenges implied by the search for increased accident-tolerant LWRs.

FJOH-2015 includes plenary lectures, group discussions, seminars, and technical visits. Speakers are invited from internationally leading universities, research and development laboratories, and industry. The lectures are at a post-doctoral level.

The FJOH-2015 participants will have the opportunity to share their views on specific cross-cutting subjects and open-ended questions, as part of group reflection and critical thinking activities. Time has been set aside in the school schedule for these activities.

This 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 School's aim is to address the challenges of reactor design and optimal fuel cycles, and to broaden the understanding of theory and experiments.

The programme of each School session is defined by the International FJOH Scientific Board (see below).

The Karlsruhe Institute of Technology and the Nuclear Energy Division of CEA jointly organize and sponsor the FJOH Summer School.

FJOH Scientific Board members

Prof. Peter Baeten (SCK/CEN Mol)
Prof. Jan Blomgren (Vattenfall AB, Sweden)
Prof. Matthew Eaton (Imperial College, UK)
Prof. Michel Giot (UCL, Belgium)
Dr. Jim Gulliford (OECD, International)
Prof. Waclaw Gudowski (RIT, Sweden)
Dr. Kevin Hesketh (NNL, UK)
Prof. Jan Leen Kloosterman (Delft Univ., The Netherlands)
Dr. Rudy Konings (EC/JRC-ITU & Delft University, Germany)
Dr. Alex Mueller (CNRS, France)
Dr. Stefan Niessen (AREVA, Germany)

Dr. Daniel Parrat (CEA, France)
Prof. Andreas Pautz (PSI & EPFL, Switzerland)
Prof. Horst-Michael Prasser (ETHZ, Switzerland)
Prof. Piero Ravetto (Politecnico di Torino, Italy)
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Dr. Martin Sonnenkalb (GRS, Germany)
Dr. Walter Tromm (KIT, Germany)
Dr. Harri Tuomisto (Fortum Power, Finland)
Dr. Luc Vanhoenacker (Tractebel Eng.-GDF-Suez, Belgium)
Dr. Nicolas Waeckel (EdF)

2015