

# APPLICATION FORM

# INFORMATION

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<http://www.cad.cea.fr/fjoh>

Frédéric Joliot/Otto Hahn Summer School on Nuclear Reactors:  
« Physics, Fuels, and Systems »  
Aix-en-Provence, France  
August 20-29, 2008

Registration fees EURO 1650 (net of taxes)

**Please print**

Title and Family Name  
(Prof, Dr, Mrs, Miss, Mr): .....

First Name: .....

Employer/University: .....

Professional address: .....

Country: .....

Tel : .....

Fax: .....

email: .....

**Supplementary information for site entry/visits:**

Date of birth: .....

Birthplace: .....

Nationality: .....

Home address: .....

Passport number: .....

Issued at: .....

Issued on: .....

Expires on: .....

**Please enclose a short curriculum vitae**  
(+photo in JPEG RGB)

Mark the box if you request a fellowship (number is limited).  
Fellowships are primarily intended for applicants  
from developing countries and students.

A confirmation letter will be sent to you with full details for payment

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

To apply, fill out and return the attached application  
form by mail, or e-mail, to:

Mrs. Brigitte LE FUR, DEN/DIR - Bldg. 101, CEA CADARACHE  
13108 SAINT-PAUL-LEZ-DURANCE CEDEX, FRANCE  
Tel. (33) 4 42 25 22 57 e-mail: [brigitte.le-fur@cea.fr](mailto:brigitte.le-fur@cea.fr)

The application form can be downloaded from our web-site:  
<http://www.cad.cea.fr/fjoh>

Deadline for application:  
**May 9, 2008**

Registration fees: EURO 1650

Fees cover lectures, class notes, meals, and accommodations  
from August 19 evening to August 29 p.m.  
Travel expenses are not included.  
Information for payment of fees will be provided  
upon review of applications.

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

A limited number of fellowships will be available for qualified  
candidates. Requests must be motivated.  
The amount of a fellowship is EURO 1100.

The FJOH School considers that the 2008 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.

## VENUE

The School will be held at the Hôtel NOVOTEL  
PONT-DE-L'ARC, located in Aix-en-Provence, 30 Km from  
the Marseille/Provence Airport, and 40 Km from  
the CEA Cadarache Research Centre



Bus transportation (free of charge) from Marseille airport,  
and Aix-en-Provence TGV railway-station,  
will be provided on August 19, 2008.

Return transportation will be provided on August 29 at 2:00 p.m.  
The school will start on **August 20, 2008, 9:00 a.m.**  
Participation is mandatory till the end of the course  
on August 29, 2:00 p.m.

A week end programme will be organized free of charge

Application can be made by returning the application form before

**May 9, 2008**

to Mrs. Brigitte LE FUR, DEN/DIR - Bldg. 101, CEA CADARACHE  
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Tel. (33) 4 42 25 22 57 e-mail: [brigitte.le-fur@cea.fr](mailto:brigitte.le-fur@cea.fr)

<http://www.cad.cea.fr/fjoh>  
<http://www.fzk.de/fjohss>

## The 2008 Frédéric Joliot & Otto Hahn SUMMER SCHOOL ON NUCLEAR REACTORS " Physics, Fuels, and Systems "

Jointly organized by the Commissariat à l'Energie Atomique (France)  
and the Forschungszentrum Karlsruhe (Germany)

## THE ROLE OF EXPERIMENTS IN NUCLEAR REACTOR SIMULATION AND ANALYSIS



Aix-en-Provence



Cadarache

Aix-en-Provence, France  
August 20-29, 2008



Création Documents : tel. 04 42 465 466

# PROGRAMME OUTLINE

- ① **The Key Role of Experiments in Complex Systems Simulations** **3 h**  
 1.1. Requirements for current and future NPP simulations  
 1.2. Basic concepts in experimental validation
- ② **Measurements in Nuclear Physics and Core Neutronics** **9 h**  
 2.1. Nuclear data measurements and evaluation  
 2.2. Integral experiments to validate lattice and core physics calculations  
 2.3. Criticality-safety: the key role of reference experiments
- ③ **Thermo-Hydraulics Experiments** **12 h**  
 3.1. Validation experiments for system codes applied to LWR accident simulation and for CFD codes applied to CHF investigations  
 3.2. Modern experimental techniques for two-phase flow characterization  
 3.3. Specific experiments for validating CFD codes and models under different liquid-metal flow regimes  
 3.4. Large-scale test facilities for understanding LWR T/H response during LOCAs and transients  
 3.5. Qualification of transients two-phase flow calculations
- ④ **Modelling and Experimental Validation of Radiation Damage in Structural Materials** **4 h**
- ⑤ **Experiments for Improving Nuclear Fuels Models and Performance** **7 h**  
 5.1. Numerical and experimental simulation at the atomistic scale  
 5.2. Irradiation tests and post-irradiation analysis to improve models at the microscopic level  
 5.3. The importance of in-pile measurements - Role of MTRs, integral validation, high burn-up experiments
- ⑥ **Predicting Actual Reactor Conditions- Why Experimental Data are Essential** **4 h**  
 6.1. BWR stability tests and experiments  
 6.2. Fuel behaviour under accidental conditions

## SEMINAR

Validation, reliability and confidence estimates  
 The case of a complex non-nuclear system: Ariane 5

TECHNICAL VISITS  
 of CEA Cadarache facilities

# LECTURERS

- DR. C. Chauliac (CEA, FRANCE)
- PROF. DR. D.G. Cacuci (CEA, FRANCE & KIT, GERMANY)
- DR. A. Plompen (IRMM, BELGIUM)
- MR. J. Tommasi (CEA, FRANCE)
- DR. P. Baeten (SCK/CEN, BELGIUM)
- DR. R. McKnight (ANL, USA)
- DR. D. Bestion (CEA, FRANCE)
- PROF. H-M. Prasser (ETH, SWITZERLAND)
- DR. R. Stieglitz (FZK, GERMANY)
- DR. H. Nakamura (JAEA, JAPAN)
- DR. D. Lucas (FZD, GERMANY)
- PROF. S. Zinkle (ORNL, USA)
- DR. C. Valot (CEA, FRANCE)
- DR. S. Van Den Berghe (SCK/CEN, BELGIUM)
- DR. M. McGrath (OECD)
- DR. T. Kozlowski (KTH, SWEDEN)
- DR. J. Papin (IRSN, FRANCE)
- DR. M-C. Palau (EADS ASTRIUM ST, FRANCE)

## SEMINAR

# COORDINATION

| Honorary Directors   |  |
|--|--|
| <b>Prof. Dr. M. Salvatores</b><br><i>Research Director, Scientific Advisor<br/>                     Nuclear Energy Division<br/>                     DEN/DIR, CEA/Cadarache, France<br/>                     massimo.salvatores@cea.fr</i>   | <b>Prof. Dr. D.G. Cacuci</b><br><i>Director, Institut für Kerntechnik<br/>                     und Reaktorsicherheit<br/>                     Universität Karlsruhe/Germany<br/>                     cacuci@ikr.uni-karlsruhe.de</i>                         |
| Executive Bureau   |  |
| For Commissariat à l'Energie Atomique  | For Forschungszentrum Karlsruhe  |
| <b>Director: Dr. R. Jacqmin</b><br><i>Research Director<br/>                     DEN/DER, CEA/Cadarache, France<br/>                     robert.jacqmin@cea.fr</i>   | <b>Director: Prof. Dr. V. Heinzel</b><br><i>Director, Institut für Reaktorsicherheit<br/>                     Forschungszentrum Karlsruhe,<br/>                     Germany<br/>                     heinzel@irs.fzk.de</i>                                  |
| <b>Co-Director: Dr. Y. Guérin</b><br><i>Research Director<br/>                     DEN/DEC, CEA/Cadarache, France<br/>                     yannick.guerin@cea.fr</i>   | <b>Co-Director: Dr. A. Möslang</b><br><i>Research Director<br/>                     Forschungszentrum Karlsruhe, IMF 1<br/>                     moeslang@imf.fzk.de</i>  |
| <b>Co-Director: Dr. H. Safa</b><br><i>DEN, CEA/Saclay, France<br/>                     henri.safa@cea.fr</i>   |  |
| Scientific Secretariat   |  |
| <b>Mrs. C. Berlanga</b><br><i>DEN/DEC, CEA/Cadarache, France<br/>                     christine.berlanga@cea.fr</i>  | <b>Dr. U. Fischer</b><br><i>Forschungszentrum Karlsruhe, IRS<br/>                     fischer@irs.fzk.de</i>   |
| <b>Dr. J.-M. Palau</b><br><i>DEN/DER, CEA/Cadarache, France<br/>                     jean-marc.palau@cea.fr</i>  | <b>Dr. V. H. Sánchez Espinoza</b><br><i>Forschungszentrum Karlsruhe, IRS<br/>                     sanchez@irs.fzk.de</i>   |
| <b>Dr. F. Storrer</b><br><i>DEN/DDIN, CEA/Saclay, France<br/>                     francois.storrer@cea.fr</i>  |  |
| Secretariat  |  |
| <b>Mrs. B. Le Fur</b><br><i>DEN/DIR<br/>                     Bldg 101, CEA/Cadarache<br/>                     13108 Saint-Paul-Lez-Durance<br/>                     France<br/>                     phone : +33 (0)4 42 25 22 57<br/>                     brigitte.le-fur@cea.fr</i> | <b>Mrs. I. Schwartz</b><br><i>Forschungszentrum Karlsruhe/IRS<br/>                     76344 Eggenstein-Leopoldshafen<br/>                     Germany<br/>                     phone: +49 (0) 7247 82 2552<br/>                     schwartz@irs.fzk.de</i> |

- The 14th session of the Frédéric Joliot/Otto Hahn (FJOH) Summer School on Nuclear Reactors, "Physics, Fuels and Systems" will be held in Aix-en-Provence, France, from **August 20th to August 29th**, 2008. This represents the continuation of the series of Frédéric Joliot Summer Schools, 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, young scientists and researchers. Beginning in 2004, the scope of the School was extended to include scientific issues related to Nuclear Fuels.
- The School's aim is to address the challenges of designing future reactors and optimal fuel cycles, and to broaden the understanding of theory and experiments. The 2008 edition will focus on the Role of Experiments in Nuclear Reactor Simulation, underlining the importance of experiments in modelling and computer-based simulations. Lectures will illustrate the complementary role of theory and measurements. Recent progress and leading scientific issues will be addressed, in nuclear physics, core neutronics, thermohydraulics, structural materials, and nuclear fuels.
- Lecturers are invited from internationally leading universities, research and development laboratories, and industry. The lectures are at the post-doctoral level and are intended for scientists and engineers engaged in the broad field of nuclear sciences and engineering.
- The programme of each School session is defined by the FJOH Scientific Board (see FJOH Web site).
- The Forschungszentrum Karlsruhe and the CEA Nuclear Energy Division jointly organize and co-sponsor the FJOH School. FJOH-2008 is also sponsored by the Institute for Education and Training in Nuclear Science and Technology (INSTN) and the Provence-Alpes-Côte-d'Azur Region.