WELCOME to XCFD4NRS

Experiments and CFD Code Applications to Nuclear Reactor Safety

OECD/NEA & IAEA Workshop
Hosted by

Commissariat à l’Energie Atomique (CEA)
Grenoble, France
10 - 12 September 2008
XCFD4NRS and CEA/DEN

XCFD4NRS

- Link between Simulation and Experiment
- Key topics
  - Role of V&V and Uncertainty Quantification
  - Guidelines for the use of CFD
  - Extrapolation

→ Also key topics for the Simulation Program of CEA/DEN (Nuclear Energy Division)
The DEN Simulation Platform for Nuclear Applications

Industrial needs

SALOME (open – source):
- Preprocessing
- Postprocessing
- Supervision

Multiscale
Multiphysics
Multipurpose

CORE PHYSICS
THERMALHYDRAULICS
MATERIAL SCIENCE
 STRUCTURAL MECHANICS

MATERIAL SCIENCE
- Crystal volume
- Grains
- Dislocations
- Atomic clusters
- Atoms

FUEL SCIENCE
- Mechanics

WASTE REPOSITORY

Uncertainties

Experimental data

Experimental data

Granoble, September 10th, 2008
XCFD4NRS and CEA/DEN, C. Chauliac

XCFD4NRS Meeting
Multiscale developments in Thermal-Hydraulics at CEA/DEN

SYSTEM SCALE
CATHARE

CFD IN OPEN MEDIA
NEPTUNE-CFD
TRIO-U
CASTEM-FLUID

CFD IN POROUS MEDIA
FLICA-OVAP

DNS SCALE
TRIO-U
TRITON
The NURESIM Platform  
(European FP6 and FP7)

- **Scope**
  - To develop the next-generation best-estimate, experimentally validated simulation tools for reactor physics (thermal-hydraulics, neutronics, multi-physics, sensitivity & uncertainty analysis) with improved prediction capabilities and robustness

- **NURESIM Project (FP6) → NURISP Project (FP7)**
  - 18 → 22 participating organizations

- Open Seminar in Madrid, November 27-28th
- [http://www.nuresim.com](http://www.nuresim.com)
10,500 employees
9 Centres

4 Operational Divisions

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