



- Institute for Neutron Physics and Reactor Technology (INR)
- Campus North, Building 521
- Date: March 25 - 27, 2020

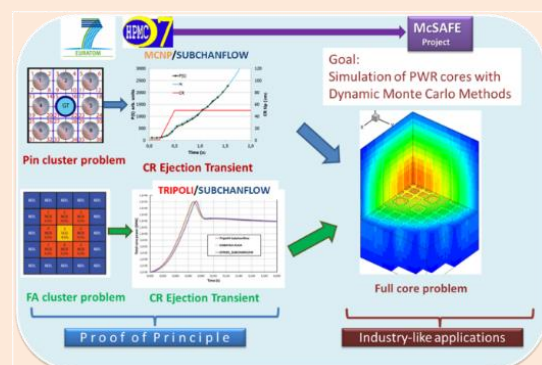
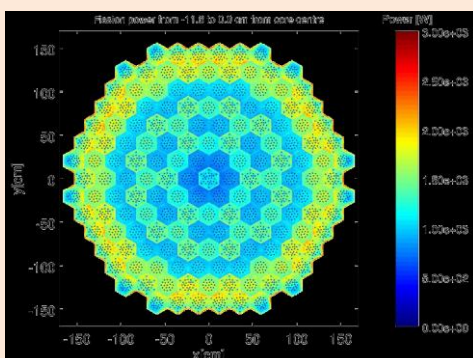


## H2020 McSAFE Training Course

*(McSAFE: High-Performance Monte Carlo Methods for SAFETY Demonstration-From Proof of Concept to realistic Safety Analysis and Industry Applications)*

### MAIL GOALS OF THE TRAINING COURSE

Advances in computer capacity and parallel computing are nowadays making possible to use computing-intensive state-of-the-art methods for large-scale problems and realistic reactor geometries in order to cope with the needs of manufacturers, utilities and regulators for optimized nuclear reactor designs and improved safety analyses. Under this framework, highly accurate numerical methods and codes are being developed worldwide in order to predict local safety parameters of reactor cores at steady state and transient conditions. McSAFE (High Performance Monte Carlo Methods for SAFETY Demonstration) is a coordinated H2020 EU research project with the overall objective of the to move the Monte Carlo based stand-alone and coupled solution methodologies (advanced depletion, optimal coupling of MC-codes to thermal-hydraulic solvers, time-dependent Monte Carlo and methods and algorithms for massively parallel simulations) to become valuable and widespread numerical tools for realistic core design, safety analysis and industry-like applications of LWRs of generation II and III. The envisaged McSAFE developments will allow on one hand to reduce the conservatism in the prediction of core safety parameters and on the other hand to increase the reactor performances and the operational flexibility. McSAFE is held in cooperation between code developers, methods developers and industry stakeholders, including twelve partners from eleven institutions of nine different countries around EU. Several calculation tools are being used within the project, including not only the TRIPOLI (CEA), SERPENT (VTT), MONK (WOOD) and MCNP (LANL) Monte Carlo transport codes but also the sub-channel code SUBCHANFLOW (KIT) and the fuel performance code TRANSURANUS (JRC). In order to disseminate the knowledge generated within the McSAFE Project, a Training Course open to young engineers, scientists, as well as professionals coming from the industry, is organized.



## COURSE THEME

The course will focus on the multi-physics coupled tools developed within the McSAFE project and the lectures will cover the following topics:

- Methods for full-core MC-depletion and optimized thermal-hydraulic feedback
- Code integration and coupling methods
- Developments of dynamic MC-methods for transient analysis
- Validation of-MC-based simulations using plant data for depletion, static and dynamic core analysis

## COURSE STRUCTURE

The course consists of eighteen lectures (45 min. each) distributed over three days. Lectures will be given by international experts from KIT (Germany), VTT (Finland), CEA (France), DNC (the Netherlands), HZDR (Germany), KTH (Sweden) and UJV (Czech Republic) and will cover both theoretical aspects and practical demonstrations (i.e. solution of multi-physics problems with the developed coupling tools).

## LOCATION

Karlsruhe Institute of Technology - Campus Nord, Building 521  
Hermann-von-Helmholtz Platz 1, 76344 Eggenstein-Leopoldschafen (Germany)

## FEE

The course is **free of charge**. Participants have nevertheless to cover their own expenses (travel, food, accommodation).

## CONTACT

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