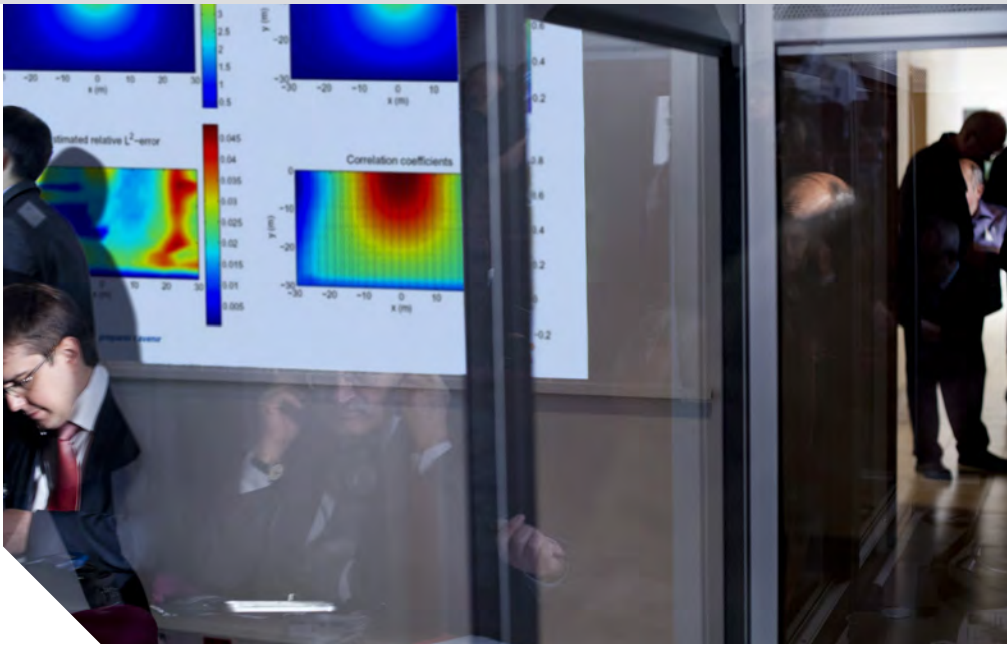
First Announcement



Training course on Uncertainty Management in Computational Materials Science

12-14 May, 2014 - Moret-sur-Loing, France

EDF

mai
materials ageing institute

Scope and objectives

The recent development in numerical simulation has enabled researchers and engineers to handle more and more complex models in materials science. Such models often depend on a large number of parameters whose values may be determined either from expert judgment or from experimental measurements. Whatever the approach, the parameters may be affected by uncertainty as the experts may provide acceptable bounds rather than a precise value and the experimental data may be limited in number and subjected to a measurement error. In addition, extra uncertainty may arise from an intrinsically random model: this is especially the case for materials representations at the microscopic scale which exhibit a significant spatial variability.

The training course aims to present probability-based concepts and methods in order to manage the uncertainty in computational materials science. The following topics are being addressed:

- General methodology for uncertainty management
- Elements of probability theory and statistics
- Uncertainty propagation methods: dispersion and reliability
- Sensitivity analysis methods
- Metamodelling techniques (polynomial chaos and kriging)
- Modelling of the spatial variability
- Physics of random media
- Design of physical experiments
- Metrology and reliability of a measurement process
- Statistical analysis of fatigue data

Moreover, computer tools based on the OpenTURNS software and the MAP platform are being handled during a training session.

Target audience

Researchers from EDF, MAI members and MAI-SN partners.
Limited number of seats available.

Contact

Administrative information

MAI secretary (contact@themai.org)

Technical information

Géraud Blatman (geraud.blatman@edf.fr)

Marc Berveiller (marc.berveiller@edf.fr)

Registration fees

The training course is free for the MAI and MAI-SN. For the other attendees, the registration fee is 150€. Participants are responsible for their own travel and lodging costs.

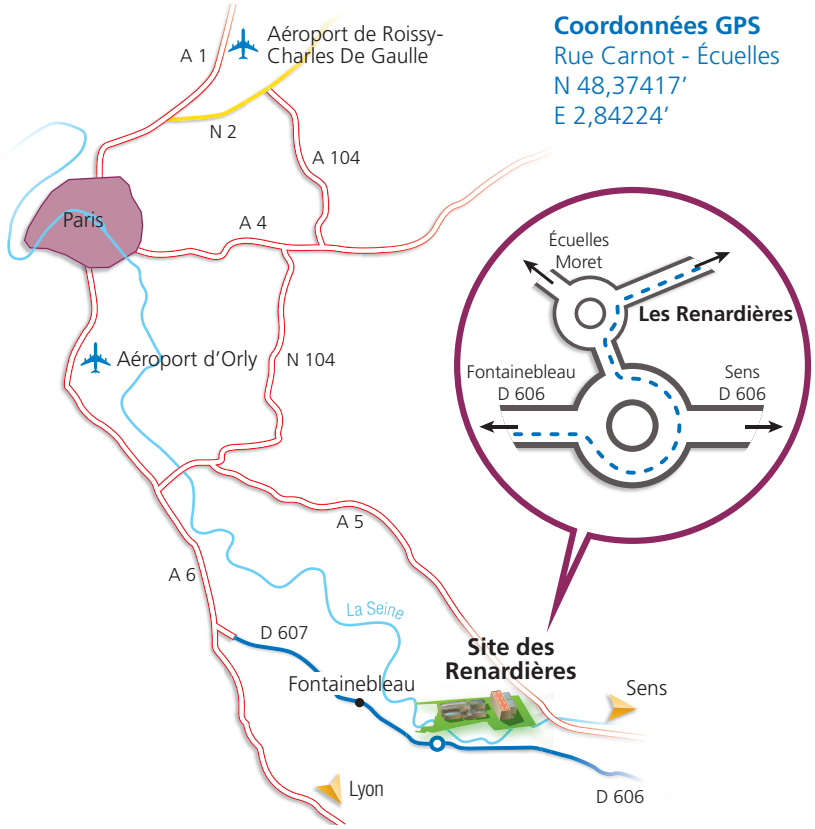
Registration is needed for all attendees : please go to www.themai.org

Location

The Materials Ageing Institute, EDF R&D Site des Renardières
Ecuelles - 77818 Moret-sur-Loing cedex - France

The Materials Ageing Institute is a utility-oriented research center founded by EDF in 2008 and co-financed by EPRI (US), KEPCO (J), CGN (CN), REA (RU), EDF Energy (UK), TEPCO (J), MHI (J), CRIEPI (J), CEA (F) and Areva (F). The key purpose of the MAI is to direct efforts in research and development towards ageing of materials used in electric power plants. This initiative by the world's biggest nuclear operators is motivated by the conviction that sharing research, experimental results, feedback and scientific information will significantly contribute to our understanding of the ageing processes in various materials employed in both nuclear and non-nuclear power plants. The combination of operational know-how, experimental knowledge and computer modeling of coupled processes can then be used to anticipate ageing and henceforth increase the durability of materials, components and structures.

materials ageing institute



Coordonnées GPS
Rue Carnot - Écuelles
N 48,37417'
E 2,84224'

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