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Objectives and Status of the OECD/NEA sub-group on Uncertainty Analysis in Modelling (UAM) for Design, Operation and Safety Analysis of SFRs (SFR-UAM)

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An OECD/NEA sub-group on Uncertainty Analysis in Modelling (UAM) for Design, Operation and Safety Analysis of Sodium-cooled Fast Reactors (SFR-UAM) has been formed under the NSC/WPRS/EGUAM and is currently undertaking preliminary studies after having specified a series of benchmarks.
The incentive for launching the SFR-UAM task force comes from the desire to utilize current understanding of important phenomena to define and quantify the main core characteristics affecting safety and performance of SFRs. Best-estimate codes and data together with an evaluation of the uncertainties are required for that purpose, which challenges existing calculation methods. The group benefits from the results of a previous Sodium Fast Reactor core Feed-back and Transient response (SFR-FT) Task Force work under the NSC/WPRS/EGRPANS.
Two SFR cores have been selected for the SFR-UAM benchmark, a 3600MWth oxide core and a 1000MWth metallic core. Their neutronic feedback coefficients are being calculated for transient analyses. The SFR-UAM sub-group is currently defining the grace period or the margin to melting available in the different accident scenarios and this within uncertainty margins.
Recently, the work of the sub-group has been updated to incorporate new exercises, namely, the depletion benchmark, the control rod withdrawal benchmark, and the SUPER-PHENIX start up transient. Experimental evidence in support of the studies is also being developed.

Country/Int. Organization

CEA, Cadarache Center
ANL, USA
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OECD, NEA, France

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