

Webinar Invite

Join us on February 28, 2024, 8:30 a.m. EST (UTC-5)

Analysis of the Reactivity Loss of the Phenix Core Cycles for the Experimental Validation of the DARWIN-FR Code Package

The development of future reactors relies on design methodologies using scientific calculation tools (SCT), validated and relevant for quantifying the uncertainty for each neutronic quantity of interest. In the validation process, SCT results are compared with experimental data; however, such reference set is limited for fourth-generation reactors. Sodium-cooled fast reactor technology offers substantial overall feedback, making it an essential asset for assessing current SCTs regarding the development of future reactors. In particular, fuel depletion requires the evolution of isotopic composition within a reactor to be mastered for design/operation trade-offs (irradiation time, mass balance of fissile materials, feedback coefficients, among others). As the local isotopic compositions are not accessible “in real time”, the assessment of SCTs for fuel depletion adopts an indirect approach. Analysis of fuel depletion involves studying its consequence: reactivity swing with irradiation. Substantial experimental data on this phenomenon have been obtained in the PHENIX reactor during the whole operation time (40 years). The current analysis involves an exhaustive reinterpretation of the existing experimental data and depletion calculations using the modern deterministic calculation tools. This comprehensive study of the SFR reactivity loss provides valuable insights, establishing links between experimental data and depletion calculations.

Free webcast!



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Who should attend:
policymakers, managers,
regulators, students, general
public



Mr. Victor Viallon is a PhD Student in the Research Institute for Nuclear Systems for low-carbon Energy Production (IRESNE) at CEA Cadarache, France. After graduating with a master's degree in mechanics and specializing in nuclear risk management, he pursued an Advanced Graduate Degree in Nuclear Engineering at the French Institute for Energy and Health Technologies (INSTN) to specialize in neutronics, with the goal of pursuing a career in R&D after earning his PhD.

He is the winner of the 2023 Pitch your Gen IV research competition.

Upcoming Webinars

20 March 2024, Overview of Canadian R&D Capabilities to Support Advanced Reactors, Lori Walters, CNL, Canada

17 April 2024, Multiphysics Depletion & Chemical Analyses of Molten Salt Reactors, Samuel Walker INL, USA

TBD May 2024, Regulatory Activities in support of SMRs and Advanced Reactor Systems, GIF/IAEA Panel Discussion