Contribution ID: **25292** Type: **Extended Abstract**

Simulation of Relevant Transient Scenarios for a lead-cooled Reference SMR using a STH Code

Wednesday, 5 November 2025 13:45 (15 minutes)

This paper focuses on thermal-hydraulic analyses to investigate safety-related aspects of the Reference LFR system, a conceptual Small Modular Reactor cooled by molten lead, using the RELAP5/Mod3.3 code in its version modified by the University of Pisa to account for heavy liquid metals as working fluid. The primary aim of this work is to develop a physically accurate model of the Reference LFR, capable of capturing both the thermal-hydraulic and neutronic behaviour of the reactor. This model is intended to be applied to simulate transient scenarios relevant for LFR operation, such as the Unprotected Loss of Flow (ULOF), Unprotected Loss Of Heat Sink (ULOHS), and Unprotected Transient Over-Power (UTOP).

Technical Track

Nuclear Thermal-Hydraulics

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Session Classification: Thermal Hydraulics