Contribution ID: **23179** Type: **Paper**

VERA Solution of Zero Power Physics Tests (ZPPT) Using DeCART2D - MASTER

Tuesday, 14 November 2023 09:40 (20 minutes)

Accurate and reliable computer codes for neutronics are essential for nuclear reactor design and operation since they permit the simulation of neutron behavior inside the reactor core. These simulations are crucial for anticipating the reactor's performance, safety, and efficiency. In order to ensure the safe operation of nuclear reactors and the advancement of new reactor technologies, the accuracy and reliability of these codes are of the utmost importance. The modeling and simulation codes' accuracy and reliability are tested using the Virtual Environment for Reactor Analysis VERA Core Physics Benchmark's problems. MASTER's neutronics model solves the space-time dependent neutron diffusion equations with the advanced nodal methods and DeCART2D a Deterministic Core Analysis based on Ray Tracing, have been developed in Korea Atomic Energy Research Institute (KAERI) to design and analyze the Pressurized Water Reactor (PWR). This study aims to validate the DeCART2D - MASTER code system for the successful completion of the calculations related to the Zero Power Physics Tests (ZPPT) of VERA pressurized water reactor that are carried out at the start of each fuel cycle startup. Several crucial configuration estimates, RCCA bank reactivity worths, the isothermal temperature reactivity coefficient (ITC), and differential soluble boron worth (DBW) are among them. The calculation results are compard to ZPPT OF VERA banchmark.

Speaker Bio

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Session Classification: Day 2- Parallel Session - II : Reactor Physics

Track Classification: Reactor Physics