

Investigation of the Capability of REALP5 to Solve Complex Fuel Geometry

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Abstract : This work is developed within IAEA Coordinated Research Program 1496, "Innovative methods in research reactor analysis: Benchmark against experimental data on neutronics and thermal-hydraulic computational methods and tools for operation and safety analysis of research reactors." The study investigates the capability of Code RELAP5/Mod3.4 to solve complex geometry complexity. Its results are compared to the results of PARET, a common code in thermal hydraulic analysis for research reactors, belonging to MTR-PC groups. The WWR-SM reactor at the Institute of Nuclear Physics (INP) in the Republic of Uzbekistan is simulated using both PARET and RELAP5 at steady state. Results from the two codes are compared. REALP5 code succeeded in solving the complex fuel geometry. The PARET code needed some calculations to obtain the final result. Although the final results from the PARET are more accurate, the small differences in both results makes using RELAP5 code recommended in case of complex fuel assemblies.

Keywords : complex fuel geometry, PARET, RELAP5, WWR-SM reactor

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