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**Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3)
Departament Badań Układów Złożonych (DUZ)**

Wtorek: **24.11.2020**
11:30

Tomasz Hanusek

Analysis of the power and temperature distribution in molten salt reactors with TRACE. Application to the Molten Salt Reactor Experiment.

Abstract:

In this study, building on the author's previous experience in the simulation of the MSRE (Molten Salt Reactor Experiment) system, a more detailed power deposition model was considered. Authors decided to take into account the power generated into the graphite moderator and the decay heat generated inside and outside the reactor core. The work was done using a modified by authors version of the system code TRACE capable of simulating molten salt coolants and the transport of neutron precursors with the coolant, and the Monte-Carlo based Serpent code to generate the appropriate core neutronic data used in the point kinetics models of TRACE. The study shows that the temperature field differs significantly taking into account these power sources. The developed reactor model was also used to simulate the transient behaviour of the MSRE. Comparable results for transient behaviour reported in the original MSRE reports by Oak Ridge National Laboratory support the correctness of the model. In the future, it will be used for the other molten salt reactors, for which interests of science and industry is growing.

Serdecznie zapraszamy,
M. Dąbrowski, T. Kwiatkowski

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