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Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3)
Departament Badań Układów Złożonych (DUZ)
Wtorek: **17.05.2022**
11:30

Mateusz Nowak

Studying the micro- and minidemonstrator model in Cathare-2 software

Abstract:

The microdemonstrator is a simplified and low-temperature model that will be the first step in the development of DFR technology. This device will consist of two loops - a fuel loop and a cooling loop, which will transfer thermal energy between them. Due to the use of low temperature, the liquid metal in both loops will be lead-bismuth eutectic. Additionally, magnetohydrodynamic pumps will be used in the system. The objective of the microdemonstrator is to reproduce the thermohydraulic properties of the DFR loops. The minidemonstrator is the next step after the microdemonstrator. This model will operate at higher temperatures and on liquid lead.

In this presentation, flow models of the micro- and minidemonstrator made in Cathare-2 software will be shown. The influence of heat exchanger design and liquid metal velocity on heat transfer and on the obtained temperatures in the heating (fuel) and cooling loops will also be presented. The presentation will also include a discussion of using magnetohydrodynamic pumps to control the flow of thermal energy in a heat exchanger. Magnetohydrodynamic pump parameter specifications for both models will also be presented.

Serdecznie zapraszamy
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