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

Wtorek: **16.02.2021**  
**11:30**

**Michał Górkwicz**

### **Optimization of control rod design and operation strategy for reduction of power peaks in HTTR-based core design**

#### **Abstract:**

Neutronic properties of the High-Temperature Gas-cooled Reactor (HTGR) cores significantly differ from those of Light Water Reactors or Fast Breeding Reactors. In order to ensure good performance of the reactor, it is important to maintain possibly equalized power distribution. Yet, the power peaks should be reduced to prevent the release of radioactive material from TRIStructural-ISOtropic (TRISO) fuel exposed to high temperatures. Available means to equalize the power distribution are burnable poisons and control rod designs. Yet, operations of control rods can cause power oscillations that may increase the power peaks. To limit this effect, a concept of radial division of control rods was investigated. The model of a prismatic HTGR core developed for the Monte Carlo Continuous Energy Burn-up Code (MCB) based on the High Temperature Engineering Test Reactor (HTTR) design by a team from the AGH University of Technology was used and the above-mentioned concept was implemented as a part of control rods operation strategy. During the presentation, the applied methodology for the power oscillation assessment will be described and the results of the MCB simulations will be discussed.

Serdecznie zapraszamy,  
M. Dąbrowski, T. Kwiatkowski

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