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

Wtorek: **26.05.2020**  
**11:30**

**Hisham Elgendy**

### **Towards construction of Dual Fluid Reactor: CFD modeling of mini-demonstrator**

#### **Abstract:**

On the way of construction of the Dual Fluid Reactor (DFR), different development steps are needed before the final stage of construction starts. Simultaneously to the neutronics studies, thermal hydraulics analyses are going on, which is expected to be tested in a series of future experiments performed at the DFR mini-demonstrator. The main component of this facility will be a model of the DFR reactor core, where several tubes made of SiC of original size will be applied for flow modeling of the nuclear fuel being a mixture of liquid uranium and chromium. Liquid lead used as a coolant will flow along the fuel tubes and outside the reactor core, will be completely separated from the fuel loop. Here, I would like to present the first construction ideas of the mini-demonstrator core, focusing on its critical inlet and outlet regions. Corresponding CFD calculations of both flows performed for different geometries will be discussed in order to optimize the heat exchange and ensure the most homogeneous flow of the tested fluids. Additionally, different aspects of the mini-demonstrator like storage of the molten metals, operation conditions and double loop components will be taken into considerations.

Serdecznie zapraszamy,  
M. Dąbrowski, T. Kwiatkowski

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