

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

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Dr Leonardo Vila Nova

A few elements on innovative nuclear fission concepts and fuel cycles - research, challenges and the particular case of a ground-laying ADS (Accelerator-Driven System) and the thorium cycle

Abstract:

Research in the field of nuclear fission has been over the last decades predominantly focused on features such as enhanced safety, proliferation resistance, waste radiotoxicity reduction, sustainability and also into offering higher competitiveness in the forever shifting energy markets. Two types of approaches coexist and have been in the limelight: the evolutionary concepts, based on the improvement of earlier designs (ex: EPR) and the innovative concepts (GenIV, ADS), where, beyond the complex technological challenges most of which they commonly share, new manufacturing and fuel management strategies are required.

This presentation aims at providing a few notes on the previous experience of the author in the latter category of innovative and promising concepts (including the thorium cycle), placing a particular emphasis on the study of the feasibility of an industrial ADS prototype for destroying, through fission, transuranic elements produced by present nuclear reactors.

Serdecznie zapraszamy,
M. Dąbrowski, T. Kwiatkowski