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Aushang

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Einladung zum Seminar über „Nukleare Energieerzeugung“

Zeit: Montag, 18. Mai 2026, 11:00 Uhr

Ort: Karlsruher Institut für Technologie, Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen, INR, Bau 521, Raum 302

Referent: Herr Dr. Arkady Serikov, Karlsruher Institut für Technologie, INR

Titel: Nuclear safety and radwaste aspects of the IFMIF-DONES lithium target assembly

Abstract:

This seminar talk presents the most significant results from my six years of experience in neutronics analyses conducted at the **KIT-INR Neutronics and Nuclear Data (NK) group**. These analyses were performed in support of the design development for **IFMIF-DONES** (International Fusion Materials Irradiation Facility – DEMO Oriented Neutron Source). Of particular importance are the nuclear safety and radwaste analyses of the IFMIF-DONES lithium target, which I performed during my 2025 secondment at the IFMIF-DONES construction site in Escúzar (Granada), Spain. To ensure safety, a **worst-case scenario** for deuteron beam dynamics — including **extreme static and dynamic errors in beam focusing** — was evaluated and compared against the reference scenario to assess total energy deposition within the lithium target assembly. The safe heat removal at the target is maintained with the fast-flowing (15 m/s) liquid lithium.

With a **125 mA deuteron beam** accelerated to **40 MeV** and a **20 x 5 cm²** beam footprint area, the peak heat density reaches an extremely high value of **110 kW/cm³**. Neutronics analyses revealed that **97%** of the **5 MW** beam power is released directly into the liquid lithium (Li). This integral heat of 4860 kW is effectively removed by the Li jet flow to the Quench Tank and Li loop. The remaining power (~140 kW) is transferred by neutrons and photons beyond the Li target, depositing energy into the surrounding Test Cell (TC) components and the wider IFMIF-DONES building. These results are currently being utilized for IFMIF-DONES licensing and updates to the safety report.

Hinweis: Alle auswärtigen Besucher des Seminars werden gebeten, ihren gültigen Personalausweis oder Reisepass mitzubringen

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