

Aushang

Institut für Neutronenphysik und Reaktortechnik

Komm. Institutsleitung:
Prof. Dr.-Ing. John Jelonnek

Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen

Telefon: 0721-608-22552
Fax: 0721-608-23718
E-Mail: ingeborg.schwartz@kit.edu
Web: www.inr.kit.edu

Bearbeiter/in: Ingeborg Schwartz
Unser Zeichen: ISC
Datum: 13.01.2026



Einladung zum Seminar über „Nukleare Energieerzeugung“

Zeit: Montag, 19. Januar 2026, 11:00 Uhr

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

Referent: Herr Florian Steinhauser, Karlsruher Institut für Technologie, INR

Titel: Neutronics analysis of an accelerator-driven neutron source for qualification of fusion reactor components

Abstract:

Nuclear qualification of critical fusion reactor components, particularly the breeding blanket, is required on the path towards credible realisation of fusion energy production. To this end, KIT is currently developing the design of a dedicated neutron source facility called „Compact Accelerator-driven Neutron Source Karlsruhe“ (CAN-SKA). The goal is to generate a fusion-relevant neutron spectrum with sufficiently high neutron flux to allow integrated testing of functional materials and breeding assemblies.

This Master thesis specifically investigates how a representative, down-scaled section of a fusion breeding blanket, based on the European Helium-Cooled Pebble Bed concept, can be tested under fusion-relevant conditions in a compact neutron source. A central question is to what extent CANSKA can reproduce irradiation conditions of the currently planned DEMONstration power plant and thereby deliver results that are relevant for the qualification of blanket components. For this, multiple configurations of breeding pins are analysed based on key parameters like the neutron spectrum, tritium production, displacement damage (DPA) and production of hydrogen and helium. The work also compares different reflector materials and lithium-6-enrichments in the breeder material. Finally, the accelerator specifications are also varied, comparing different particle energies, beam cross sections and beam particle distributions.

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