



ACCELERATOR SEMINAR

Holger Podlech

Uni Frankfurt

Thursday, 26. November 2020 at 4 pm

Seminarraum Theorie & via Zoom

(ID: 980 9195 9196/ PW: 969306)

The MYRRHA Project - Challenges of a Modern High Power Proton Linac

The main objective of **MYRRHA** (**M**ulti-purpose hybrid **R**esearch **R**eactor for **H**igh-Tech **A**pplications) at SCK•CEN, the Belgian Nuclear Research Centre, is to demonstrate the large scale feasibility of nuclear waste transmutation using an Accelerator Driven System (ADS). It is based on a high power cw operated 600 MeV proton Linac with an average beam power of 2.4 MW. Due to the coupling of the accelerator with a fast reactor, a major concern is reliability and availability of the accelerator. Only 10 beam trips longer than 3 s are allowed per 3-month operation cycle, resulting in an overall required Mean Time Between Failure (MTBF) of at least 250 hours. The MYRRHA Linac consists of a room temperature 17 MeV Injector based on CH-cavities and the superconducting main Linac using different RF structures as Single Spokes, Double-Spokes and elliptical cavities. In 2017 it has been decided to stage the project and to start with the construction of a 100 MeV Linac (Injector and Single Spoke section) including a 400 kW proton target station. This facility will be operational in 2026 aiming to evaluate the reliability potential of the 600 MeV Linac. The Front-End consisting of an ECR source, LEBT and 1.5 MeV RFQ is already operational while the first 7 CH-cavities are under construction. The presentation gives an overview about the MYRRHA Project, its challenges and the status of construction and testing.



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