



Contribution ID: 88

Type: **Poster without speed talk**

H-Mode RF-cavity developments for the HBS-linac

Neutron research in Europe is mainly based on various nuclear reactors that will be successively decommissioned over the next years. This means that despite the commissioning of the European Spallation Source ESS, many neutron research centers, especially in the medium flux regime, will disappear. In response to this situation, the Jülich Center for Neutron Science (JCNS) has begun the development of a scalable, compact, accelerator-based High Brilliance neutron Source (HBS). A total of three different neutron target stations are planned, which can be operated with a 100 mA proton beam of up to 70 MeV and a duty cycle of up to 6%. The driver Linac consists of an Electron Cyclotron Resonance (ECR) ion source followed by a LEBT section, a 2.5 MeV double Radio-Frequency Quadrupole (RFQ) and 35 normal conducting (NC) Crossbar H-Mode (CH) cavities. The development of the cavities is carried out by the Institute for Applied Physics (IAP) at the Goethe University Frankfurt am Main. Due to the high beam current, all cavities as well as the associated tuners and couplers have to be optimized for operation under high thermal load to ensure safe operation. In general, the continuous wave linear accelerator HELIAC is an ideal test environment to develop and benchmark H-mode drift tube cavities with high thermal load. Two alternating phase focusing interdigital H-Mode cavities have been developed and are currently tendered to test key components such as high-performance couplers and tuners. They will be used to demonstrate and explore the operation of H-mode cavities under realistic conditions, prior to the operation of the HBS-linac.

Primary authors: DZIUBA, Florian (Helmholtz Institute Mainz); LAUBER, Simon (HIM Mainz, GSI Darmstadt); Dr MISKI-OGU, Maksym (HIM, GSI); BASTEN, Markus (IAP University Frankfurt am Main); Dr YARAMY-SHEV, Stepan (GSI, Him); BARTH, Winfried (GSI)

Presenter: DZIUBA, Florian (Helmholtz Institute Mainz)

Session Classification: Conference Dinner with Poster exhibit

Track Classification: Accelerator Research and Development