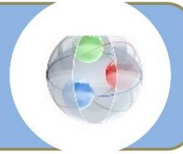


## Development of accelerator and neutron target technology HBS

Target- and moderator development



System development:  
Multiplexer, beam dynamics



Accelerator development:  
nc-cavities low- $\beta$



Neutron targets for  
imaging and  
irradiation  
experiments



Beam  
extraction  
and guides  
systems



# High current accelerator systems for future HBS

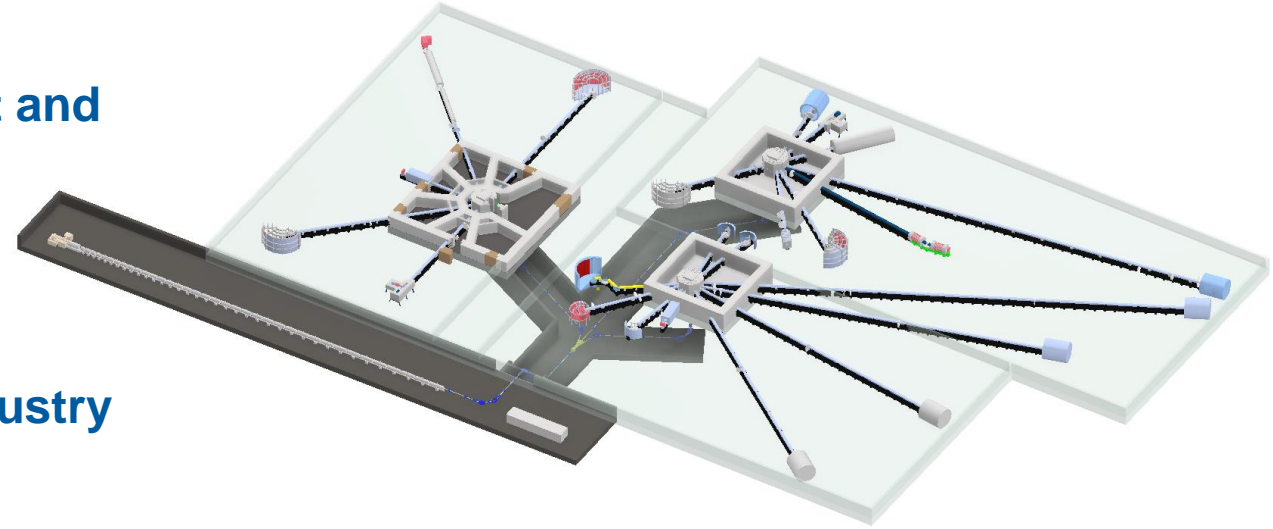
## HBS Innovationspool Project

Alexander Schwab, Thomas Gutberlet, JCNS

# High current accelerator systems for future HBS

## Scope

- Develop the accelerator and neutron target technology for future accelerator driven cost and energy efficient neutron sources
- Scalable from „table top“ to full user facility
- Ease access to neutrons for science and industry
- Closing the gap and shaping the future
- Secure world leading position in neutron technology
- Prepare for a prototype of such a facility (HBS-P)

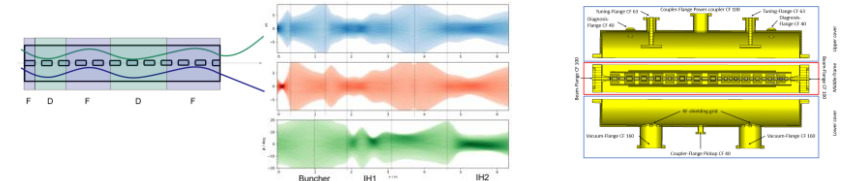


# High current accelerator systems for future HBS

## Development of 1b H-mode cavities (HI Mainz)

Particle dynamic design and mechanical layout of the cavities.

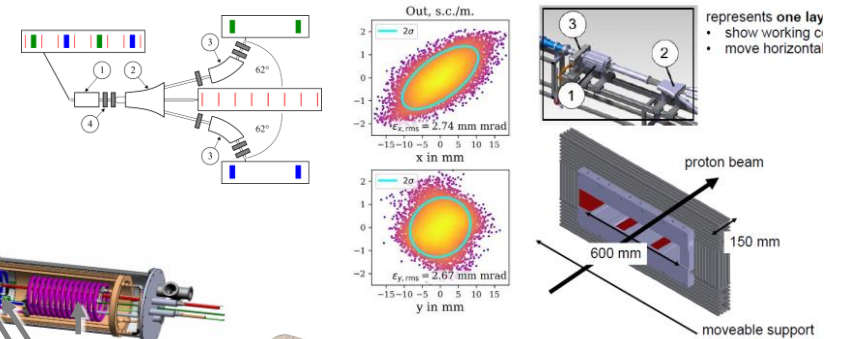
Preparation of high power RF test of a 108 MHz double spiral burster.



## Development of a fast switching multiplexer system (IKP-4)

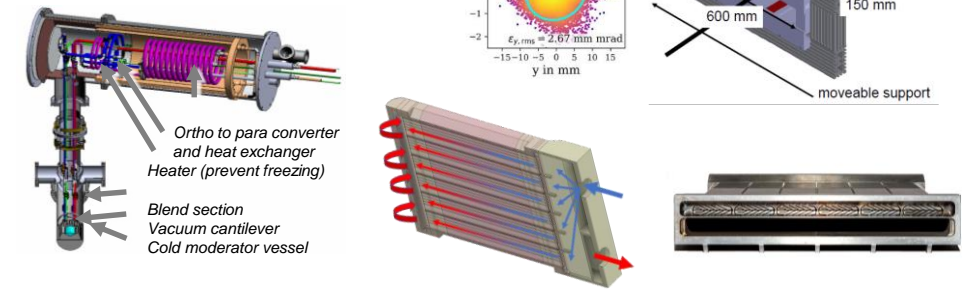
Beam dynamics simulations and construction of the multiplexer system.

Fitting of the multiplexer into the HEBT and detailed tracking study.



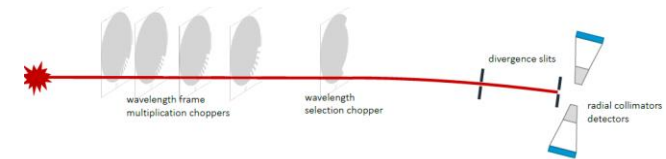
## High power targets and cryogenic moderators (JCNS)

Successful target tests with a 100 kW electron beam. Optimisation of the target geometry for improved neutron yields. Design and fabrication of cryogenic moderators (methane, o/p H<sub>2</sub>). Design and fabrication of a TMR prototype at Big Karl/COSY.



## Concept of an adapted time-of-flight diffractometer (Hereon)

Instrument model adapted and optimized.



## Imaging and irradiation experiments (HZDR)

Concept development for imaging instrument