

## The VSR Demo Module design – a spaceframe-based module for cavities with warm waveguide HOM absorbers

The VSR (Variable pulse length Storage Ring) demo module is a prototype for the superconducting upgrade of HZB's BESSY II. The module houses two 1.5 GHz superconducting cavities operated at 1.8K in continuous wave (CW) mode. Each cavity has five water cooled Waveguide HOM Absorbers with high thermal load (450 W), which requires them to be water cooled. This setup introduces several design challenges, concerning space restriction, the interconnection of warm and cold parts and the alignment. In order to provide support and steady alignment an innovative space frame was designed. The transition from cold to warm over the partially superconducting waveguides made a more complex design for shielding and cooling system necessary. With the design completed, we are now in the purchasing and production phase.

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