



Contribution ID: 603 Contribution code: WEPS133

Type: **Poster Presentation**

Development of test bench for 324 MHz superconducting cavity power couplers

Wednesday 4 June 2025 16:00 (2 hours)

The power coupler is one of the most important components for superconducting cavities. Different from the normal conducting cavity, the superconducting cavity has to keep an ultra-high cleanliness environment for operation. As the vacuum barrier, power couplers are welded by many different materials and maybe the gas source since they are installed to the cavities after vertical test, therefore, they should be high power conditioned before operation. Generally speaking, test bench equipment with two power couplers is often designed to improve the high conditioning efficiency. In this paper, different types of test benches are compared according to simulation and the cylindrical quarter-wavelength cavity is chosen. Besides, the detailed electromagnetic and mechanical design of the test bench is presented; to verify machining accuracy, two test pieces are also designed to measure the transmission of the test bench. Finally, limited by the output power of klystron, the test bench with a pair of couplers is high power conditioned to a standing power level of 500 kW with a repetition rate of 25 Hz and a pulse width of 1.2 ms.

Footnotes

Paper preparation format

Word

Region represented

Asia

Funding Agency

Author: FAN, MengXu (Institute of High Energy Physics)

Co-authors: LIU, Huachang (Dongguan Neutron Science Center); WU, Xiaolei (Dongguan Neutron Science Center)

Presenter: FAN, MengXu (Institute of High Energy Physics)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T06 Normal Conducting RF