

Novel Ridge Waveguide HOM Damping Scheme for High Current SRF Cavity

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eRHIC SRF linac generates up to 7.8 kW of HOM power per 647 MHz 5-cell BNL4 cavity, presenting a big challenge for the machine design. A ridge waveguide is a natural high pass filter and has a smaller size than the regular waveguide. A HOM damping with combination of ridge wave-guide for low frequency HOM and two room temperature HOM damper (between cryomodules) for high frequency HOM was proposed to damp the high power, full spectrum HOM in eRHIC. The eRHIC SRF linac configuration and the results of ridge waveguide design will be presented. The prototype waveguide HOM damper and its measurement plan are described as well.

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