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Development of an online adjustable waveguide coupler for CSNS- Ⅱ debuncher cavity

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The China Spallation Neutron Source Upgrade Project (CSNS-Ⅱ) will use two debuncher cavities to supplement the beam energy at the end of the linear accelerator. The PI mode structure operating at room temperature is chosen, and each debuncher cavity is equipped with an online adjustable waveguide coupler. The main body of the coupler is the WR1500 waveguide, and a hole on the narrow wall of the waveguide is opened to achieve the coupling between the cavity and the waveguide. Meanwhile, every coupler contains a removable waveguide window. In this paper, we will detail describe the electromagnetic, cooling and mechanical design of the coupler. Finally, the coupler is high-power conditioned to 1 MW with a duty factor of 2.25%, and the coupler factor of it can be online adjusted between 0.6~3 without arc event.

Footnotes

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