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Design of X-band pulse compressor for the X-band deflecting cavity in SXFEL and SHINE

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The X-band deflecting cavity is one of the critical components of the microwave systems for the Soft X-ray Free-Electron Laser (SXFEL) and the Shanghai High Repetition Rate X-ray Free Electron Laser and Extreme Light Facility (SHINE). It necessitates a pulse compressor to achieve high pulse power. Traditional designs involve two cavities connected by a specialized waveguide. Such designs are not only structurally bulky but also costly. This paper presents a novel dual-polarization mode design based on a cylindrical pulse compressor, which employs a single cavity to perform the same function. The mode coupler for the pulse compressor has been redesigned to form two polarization modes with a 90-degree phase difference, which are then fed into the cavity.

Footnotes

Paper preparation format

LaTeX

Region represented

Asia

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