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RF design of a C-band spherical pulse compressor for Super Tau-Charm linac

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Pulse compressors have been widely used to generate very high peak RF power in exchange for the reduction in the RF pulse length for linear accelerators. As compared to a traditional SLAC Energy Doubler(SLED), a spherical pulse compressor is more compact while maintaining a high energy gain. A C-band spherical pulse compressor is studied in this paper, which consists of a dual-mode polarized coupler for producing two orthogonal TE₁₁ modes simultaneously, as well as a resonant cavity working at TE₁₁₃ mode for storing energy. Through optimizations, an average energy gain of 4.7 with a coupling factor of 6.6 can be achieved for such a spherical pulse compressor. The RF design of this pulse compressor has been finalized, the fabrication and measurement of prototype can be expected in the next step.

Footnotes

Funding Agency

Paper preparation format

Region represented

Asia

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