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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

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Paper preparation format

Region represented

Asia

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