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RF design of a compact X-band two-stage pulse compressor with novel open cavities

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This paper presents the design of a compact X-band two-stage pulse compressor with novel open cavities (they are also called as bowl-shaped cavities) for our newly purchased 6-MW X-band klystron. Since this novel open cavity has an unload quality factor higher than those of the spherical cavities, it can be used for both correction and storage cavities to improve the power gain and compression efficiency. The entire compressor system consists of a correction cavity chain, a first-stage and a second-stage storage cavity. With an input pulse of 5 μs from klystron, the first-stage pulses can be flattened and generate two-stage compressed pulses of 250 ns with exponentially decaying waveforms, thereby achieving a total power gain of ≥10.

Footnotes

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