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Design and optimization of a C-band RF Pulse Compressor for a VHEE LINAC for FLASH Radiotherapy

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In this paper, the design of a compact C-band SLED RF Pulse Compressor for a Very High Electron Energy (VHEE) FLASH machine is presented. A spherical cavity RF pulse compressor - selected because of its compactness and relative ease of fabrication - is adopted to compress the 5 μs RF pulse, down to 1 μs obtaining a peak power gain greater than 5. Both the RF and thermo-mechanical design have been carried out, including a sensitivity study to evaluate the mechanical tolerances, possible tuning methods, and the cooling system. The main parameters of the full RF design (spherical storage cavity + mode converter/polarizer) and the final mechanical design of the structure are presented.

Footnotes

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