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Fabrication and tuning of a 325 MHz ion-injector for particle therapy facility

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In order to miniaturize ion injectors for particle therapy, a design of ion injectors based on a 325 MHz operating frequency was completed. The LINAC was consist of a 2.0 m length RFQ and a 3.8 m length IH-DTL, which was designed to accelerate $^{12}\text{C}^{4+}$, $^3\text{H}^+$, $^3\text{He}^+$ and $^{18}\text{O}^{6+}$ beams to 7 MeV/u. The RFQ cavity and the first DTL tank was been manufactured using aluminum. This paper gives an overview of the fabrication and tuning procedure of the prototype. The quadrupole electric field of the RFQ is adjusted flat by the tuner while reducing the dipole field components in both directions. The measured DTL electric field distribution after tuning is in good agreement with the simulation results.

Footnotes

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Paper preparation format

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Asia

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