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## **Alvarez drift tube linac for medical applications in the framework of HITRIplus project**

*Tuesday, 9 May 2023 16:30 (2 hours)*

A first beam dynamics and RF design of an Alvarez-type drift tube linac (DTL) has been defined in the framework of the EU project, HITRIplus. Its main application is to be exploited as a carbon ( $^{12}\text{C}^{4+}$ ) and helium ( $^4\text{He}^{2+}$ ) ion injector into a compact synchrotron for patient treatment. As a second implementation, helium particle acceleration with a higher duty cycle of 10% enables the possibility for radioisotope production. The 352.2 MHz structure efficiently accelerates two ion species, for  $A/q=3$  and 2, in the energy range of 1–5 MeV/u and for a beam current of  $\sim 0.5$  mA. The design extends to a full length of  $\sim 7$  meters. Permanent magnet quadrupoles are utilized all along the DTL for focusing both ion beams. This paper presents a first-phase analysis towards a realistic DTL design capable of providing full beam transmission and minimum overall emittance increase for two ion beams.

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### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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