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Planned optimization of the ion sources on the HIT test bench

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The Heidelberg Ion Beam Therapy Center (HIT) is a hospital-based treatment facility in Germany. Since the first treatments in 2009, more than 8.500 patients have been irradiated with protons or carbon ions and since July 2021 with helium ions. At HIT, three Supernanogan ion sources supplied by Pantechnik are in operation around the clock for therapy up to 335 days a year.

A 4th Supernanogan ECR ion source is installed at the HIT test bench. The test bench is currently being prepared for a measurement campaign that will begin in October. The aim of the investigations is to obtain more beam current for the carbon ions used in therapy by feeding two microwave frequencies in parallel. We expect that this experiment will provide a better understanding of the ionization process in the ion source. In the first step we will feed 14.5 GHz and an extra frequency near the resonance frequency of 14.5 GHz. ± 0.5 GHz. In the second step we will feed in 14.5 GHz and 18 GHz.

To characterize and evaluate the beam quality in this setup, we will use the pepperpot a 4D emittance measuring device. In addition, it is possible to measure the beam current and the beam profile at the test bench.

This article provides an overview of the planned developments on the test bench.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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