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Operation with the LAPECR3 ion sources for cancer therapy accelerators

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An all-permanent magnet electron cyclotron resonance ion source-LAPECR3 (Lanzhou All Permanent magnet Electron Cyclotron Resonance ion source No.3) had been developed as the C^{5+} ion beam injector of Heavy Ion Medical Machine (HIMM) accelerator facility since 2009 in China. The first HIMM demo facility was built in Wuwei city in 2015, which had been officially licensed to treat patients in early 2020. The facility has been proven to be very effective, and more than 1000 patients have been treated so far. In order to prevent ion source failure, each facility employs two identical LAPECR3 ion sources to supply C^{5+} beam. At present, there are eight HIMM facilities under construction or in operation, and more than 16 LAPECR3 ion sources have been built. In order to improve the performance of the ion source for long term operation, some techniques were employed to optimize source performance and to avoid the damage of key equipment. This paper will introduce the operation status of LAPECR ion sources at these HIMM facilities and present the latest results of carbon beam production.

Footnotes

Funding Agency

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