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Compact 2.45 GHz PMECR ion sources developed for accelerator based radiation therapy facilities at Peking University

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Recently, Accelerator Based Radiation Therapy (ABRT) facilities for cancer treatment, that includes ion therapy and BNCT, have been bloomed up rapidly and is being established as a future modality to start a new era of in-hospital facilities around the world. A high current, small emittance, easy maintenance, long lifetime, high stability and reliability ion source is crucially important for those ABRT facilities. Research on this kind of characters ion source has been launched at Peking University (PKU) ion source group for more than 30 years and some exciting progresses, such as hundred mA H+/N+/O+ etc. beam current, less than 0.2 pi.mm.mrad emittance, a continue 300 hours non-sparking CW proton operation record have been achieved. Recently, we also involved in the ABRT campaign by in charging of ion sources. In this paper, we will summarize the several compact PKU 2.45 GHz permanent magnet ECR sources (PMECR) that were developed for proton therapy machines and BNCT facilities. The individual structure of the sources as well as the LEBT along with the commissioning results will be presented then.

Footnotes

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