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## The Development of Pepper-Pot Emittance Monitor in Gunma University

In Gunma University Heavy Ion Medical Center, carbon ion therapy has been performed since 2010. The carbon ion ( $C^{4+}$ ) for the injector is made with KeiGM ion source. There is another KeiGM ion source in Gunma University for the both the purpose of a reserve machine and for research and development. A wire-slit type emittance monitor has already been installed as a beam diagnostic device, and a pepper-pot emittance monitor (PPEM) was newly installed. PPEM has the advantage of shortening the measurement time. The emittance of He, C, Ne, and other ions was measured using PPEM, changing RF frequency, power, and gas flow rate to find the optimum parameters. Emittance variation with charge number of the ions were also measured.

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Yes

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