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Strategies for SPIRAL2 linac heavy-ion beam tuning

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Heavy ions have been accelerated for the first time by SPIRAL2 in 2022. A fast method to tune the linac cavities has been used (< 1 hour by now, < 10'in the future) to obtain a 7 MeV/A 18O6+ beam (50 microA CW). Then an automatic Q/M beam change procedure has been successfully used to directly produce a 18O7+ beam. The goal was to demonstrate the possibility to tune a beam even if its intensity is too low (<10 microA) to be seen by phasemeters (BPM) along the linac. The linac transmission was ˜ 100% for both beams and, as expected, the measured output energy was the same. The same oxygen reference beam tuning has been also used to obtain 80 microA of 40Ar14+ at 7 MeV/A. Again, the same method has been used to tune the linac cavities at the RFQ output energy beam (0.73 MeV/A, no acceleration). These different methods and the one used to tune the linac output energy are presented.

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Footnotes

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Yes

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