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GANIL cyclotron ion sources: optimisation for operation

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The GANIL (Grand Accélérateur National d'Ions Lourds) in Caen has been producing and accelerating stable and radioactive ion beams for nuclear physics, atomic physics, radiobiology and materials irradiation since 1982.

On cyclotrons facility, two ion sources (ECR4 and ECR4M) are used to produce around 4,000 hours per year of gaseous and metallic beams. Recently, studies have been carried out to find ways of optimizing beam characteristics (stability, intensities).

One of these involves improving the long-term stability of the beam, which is an important parameter for tuning the accelerator and for physics experiments. At the same time, this improved stability will also reduce the need of on-call interventions for ion source experts.

Other studies and tests have been carried out to increase the intensity and/or stability of the metal beams by adapting the injection of the ion source on ECR4/4M. Depending on the configuration, the gain shall be up to a factor of 2 on the charge state required for acceleration, and stability has also been improved compared to previous one.

Some details and results will be presented.

Footnotes

Funding Agency

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Yes

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