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The Ion Beam Extraction System Upgrade of the GTS ECR Ion Source at GANIL

The GTS ion source, operated at 14.5 GHz, provides multiply charge heavy ion beams for the ARIBE facility at GANIL. The facility variety is limited by the efficiency of the extraction especially in the few keV domain. In order to improve the ion source, the extraction system was upgraded numerically. The shape of the plasma and the puller electrodes was changed. It causes the increase of the electric field near the plasma meniscus and allows to increase the maximum available ion beam current while decreasing the optimal extraction voltage. The new extractor was designed and compared with the existing one using IBSimu. The required beam parameters were taken from the experimental data. The possibility of the increase in the extracted beam current was investigated. Also, the opportunity of effective low energy beam formation (at a few kV or sub-kV extraction voltage) was studied. The high current and low energy ion beam production will provide new possibilities for ARIBE facility users.

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