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RFQ injector A/Q = 7 for the production of exotic nuclei using fusion-evaporation and multinucleon transfer reactions

Having a Q/A = 1/7 or 1/6 injector available as soon as possible is essential for S3 to be competitive for heavy and super-heavy nuclei studies. A higher intensity can be obtained for the heaviest beams with an injector Q/A = 1/7 compared to 1/6, but will not benefit to S3 in the medium term due to the limitations of the S3 electric dipole. In the longer term, it is imperative to increase the variety of beams on offer for the long-term future of GANIL and SPIRAL2: radioactive beam production method different from fission, alternative to the CSS cyclotrons, and new associated instruments. An energy limitation of the injector Q/A = 1/7 compared to 1/6 is not prejudicial in this perspective, whereas the highest intensities of the heaviest beams are an advantage in the 1/7 case. This is illustrated with the case of multinucleon transfer reactions produced using a target-ion source followed by a post-acceleration. Such an experimental complex would make it possible to have competitive beams for a unique physics.

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Classification de Session: Contribution to the future of GANIL