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SPIRAL 1 Upgrade at GANIL: status

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The Upgrade of SPIRAL1 [1] aims to offer new radioactive ion beams to the physics community. Regarding the ion beams requested by the users, an important technical transformation was needed to make the current installation able to host new Target Ion Source Systems (TISS) suited to the production and ionization of the relevant isotopes, while preserving sufficient high charge states for post-acceleration. Part of the work has already been done: the irradiation cave has been transformed and successfully tested with two different TISSs in 2013. To match with the features of the cyclotron post-accelerator, the second part of the project consists in the installation of an efficient charge breeder, in a room surrounding the production cave which must first be transformed to be in conformity with the conclusions of a safety examination. The risk analysis related to the technical proposal has just been approved by the safety authority thus building transformations will start soon and should be completed by the end of 2015. Improvement of our charge breeder takes advantage of the experimental feed-back of existing on-line breeders (ANL/Argonne, LPSC/Grenoble). It is now built and on-line tests with stable primary ion beams are scheduled by spring 2015 at LPSC. In parallel, a TISS including a graphite target associated to a FEBIAD ion source [3], already tested on-line in 2013 [2] to produce new radioactive ions on SPIRAL1, will be optimized before using it regularly after the SPIRAL1 Upgrade commissioning.

Goals, technical progress and safety status will be presented with more details.

[1]: P. Jardin et al, Rev. Sci. Instrum. 83 (2012) 02A911

[2]: P. Delahaye et al, contribution to this conference.

[3]: O. Bajeat et al, Nuclear Inst. and Methods in Phys. Res. B 317 (2013) 411

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