

GANIL/SPIRAL 2 – status and future

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Recent results related to study of nuclei far from stability obtained at the GANIL facility [1] will be presented. A short-term scientific program of the current facility and, in particular, the AGATA campaign at GANIL will be discussed.

A first phase of the SPIRAL 2 facility [1], an ambitious extension of the GANIL accelerator complex, will be accomplished in 2014. In the frame of this project, a new superconducting linear accelerator delivering high intensity, up to 40 MeV, light (proton, deuteron, 3-4He) beams as well as a large variety of heavy-ion beams with mass over charge ratio equal to 3 and energy up to 14.5 MeV/nucleon is in the final stage of construction. In the future SPIRAL2 Phase 2, using a dedicated graphite converter and the 5 mA deuteron beam, a neutron-induced fission rate is expected to approach 1014 fissions/s for high-density UCx target. The versatility of the SPIRAL 2 driver accelerator will also allow using fusion-evaporation, deep-inelastic or transfer reactions in order to produce very high intensity Rare Isotope Beams and exotic targets. The energies of accelerated RIB will reach up to 7-8 MeV/nucleon for fission fragments and 20 MeV/nucleon for neutron-deficient nuclei.

An ambitious scientific program at GANIL/SPIRAL2 impose a use of the most efficient and innovative detection systems as the upgraded magnetic spectrometer VAMOS, the 4 π gamma-arrays EXOGAM2 and AGATA as well as charged particle detectors like MAYA, MUST 2 and TIARA. Several new concepts of the detection systems (ACTAR, FAZIA, PARIS) and a new separator/spectrometer S3 located in dedicated experimental hall are currently under construction. A dedicated new experimental hall called DESIR will be used for experiments with low-energy RIB provided by SPIRAL1, S3 and SPIRAL2 ISOL target-ion source system.

It will be shown that developments of high intensity stable and radioactive ion beams at GANIL cyclotrons, SPIRAL1 and new SPIRAL2 facility as well as important upgrade of existing detection systems will open new opportunities in experimental nuclear physics and its applications. A status of the construction of the SPIRAL2 facility and future operation modes of the GANIL/SPIRAL2 complex as a multi-user facility will be shortly presented.

[1] <http://pro.ganil-spiral2.eu/>

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