

Nuclear physics for basic science and applications

In this contribution, the DPhN presents its priorities for the evolution of GANIL. Saclay physicists are currently conducting experiments along three main scientific axes:

- 1) properties of nuclei at the extremes of isospin asymmetry, excitation energy and shape,
- 2) heavy and super-heavy nuclei at extreme masses,
- 3) neutron-induced reactions notably for the study of fission in actinides, with applications for nuclear data.

Regarding the scientific future of GANIL, DPhN physicists propose along these three axes the construction of three new scientific tools, which will ensure that GANIL will continue to be a worldwide competitive facility:

- An installation for studying nuclear structure with electron-ion collisions, that will provide a new original probe to study charge distributions in radioactive nuclei,
- a facility capable of delivering a wide range of radioactive beams, both on the neutron- and proton- rich sides, at energies up to ~ 60 A.MeV, and
- the construction of an RFQ $A/Q = 7$ injector for enhancing the intensity of ion beams ranging up to U. This upgrade will be vital for the long-term programme of S3 and will also allow the production of new neutron-rich nuclei through multi-nucleon transfer.

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