

**Status report on the Preparatory  
Work for and with the International  
Expert Committee on the Future of  
GANIL**

Michel Spiro with the precious help of  
Fanny Farget and Nicolas Alamanos

June 25th 2020

# International Expert Committee on The Future of GANIL

- Maria Jose Garcia Borge (CSIC)
- Paolo Giubellino (GSI)
- Ulli Koester (ILL)
- Hiroyoshi Sakurai (Riken)
- Boris Sharkov (JINR)
- Brad Sherill (MSU)
- Michel Spiro (Chair)
- Johanna Stachel (University of Heidelberg)

# Agenda June 9<sup>th</sup>, 2020 meeting

- Welcome and draft agenda (5 minutes)
- Presentation of GANIL and views from the direction ( 1hour + 15')
- Break 10 minutes
- Status report on the Preparatory work for the Committee MS (1hour + 20')
- Break 10 minutes
- Closed session (1 hour)

# Terms of Reference (1)

Comme vous le savez, le paysage européen, pour ce qui concerne la physique nucléaire et les applications associées est en forte évolution avec en particulier la mise en service prochaine de la phase 1 de SPIRAL 2 au GANIL, l'évolution de la construction de FAIR en Allemagne, les développements de ISOLDE au CERN et les importants investissements engagés à JINR en Russie. Sur le plan international également, d'importantes infrastructures de ces domaines de recherche sont en construction ou en projet en Corée du sud et en Chine ainsi qu'aux États-Unis.

Dans ce contexte en forte évolution et compte-tenu de la position et du rôle de notre pays dans le développement des sciences et techniques nucléaires, il nous apparaît essentiel d'actualiser notre vision de la place et du rôle futur de notre installation nationale le GANIL. Nous souhaitons démarrer cet exercice en ayant en main une analyse experte et indépendante du positionnement scientifique et technologique du GANIL débouchant sur des voies possibles d'évolution du laboratoire dans son contexte local et régional.

Nous avons souhaité vous confier cette mission et proposons pour cela que vous vous entouriez d'un petit comité composé d'experts de renommée mondiale. Sans que ce soit limitatif, les personnes dont le nom suit

# Terms of Reference (2)

NOUS souhaitons que les points suivants soient abordés :

- Le GANIL dans son environnement local et régional : positionnement disciplinaire (physique fondamentale et applications), lien thématiques et structurels avec les laboratoires voisins, liens avec le milieu industriel régional et national,
- Quel rôle futur pour le GANIL dans la recherche en physique nucléaire fondamentale, dans le contexte européen et à l'international ? Quels partenariats privilégier ?
- Quel rôle futur pour le GANIL dans les applications associées, en France et dans le contexte européen en particulier ?
- Quelles évolutions possibles du positionnement disciplinaire ?

- Dear colleagues,
- Thank you very much for having accepted to be part of the international expert committee on the long term future of GANIL. Your expertise and vision will certainly mark the history of GANIL. I am very honoured to chair this very high level group of expert personalities. I have asked Fanny Farget (CNRS) and Nicolas Alamanos (CEA) to help me in this task. They are in cc.

The process, if you agree will be the following:

- 1) A call, for about 2 pages maximum contributions from the national and international community, will be open end of January till end of March
- 2) Meanwhile, Fanny, Nicolas and myself will interview selected French personalities who have a responsibility connected to GANIL.
- 3) In April and May, Fanny, Nicolas and myself will produce a digest of all the inputs we collected in a no more than 10 pages document.
- 4) All this will be given access to you to start the work of your committee.
- 5) We may need to meet (remotely at least) in June and maybe again in Fall to converge to the final report. Meanwhile we can exchange electronically.

# Contributions from

- Nuclear Physics Community
- GANIL users
- CS members
- And beyond...

# Contributions received

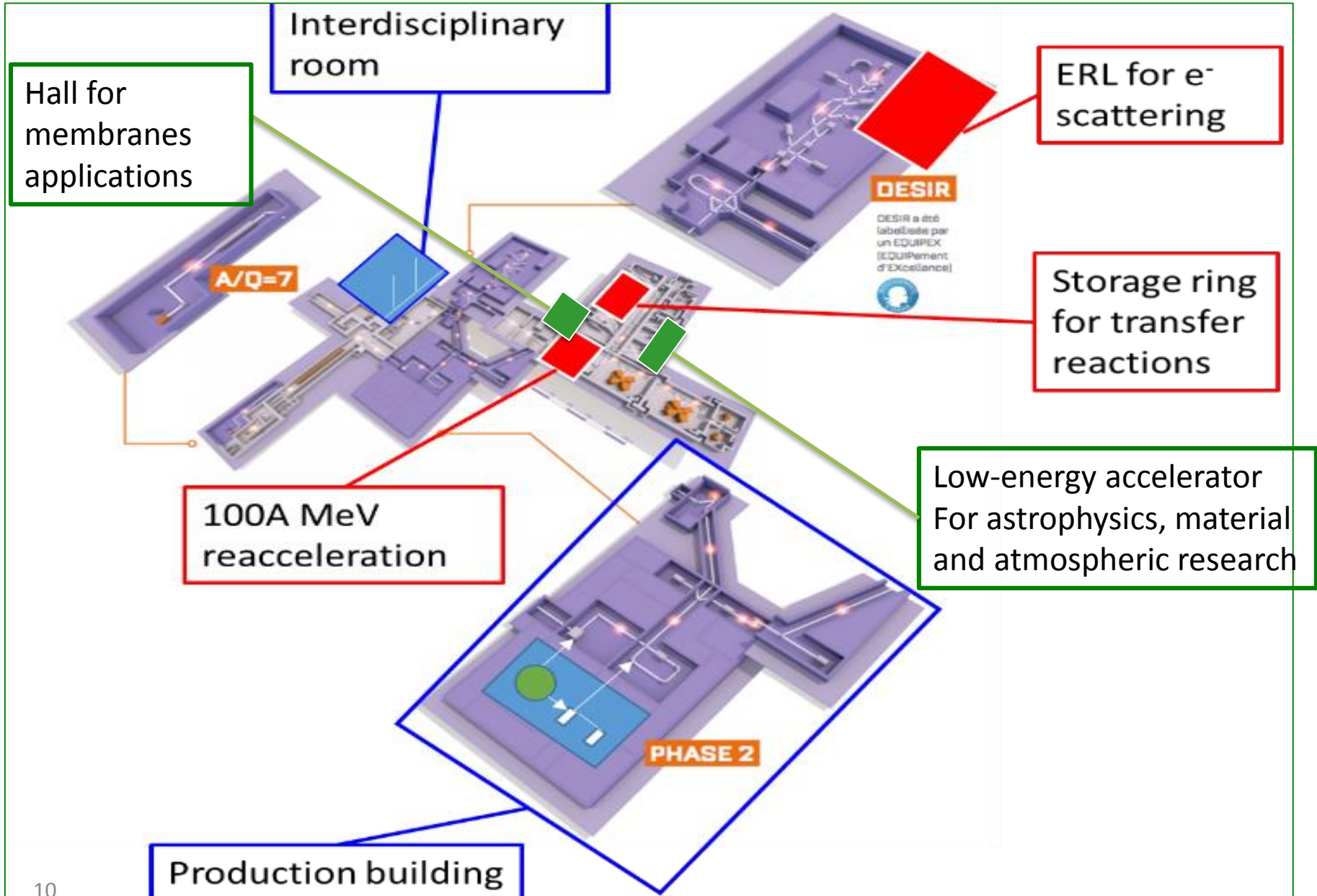
- 12 for Nuclear Physics
- 9 for applications and interdisciplinary fields
- 5 support letters
- 2 directly to us, not on the site
  
- About 200 people replied (1/3 of the user community, seniors mostly → almost 100% of all seniors)
- → Converging views for the future



# Interviews

- Caen-la-mer, Centre François Baclesse, CHU, CYCLHAD, Région Normandie, Université de Caen, CIMAP, Normandie Énergie/Nucleopolis, Cyceron, LPC Caen, ENSI Caen, DEN, DAM, IRAMIS, IPhT, INP, INSU, INSIS, INSB, INC INSERM, selected people in GANIL, Director and Deputy Director of GANIL...
- They all consider that GANIL is the international place of the Caen area, thanks to the nuclear research installation. It must remain so. In parallel, GANIL must develop applications: value the know-how, the technology, the instrumentation, apply accelerator technology, develop nuclear astrophysics and chemistry (astrochemistry, chemistry under irradiation), radio isotopes, radiobiology, nuclear imaging, hadrontherapy, nuclear applications for health and last but not least the study of materials under irradiation. Ganil could become a world center of the study of materials under irradiation.
- Everyone is ready to help to make GANIL a leading and federating research center.
- Ganil should more liaise with local actors
- National entities (CEA and CNRS Institutes) should be more connected to the governance

# FUTUR -- GANIL – RESUME PROPOSITIONS



# Summary (1)

- 1/ GANIL must keep its character of being at the top level of the fundamental research
- 2/ The originality and uniqueness of basic research in nuclear physics will bring along uniqueness and excellence in applied science
- 3/ The already going-on upgrade of GANIL will be already a unique asset in the world:
  - **Phase 1 (already planned) LINAC, S3, NFS, New injector A/Q=7:** Commissioning with nominal parameters. **Building of DESIR hall.**
  - **Phase 1+ (already planned):** Consolidation of cyclotrons for SPIRAL1 and Interdisciplinary research, **and DESIR equipment with traps** for neutron deficient nuclei, neutron rich nuclei, super-heavy and isomeric beams.
  - **NFS** as platform for nuclear data and neutron-induced reactions.

# Summary (2)

- 4/ - **production of fission fragments** in the Production Building by other mean than the initially foreseen phase2 (full LINAC): the possible downgrading in terms of fission-fragment production by the LINAC or the use of other means (electrons through photofission) has to be studied and put into balance with the optimization of parallelisation of beams.
  - **ERL with exotic beams in traps** seem very promising. Additional information will be required to define the project
  - timelines

# Summary (3)

- 5/ Parallelisation of beam is a must to succeed in the diversification of activities and increase of the community
- 6/ Interdisciplinary research has a well-defined perimeter with the Phase 1 and Phase 1+ development, based on ion-irradiation and pulsed neutron beams (using 1% of the LINAC beam)
- 7/ A detailed analysis on a future strategy on the Human Resources needed to build the different projects including other French institutes and International collaboration has to be planned.
- 8/ On the same topic, neutron-science community has to be better approached especially concerning the Interdisciplinary Hall, through the IRAMIS, the CRISMAT laboratory and the Société Française de Neutronique.

# Priorités et programme de travail

- Terminer le programme actuel déjà approuvé
- Optimiser l'exploitation
- Plus de travail nécessaire sur Production Building et Interdisciplinary Hall
- Soutien de principe à un programme ERL plus pièges qui demande à être étudié
- Cadrage financier et humain des tutelles?