DESIR Meeting – 11/20/2013
Minutes

Participants :

P. Ascher[1], B. Blank[2], M. Bissel[3], J.F. Cam[4], F. Delalee[2], P. Delahaye[5], A. de Roubin[1], D. Durand[4], X. Fabian[4], X. Fléchard[4], S. Grévy[2], G. Grinyer[5], E. Liénard[4], S. Naimi[1], K. Mazurek[6], G. Neyens[7], N. Orr[4], L. Perrot[8], H. Savajols[5], L. Serani[2, 5], J.L. Tain[9], J.C. Thomas[5], Ch. Weber[10], D. Yordanov[8]

[1]MPI Heidelberg
[2] CEN Bordeaux-Gradignan
[3] ISOLDE, CERN
[4] LPC Caen
[5] GANIL
[6] Univ Krakov
[7] KU Leuven
[8] IPN Orsay
[9] CSIC Valencia
[10] LMU Munchen

Introductory word: B. Blank

- ➔ Meeting agenda
- ➔ Announcement of a forthcoming 2-days joint DESIR/S3-LEB workshop early in 2014, presumably in March and at GANIL. Deadline for submission by mid-February. The purpose will be to update the S3-LEB and DESIR LoI (see below). Further information to be sent to the two collaborations.
- ➔ Introduction of Laurent Serani (50% CENBG-50% SPIRAL2), technical coordinator of the DESIR facility during the construction phase

News from SPIRAL2: H. Savajols

- ➔ New SPIRAL2 project strategy:
  - o Integration of DESIR in the first phase of the project, called “SPIRAL2 Phase 1+”
- ➔ An update of the DESIR LoI is mandatory to take into account the unavailability of n-rich SPIRAL2 beams before at least 2020
  - o Input 1: the S3 beams will be available at the S3 low-energy branch (S3-LEB) by 2016 and at DESIR by 2018 (from 10 to 30 kV): they will be produced using a laser ion guide where ions will be first thermalized and neutralized before being selectively laser ionized => beams of lifetimes > 100 ms. The list of expected beams will be provided soon to the S3-LEB and DESIR users
  - o Input 2: new beams will be provided by SPIRAL1, produced by means of a FEBIAD source (on-line test in December 2013). The list of expected beams will be provided soon.
- ➔ Synergies with S3-LEB:
  - o MR-ToF-MS systems and 4-arms electrostatic deflectors are foreseen both at S3-LEB (see annex 1) and at the GPIB-PIPERADE purification system of DESIR (see annex 2). The study of those devices will be coordinated by Pierre Delahaye (GANIL). The construction (2014) and the test (2015) of the electrostatic deflector will be performed at CENBG (coordination by S. Grévy).

Beam purification using SHIRaC and the HRS: L. Serani

- ➔ Following the recommendation of the SPIRAL2 management board, the development of the purification ensemble will be completed in the next two years. See annex 3.
- ➔ It is proposed to use it to purify the beams from S1 and S3.
- ➔ The best location would be at level -1, just before entering the DESIR hall basement. The integration of the purification ensemble at the end of the beam transport tunnels is being studied by the RIB group of the SPIRAL2 project.

Constrains on the DESIR experimental hall: J.C. Thomas

- ➔ The Preliminary Design Study (PDS) of the DESIR buildings will re-start by the beginning of 2014
  - o Inputs needed on the specific requirements of the equipment (handling capabilities, supplies, specific risks, etc…) to be given to the primary contractor. JCT will contact individually the owners of the equipment.

DESIR Timeline: J.C. Thomas

- ➔ PDS phase: January 2014 – July 2014
- ➔ Detailed Design Study: July 2014 – December 2014
- ➔ Construction permit: beginning of 2015
- ➔ Construction start (goal): 09/2015
- ➔ Availability of the DESIR hall to install the experimental equipment: 08/2016
- ➔ Commissioning: 12/2017

DESIR beam line studies: L. Perrot

- ➔ In 2013, design of a prototype section to be tested at CENBG together with the GPIB -> would be copied for the DESIR beam line. See annex 4.
- ➔ Ongoing: design of an electrostatic deflector

DESIR beam lines height: B. Blank

- ➔ At least three setups (MLLTrap, LPCtrap and MONSTER) would preferably use beam lines at 1.75 m; LPCtrap could easily be adapted to 1.5 m, MLLTrap with some work.
- ➔ The SPIRAL2 standard (beam transport tunnels) is 1.5 m
  - o The final decision depends on MONSTER, but is most likely 1.5 m.

Off-line tests with stable ion sources: B. Blank

- ➔ A FEBIAD source (being implemented at CENBG) and an electrospray ion source will be connected to the GPIB to provide the experimental setups with continuous or bunched stable ion beams for tuning.

LUMIERE facility design: D. Yordanov, M. Bissell

- ➔ Laser room: 60 m2; preferably in the hall close to the CRIS beam line entrance (collinear laser spectroscopy) and to the LPCTrap setup (β–ν correlation measurements with laser polarized ions)
- ➔ Additional storage + chemical lab rooms required (25 m^2)

➔ Layout of the CRIS (space optimization) and of the optical pumping line (laser injection) to be modified

DETRAP facility layout: S. Grévy (GPIB+PIPERADE), E. Liénard (LPCTrap), Ch. Weber (MLLTrap)

- ➔ The LPCtrap should be close enough to the GPIB to get short bunches. If not possible, an intermediate MR-ToF-MS or a RFQCB may "rebunch" the ions before their injection in the trap.
- ➔ The GPIB would be used in a standalone mode, to transmit to the setups either cooled and bunched beams (up to 60 kV, 10 to ~100 ms bunches) or continuous beams (~90% transmission expected for any mass). It could also be coupled to an MR-TOF-MS system (10^4 pps, 10 ms bunches, $M/\Delta M$ ~10^5) and to PIPERADE (10^6 pps, $M/\Delta M$ ~10^5). In this case, the GPIB and PIPERADE will share the same HV platform and the transport between them will be performed at a relative energy between 1 and 3 keV (i.e. the transport sections will be put at HV - (1 to 3) kV).
- ➔ The MLLTrap setup could be set to the same HV as the GPIB (like PIPERADE) or at ground. Both solutions need to be evaluated.

AOB:

- ➔ H. Savajols: announcement of the next SPIRAL2 week, 6-9 October 2014, Caen

Annex 1 - S3-LEB

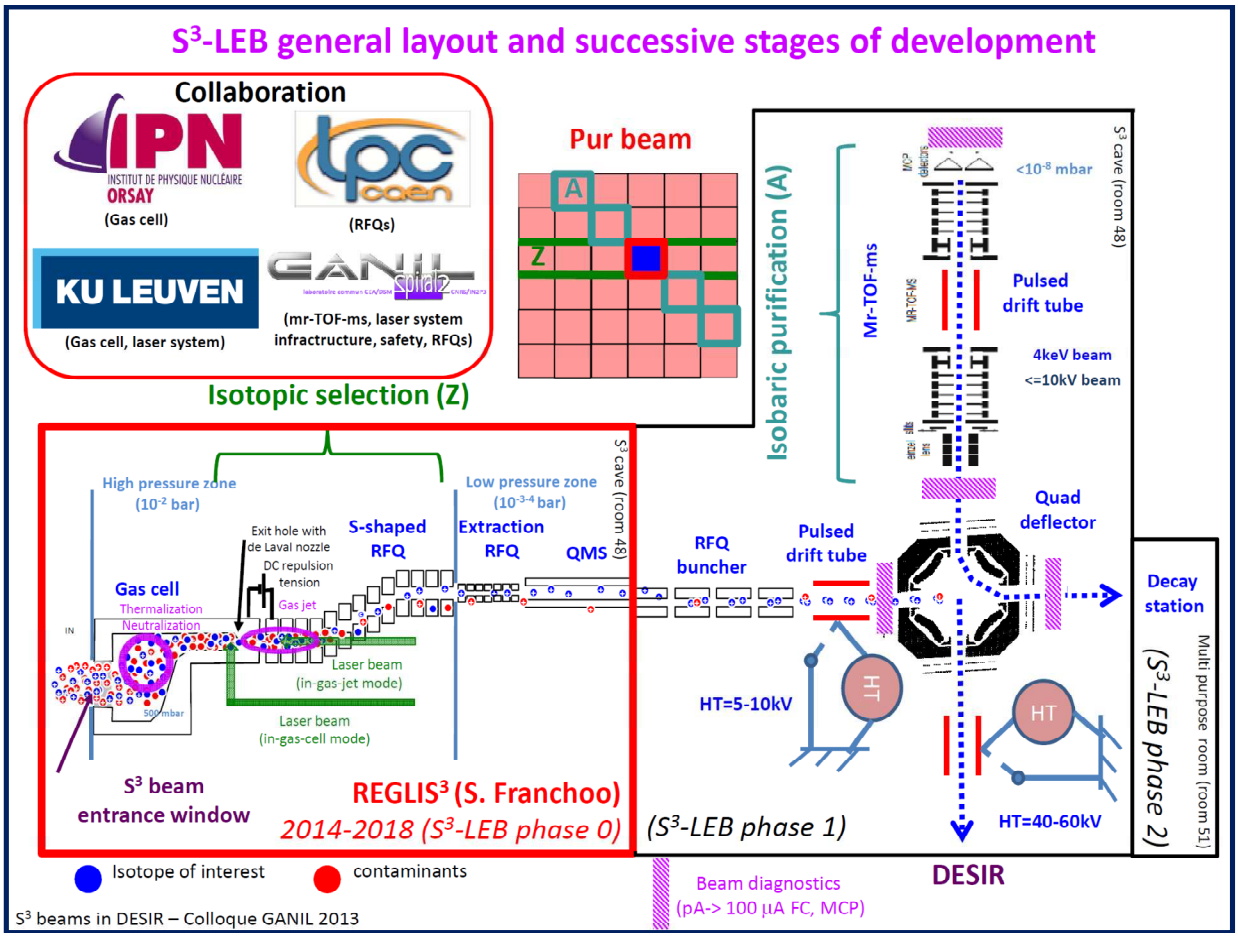

Figure 1: Layout of the S3-LEB facility (courtesy of B. Bastin, GANIL).

Annex 2 – GPIB+PIPERADE

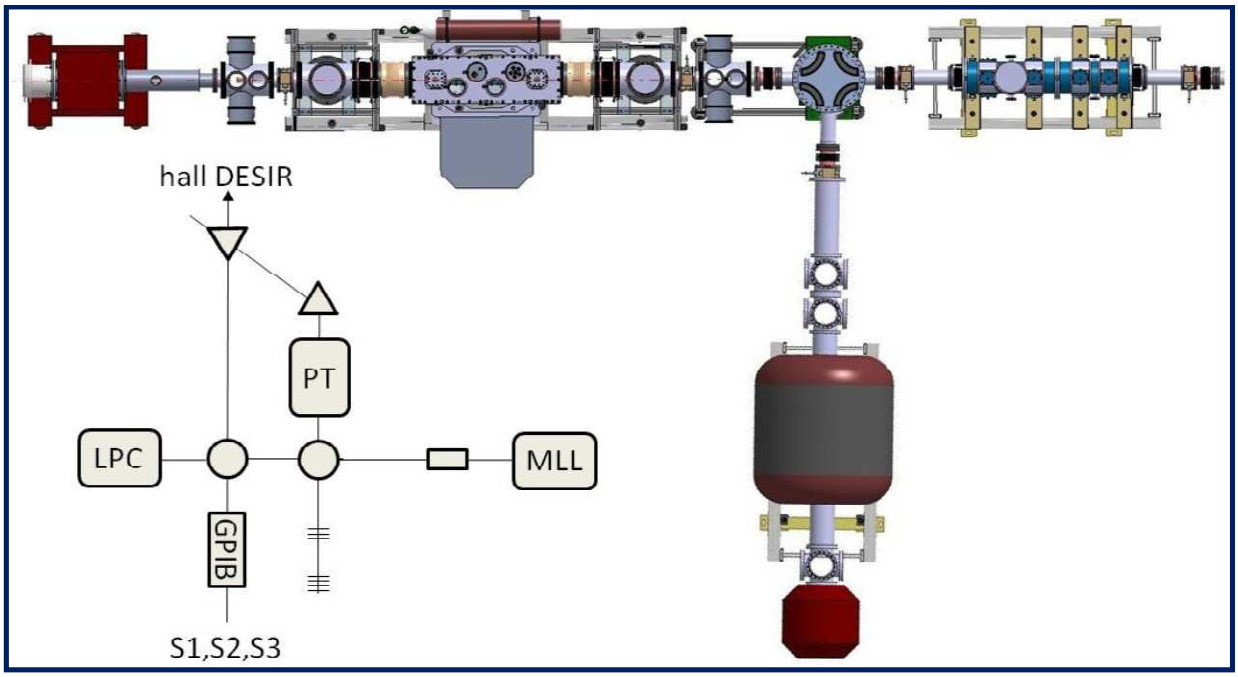

Figure 2: Proposed layout of the GPIB+PIPERADE purification ensemble and its link to the LPCTrap and the MLLTrap (Courtesy of S. Grévy, CENBG).

Annex 3 – HRS+RFQ

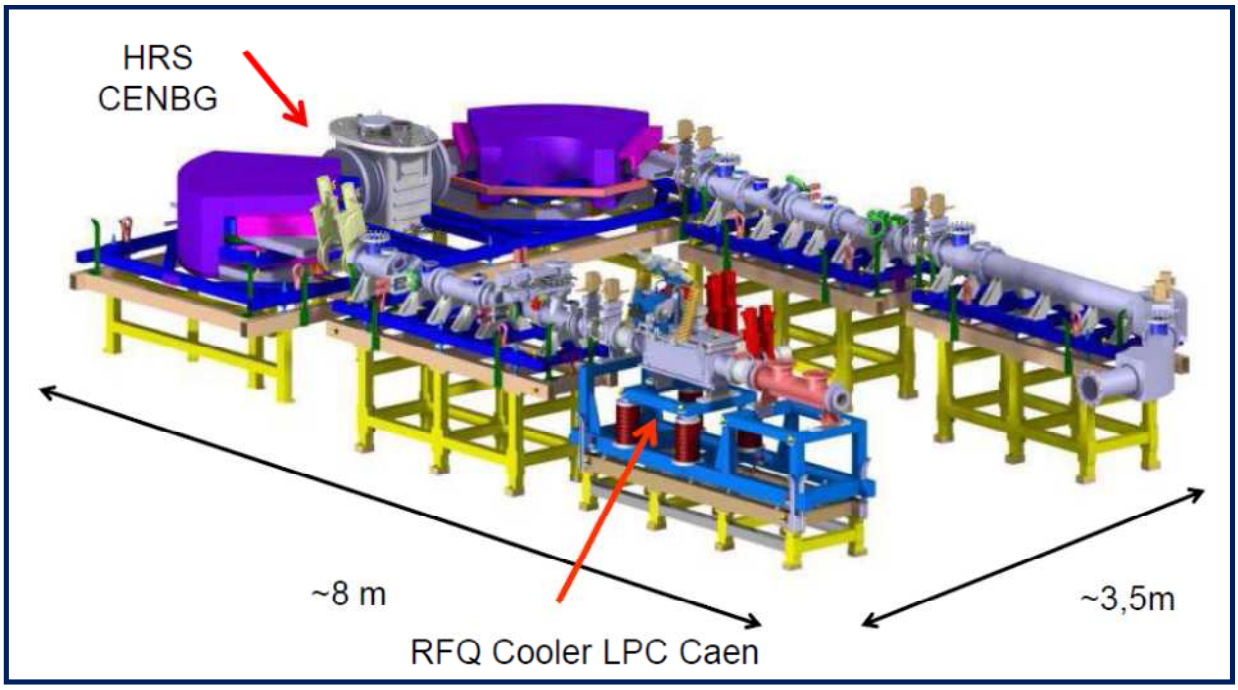

Figure 3: View of the RFQCB + HRS purification ensemble (Courtesy of Th. Chiron, CENBG).

Annex 4 – Beam lines studies

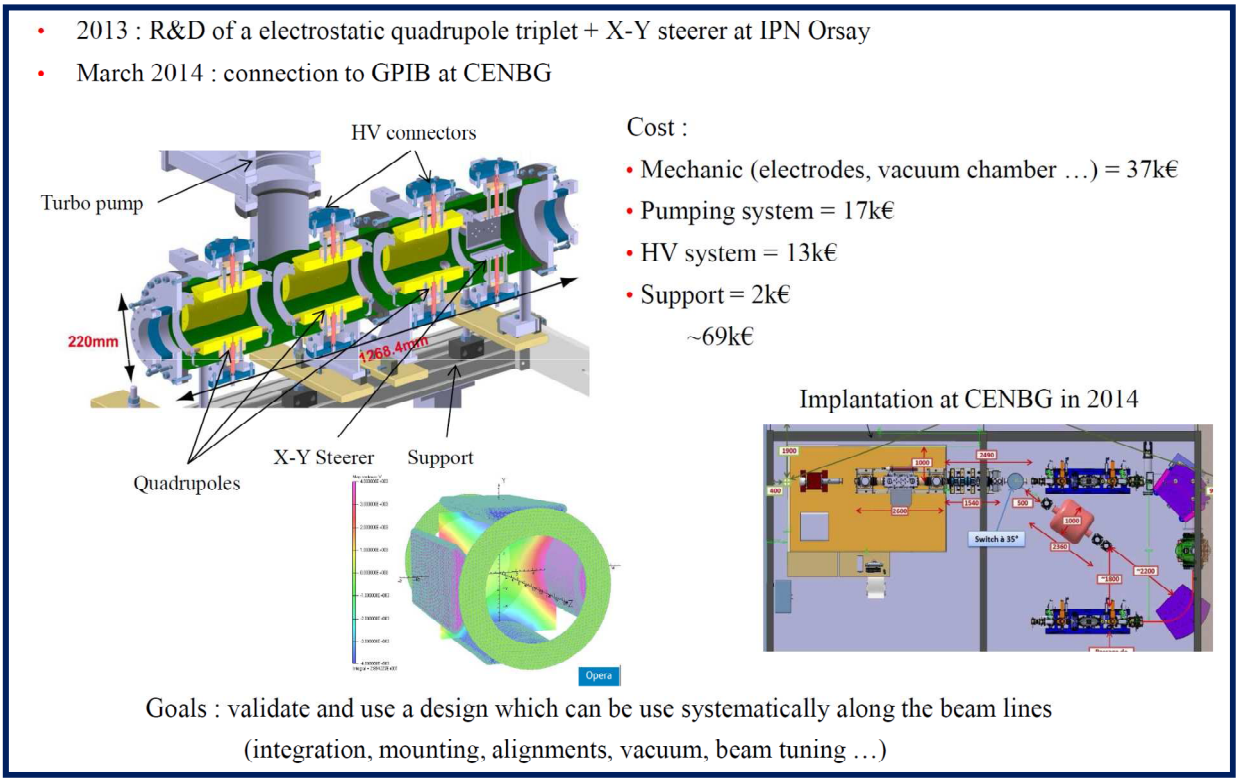

Figure 4: Prototype of a quadrupole + steerer electrostatic section for the DESIR beam lines (Courtesy of L. Perrot, IPN Orsay).