

# Minutes of the ISOLDE Physics Group Meeting, October 26<sup>th</sup> 2016

There were no comments to the minutes of the previous physics group meeting.

## Technical news

### • HRS + REX/HIE-ISOLDE

- $^{132}\text{Sn}$  has been delivered to Miniball at 5.5 MeV/u and  $A/q = 4.26$ , both maximum values for this year. The third superconducting cavity of cryomodule 1 was used for the first time this year and has been the main source of a few trips.
- A complicated production scheme of  $^{132}\text{Sn}$  was used. To achieve the required purity,  $^{132}\text{Sn}$  was extracted as a sulphide from a plasma source, then the sulphide was broken up in the EBIS.
- A gradual reduction of the  $^{132}\text{Sn}$  rate was observed at Miniball over time, due to either production or transmission. A factor 2 is expected to originate from the target degradation itself, a possible other reason being the reduction of the sulphur concentration.
- The liquid helium delivery was late, leading to a delay in the filling of the EBIS.
- For one night the proton beam was available only at reduced intensity due to a water leak in the cooling circuit of one of the PSB RF cavities.
- Yesterday some control problems were also experienced.

### • GPS

- There was a short run on GPS,  $^{26}\text{Na}$  was delivered to VITO for beta-NMR measurements (see *Physics and schedule*).
- The target for the lithium run was installed on-line, one day late.

### • Targets

- Target production is on schedule.
- Two targets were prepared for the upcoming  $^{66}\text{Ni}$  HIE-ISOLDE run, one of them as back-up due to the fact that it is a long experiment. This might become the approach for long HIE-ISOLDE runs in the future.

## Physics and schedule

- Next year's schedule will reserve two months (end of April-June) only for low-energy experiments, then HIE-ISOLDE will have priority until November.
- A change of approach in scheduling is possible for next year, with larger breaks between HIE-ISOLDE runs which could be filled by low-energy runs. This would reduce the strain on the operations teams, which was quite large this year.
- It is difficult to quantify the outcome of the  $^{132}\text{Sn}$  run, because the statistics expected in the peak of interest is very low. An idea to consider for the future in the case of well-separated high-energy transitions would be using scintillators instead of germanium detectors.
- VITO has been taking beam from time to time for further tests with  $^{26}\text{Na}$ . It was possible to reproduce the beam polarization from the September test and detect a beta-decay asymmetry. Despite improvement in beam quality the asymmetry was nevertheless only 10%, as during the September tests (compared to 30% measured at Collaps in the past). Various causes are being investigated<sup>1</sup>. The next test concerns the implantation of the polarized beam in a liquid and the necessary separation of the low and high vacuum regions

---

<sup>1</sup> In the meantime the likely source of the low beta-decay asymmetry was attributed to a loss of the laser-beam circular polarization due to one of the mirrors installed in the beam path.

(to be achieved using a thin membrane). Some more test beam time would be great for this check.

- The next HIE-ISOLDE run takes place on GPS and will begin on Friday. Currently the setting-up and calibration of the experiment are ongoing.  $^9\text{Li}$  beams will be delivered for the first time from HIE-ISOLDE to the scattering chamber and produce (d,p) transfer reactions, thus populating states in  $^{10}\text{Li}$ . The angular correlation of the reaction products will be investigated. This experiment is also a test for a higher-energy study in which (t,p) reactions will be performed.

## Safety

- On Wednesday there will be an intervention on the 400 kV electrical line, which will require switching between the French and Swiss power lines at 6:00 AM and a switch back after the intervention is completed. This should not cause any power failure at ISOLDE, but users should check their equipment.
- During the lithium run a large neutron background is expected. It will be monitored by RP (not observed).

## Visits

- A visit of 15 UK students will take place next Thursday at 10 AM. Volunteers are kindly asked to contact Kara.

## AOB

- The EURISOL DF Conference took place last week, benefitting from a large ISOLDE participation. There were many talks and nice overviews. Rob Harding and Yisel Martinez Palenzuela won the poster prizes, the former for the best physics contribution and the latter for the best technical contribution.
- The registration for the upcoming separator courses has been opened. The courses will take place November 14-16 and November 21-23. There are already many requests.
- Next week there will be the ISCC (Wednesday) and the INTC (Thursday) meetings. Both the open and the closed sessions of the INTC meeting will be organized in the same day, which makes the schedule very dense. The program will start at 8:30.

## Seminar

- The meeting was followed by a seminar of Georgi Rainovski from Sofia University with the title “Study of the impact of the microscopic structure on the isovector valence shell excitations in vibrational nuclei”.

The next PG meeting will be held on November 9<sup>th</sup> at 14:00, followed by a seminar by Joao Pedro Ramos.

Minutes taken by VM