

# Minutes of the ISOLDE Physics Group Meeting, October 25<sup>th</sup> 2017

The meeting took place in room 26-1-022. There were no comments to the minutes of the last meeting.

## Technical news

- GPS/REX/HIE-ISOLDE
  - <sup>9</sup>Li beams were post-accelerated to 8 MeV/u and delivered to the scattering chamber at XT03.
  - The yield of <sup>9</sup>Li was lower than expected.
  - Setting up began on Tuesday and for the accelerator part was finished on Wednesday. The rest of last week was dedicated to setting up the scattering chamber, which proved to be difficult.
  - The ion-source cavity was made of Ta, not W as had been requested. Nevertheless, the fact that the RILIS yield enhancement over surface ionization was only a factor 1.5 might suggest that the low yield was a target, not ion-source issue. Some final tests will be performed tomorrow.
  - The beam time was on its way on Friday night. On Monday morning a cool down in the accelerator chain was necessary for some radiation hotspot checks. During the proton interruption, <sup>12</sup>C was delivered to the experiment for calibrations and tests.
  - The experiment had to recover from many trips of the cavities and of the IHS. The latter was particularly problematic, because it is difficult to reset. Experts will be working on a simplified reset procedure.
  - Problems with the magnet reproducibility and with the experiment's sample holder were also reported. It was again pointed out that the GPS magnet problems seemed to have gotten worse since the magnetic-field probe was moved from its position.
  - The software intervention for fixing the bug responsible for the spontaneous move of the extraction electrode will have to be postponed for the winter shutdown, because it requires venting both front ends.
- HRS
  - The separator has been in stand-by. The next run will deliver Sn isotopes to Collaps.
- RILIS
  - The initial set-up for the upcoming Sn run began already during the HIE-ISOLDE run.
  - Due to the large isotope range to be probed, some isotope-shift corrections might be necessary during the run.
  - It would be preferable not to use lasers for next week's mercury run, unless absolutely needed.
- Targets
  - In the next year, the schedule will contain more target-ion-source information, in order to prevent any miscommunication concerning the desired beam-time conditions.
  - Currently, target #615 is installed on GPS.
  - The next GPS target Pb-VD5 (#619) was finished despite some problems with the cooling circuit and will be installed on Friday morning.
  - The characterization of the ZrO<sub>2</sub> target #622 for n-deficient Cu isotopes is almost ready.
  - The SiC target #623 for the last Miniball run of the year is on schedule. A UC<sub>x</sub> back-up will be available for this run.

## Physics and schedule

- The Li run was affected by a few problems. Apart from the setup difficulties, the production of  $^9\text{Li}$  was about a factor 10 lower than desired. The cavities were operated at the high-power limit and this led to occasional trips. On the positive side, the stripping of the  $^{12}\text{C}$  beam was more efficient at the higher energy used for this experiment and the background was not as high as had been feared. Nevertheless, some useful information might have come out from the measurements, but this will only become clear in post-analysis.
- Reports were received also from previous experiments, which could not be covered due to the meeting gap.
- The  $^{108}\text{Sn}$  HIE-ISOLDE run achieved its main goals, improving the precision on the  $B(E2;0^+ \rightarrow 2^+)$  value and also addressing the  $B(E2;2^+ \rightarrow 4^+)$ .
- The cadmium run on GPS was a PAC study of the behavior as a function of temperature of the so-called improper ferroelectrics. Cadmium was used as a hyperfine-interaction probe. The beam time was very successful. The program of PAC on molecules in gas phase is making gradual progress, but many complications are still in the way of obtaining conclusive results.
- The CRIS run on gallium isotopes encountered difficulties both on the laser-spectroscopy program (due to the large rubidium contamination) and on the laser-assisted decay spectroscopy part, due to problems with the decay station.
- Finally, the upcoming run on HRS is a collinear laser-spectroscopy study of tin isotopes using the Collaps setup. A lot of isotopes are foreseen to be addressed. Last year the experiment reached  $^{134}\text{Sn}$ . The goal of this year's run is to attempt  $^{136}\text{Sn}$  and to study again the less exotic isotopes with a different transition, which is more sensitive to the magnetic moments.

## Safety

- A lot of work on the shielding of the ISS will follow. A few items will be moved from the SAS in order to allow the transport of the items into the hall. The shipping will take place on Friday, so latest the day before the access path must be clear. As an emergency solution, b. 275 might be used temporarily to store items, although there is not much room there either. Drilling will take place next week.
- On Sunday the  $^9\text{Li}$  experiment detected some electrical noise, which after a while went away by itself. One possible source is the oil circulator from Collaps which was used in the weekend. Another possible source is the HIE-ISOLDE RFQ prepump, which Frank heard making noise around the same time.
- It would be useful to purchase a pallet forklift for b. 275. We could ask our AD co-users of the building to purchase one and this way contribute to the common cost.

## Visits

- There will be no visits this week. Next week there will be visits of both Bulgarian and Swedish students.

## Seminar

- The meeting was followed by the seminar of Zhengyu Xu from KU Leuven, with the title "Beta-decay half lives of neutron-rich nuclei around  $N=50, 82, \text{ and } 100$ ".

The next PG meeting will take place on Wednesday, November 1<sup>st</sup>, at 14:00 in the ISOLDE visitors' room (26-1-022). It will be followed by the seminar of Zsolt Podolyak from the University of Surrey, with the title "Role of Nucleonic Resonances in the Population of Excited States in High-Energy Reactions".

Minutes taken by VM