

Minutes of the ISOLDE Physics Group Meeting, October 4th 2017

The meeting took place in room 26-1-022. Maria Borge commented by e-mail that the technical stop mentioned in the previous minutes did affect the HIE-ISOLDE beam time, because the ion pulse width could not be recovered.

Technical news

– GPS/REX/HIE-ISOLDE

- A HIE-ISOLDE beam time on $^{140}\text{Nd}/^{140}\text{Sm}$ has been running until today.
- There have been a few problems with trips of the amplifiers due to the high A/q of the beam of interest, which required a lot of power. There was an intervention on Friday on the 9-gap amplifier. It seems that the interlock on the water supply is also causing problems.
- The CA0 elements are still tripping.
- There is ongoing work to integrate the beam-gate signals into the general controls. A trial version will become available at the end of the year.

– HRS

- The VITO experiment has been running on HRS until Wednesday morning, when GPS took over.
- The target for the upcoming CRIS experiment has been installed on Monday and will take stable beam tomorrow.
- There were some problems with the position calibration of the target robot, which in the end required a manual intervention (a more detailed intervention will take place during the shutdown).
- The HRS target has a neutron converter. A bug causing a misrepresentation of the proton beam coordinates was observed (position zero needed to be implemented at 0.1; otherwise the position of the beam was +40). The problem was corrected but care should be taken in the future in case it comes back.

– RILIS

- During the Nd run both a Ti:Sa scheme and a dye scheme were set up and compared. Ultimately the dye scheme was favored during the run.
- Shane Wilkins has joined the RILIS team.
- Currently a gallium scheme is being set up for the CRIS run, which will be finalized once the Nd run is over.

– Targets

- The LaC_x target for the next Miniball run is being produced. There are some delays because the new press is broken and the old one must be used. The goal is to install the target on Friday, but if not possible the installation might have to move to Monday.

Physics and schedule

- The goal of the last HIE-ISOLDE experiment was to study mixed-symmetry states in ^{140}Nd . Due to the very low probability of the transitions of interest, the yield was a crucial component of the experiment. A lot of efforts were made to improve the ratio between ^{140}Nd and ^{140}Sm , however ultimately it was not possible to improve it beyond 1:1. The count rate was relatively low at 5-6 counts/minute, which meant that it was not possible to observe the non-yrast states relevant for the physics case. Consequently, the program was switched to ^{142}Sm , where many states, including states of interest, were observed. Because it seems that the lasers might not have been ideal last week, the beam time will continue for one additional shift, to

be discussed after the meeting. Many thanks to all people who supported the experiment, including Liam, the operators and RILIS.

- The following experiment on HRS with the CRIS setup will perform the laser spectroscopy of neutron-rich Ga isotopes. In 2015 it was possible to measure up to ^{82}Ga , having to face both the Rb contamination and a neutralization efficiency problem. With more recent improvements on the CRIS apparatus it is now possible to attempt more exotic isotopes (^{83}Ga) and to perform the spin identification and spectroscopy of two long-lived states in ^{80}Ga , which might be a mark of shape coexistence.

Safety

- On October 23rd there will be an RP survey (Monday-Tuesday). During this time, no protons will be delivered.
- Comments have been received from Safety on the fact that the storage material is sometimes covering or blocking access to fire extinguishers and emergency stops. This should be avoided.
- One of the problems with moving out material is that the CERN long term storage space is occupied with furniture from the ongoing office renovations.
- The installation of the shielding of the ISS magnet will begin October 23rd.
- A VITO electrical safety inspection will take place on Monday.

Visits

- The Researchers Night event was busy with about 1400 participants. Many thanks to the people who helped out with the event.
- On Monday there will be a visit of Danish high-school students.
- In two weeks there will be a visit of Bulgarian students.
- The participants in the ICIS 2017 conference in Geneva will only attend a Power-Point presentation of the ISOLDE facility. Several presentations were scheduled and Jose Alberto volunteered to help out.

Seminar

- The meeting was followed by the presentation of the bachelor-student work on the MIRACLS project of Laurin Elias Fischer, as well as by the seminar of Christine Steenkamp from the Laser Research Institute, Stellenbosch University, South Africa, with the title “Precision laser spectroscopy for astrophysics and nuclear physics”.

The next PG meeting will take place on Wednesday, October 25th, at 14:00 in the ISOLDE visitors’ room (26-1-022). It will be 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, and 100”.

Minutes taken by VM