

Minutes of the ISOLDE Physics Group Meeting, July 27th 2016

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

Technical news

• GPS

- Neutron-rich mercury beams (mainly ^{207}Hg) were delivered to IDS until Monday morning from a molten lead target, with plasma ionization.
- Collections of $^{197,199}\text{Hg}$ beams were attempted in parallel at GLM but were initially not successful. Possible reasons are that the transport settings to GLM were not correct for the desired mass, or that the high temperature of the lead target (required for the IDS program) produced too much contamination. Collections continued successfully once the IDS program was complete. A couple of trips of the target and line heating occurred towards the end of the run.
- The GPS setup was difficult, leading to only 50% transmission efficiency from the separator to the central beam line. A possible reason is the high beam emittance, although it is not certain whether the readings of the YGPS.FC490 Faraday cup are completely trustworthy.
- The setup problems were aggravated by the frequent crashes of the frontend computer *cfv-197-bisoinst*, which however stop occurring suddenly after one day, without any obvious reason.
- There was an accidental venting of the LA2 section during tests of the new tape station, which led to a closing of the sector valves for one hour.

• HRS

- Radium beams were delivered to CRIS until Wednesday morning.
- The helium tank and the RF amplifier of ISCOOL were replaced. The maximum amplitude of the RF field which can be now set is 1.7 V.
- A new uranium carbide target with neutron converter and quartz line was installed for ISOLTRAP, with separator setup performed on Monday.
- Stable beam was used by Tim Giles to test the transmission to the new tape station installed at LA2. It was observed that some of the control-system names of the various power supplies were changed, without taking into account the impact on saved users' settings or the beam optimiser.
- Stable beam tuning was performed by ISOLTRAP on Monday. They reported observing continuous beams of various elements (predominantly ^{133}Cs) coming from ISCOOL and producing permanent background in their MR-TOF MS spectra. Possible connection to the use of ISCOOL in bunching mode with abundant beams in previous experiments. The workaround was to turn the ISCOOL high voltage and RF off and retune the injection, which eliminated the background but reduced ISCOOL transmission to 20%.

• REX

- The interlock of the 9-gap amplifier is not working as smoothly as expected. It does not hamper preparation, but in case of an incident it would require more time for the setup to be put back on-line.
- Beam with $A/q = 4$ was successfully transported, which is close to what is needed for the next HIE-ISOLDE campaign.

• HIE-ISOLDE

- The beam-line alignment operation started last week is almost finished. Following its completion, the tunnel will be closed and the beam commissioning work can continue.

- The solenoid which developed a short to ground was tested in floated mode and could hold a 50 A current, which is the requirement for this year's operation.
- **Targets**
 - During the off-line tests of the UC_x target unit for the ISOLTRAP cadmium run, there were a few problems with the regulation of the temperature of the quartz oven. The thermocouples used for determining the temperatures of various target-unit elements have not been very reliable, which is a recurring problem. Better documentation will be provided for the future.
 - The UC_x unit for the next COLLAPS run on aluminium is ready, as well as the SiC target for the following ISOLTRAP run, which was produced using the new, recently delivered pill press.
- **RILIS**
 - The Edgewave laser used for the radium scheme seemed to have stopped working, but recovered by itself when turned on later. A possible explanation is the occurrence of an odd electrical glitch, which could not be reproduced.
 - Cadmium scheme for ISOLTRAP in preparation.

Physics and schedule

- The IDS run on GPS studied the decay of ²⁰⁷Hg to ²⁰⁷Tl. A lot of data were collected. A new set of clover detectors were brought from the IFIN-HH institute in Bucharest, which allowed increasing the number of possible angular correlations. A permanent solution for mounting them on the IDS setup will be implemented.
- ^{199m}Hg and ¹⁹⁷Hg was collected at GLM for perturbed angular correlation studies and tracer experiments. They addressed the properties of graphene surfaces and the effects of magnetic nanoparticles in the purification of water from mercury pollution.
- The following run is on HRS, delivering neutron-rich cadmium beams to ISOLTRAP. The goal is to re-measure ¹³¹Cd with the Penning trap, attempt ¹³²Cd and test the possibility of isomer separation and measurement in ^{127,129}Cd with a new phase-imaging technique.
- The schedule for the remainder of the year is complete.

Safety

- ISOLDE vacuum exhaust balloons were emptied before the holiday period.
- Thursday there will be an initial safety inspection of building 508.

Visits

- A visit of Bulgarian teachers took place on Monday, organized by Dinko Atanasov. Due to the collections taking place in the hall, it was restricted to a presentation in the visitors' room of building 508.
- There was a visit of South Korean delegates, focused on the handling of uranium carbide targets.

Seminar

- The meeting was followed by a seminar of Robert Wolf from MPIK Heidelberg on *The ALPHATRAP g-factor experiment*

Next PG meeting will be held Wednesday August 3rd at 2 pm. There will be no seminar next week.

Minutes taken by VM