

# Minutes of the ISOLDE Physics Group Meeting, July 12<sup>th</sup> 2017

There were no comments to the minutes of the last ISOLDE PGM.

## Technical news

### – HRS

- The HRS was in stand-by, with the last UC<sub>x</sub>-n/quartz unit still installed and pumped on the front-end.

### – GPS

- The first HIE-ISOLDE run of the year (and the first ever with 3 cryomodules) aimed at studying <sup>72</sup>Se, produced as a CO molecule from a ZrO<sub>2</sub> target. For this purpose, the target was designed with a CO<sub>2</sub> leak, in order to enhance the desired chemistry. Nevertheless, it was noticed that the production of molecules was much lower than expected, confirmed by the yield checks on Thursday night.
- The target conditions were optimized, but the already low yields have gradually decreased, being effectively gone by Sunday morning.
- The working assumption is that the chemistry was not driven by the gas leak, but by target impurities. The fact that the target had been very thoroughly baked prior to installation probably contributed to the very low default molecule formation and further on-line outgassing lead to a gradual decrease of beam production.
- Problems were reported with the GPS-FC490 Faraday cup, due to a faulty repeller. The repeller was replaced and now performance is improved.
- The transmission to the ISOLDE tape station was low for this run.
- The HRS and GPS power supplies were swapped again, due to a malfunction – drifting over time after restarting – of the GPS one.

### – REX/HIE-ISOLDE

- Some mis-coordination with the new person in charge of filling the REX-EBIS magnet with cryogenic liquids lead to time loss. It will be necessary to better manage the filling schedule (and clarify the general ISOLDE-specific constraints).

### – RILIS

- The lasers were set up as a back-up for Se ionization, however the achieved efficiency led to rates even lower for the atomic Se than for the molecular one.

### – Targets

- A new ZrO<sub>2</sub> target was prepared for this week's HIE-ISOLDE run. The target was not at all baked, in order to achieve as much chemistry with target impurities as possible. It was installed this morning and preliminarily it seems to behave better.
- The target for the next HIE-ISOLDE run on Ba is ready, it only requires filling with UC<sub>x</sub>. The fluorination required for Ba molecular production seems to have went well.

## Physics and schedule

- The first HIE-ISOLDE experiment performed a Coulex study of <sup>72</sup>Se. The rich population of levels in <sup>72</sup>Se allows it to be an excellent benchmark of models in the region, which an interesting region of shape coexistence. Some measurements were performed, but the decreasing beam rates made it very challenging to achieve sufficient statistics.
- The HIE-ISOLDE program will continue on the new target with <sup>70</sup>Se, for which the main goal is to settle some past conflicting results concerning its nuclear shape, prolate as deduced from an older Coulex study, oblate as deduced from half-life studies. A measurement of the

quadrupole moment of the first  $2^+$  state and of the energy of the second  $2^+$  state is intended. The proton scan on the new target will be made this afternoon, aiming to deliver beam to Miniball on Thursday night.

- Collections for Bertram might take place on Monday.

## **Safety**

- No news.

## **Visits**

- The second HIE-ISOLDE run was also the first approved CERN experiment from a South-African-led research team, which was the occasion of a visit of the facility by the CERN Press Office.
- A visit of CERN summer students will be organized next week.

## **Seminar**

- The meeting was followed by the seminar of Răzvan Lică from CERN and IFIN-HH, Bucharest, with the title „Beta decay spectroscopy at the edge of the  $N=20$  ‘Island of Inversion’ using the ISOLDE Decay Station”

The next PG meeting will take place on Wednesday, July 19<sup>th</sup>, at 14:00. It will not be followed by a seminar.

Minutes taken by VM