

Minutes of the ISOLDE Physics Group Meeting, November 15th 2017

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

Technical news

- GPS/REX/HIE-ISOLDE
 - During the last week, ⁵⁹Cu ions produced from a ZrO₂ target have been post-accelerated to a reaction chamber installed on the XT03 line. In parallel, some ⁶⁴Cu collections have been performed on the GHM line.
 - The HIE-ISOLDE setup went well and the REX efficiency was high. In order to study the ⁵⁹Cu reaction at different energies, the HIE-ISOLDE energy was changed several times around 5 MeV/u, which made the setup more time intensive.
 - The target tripped a few times at the beginning of the beam time, but became more stable later on.
 - There were also a few trips of the central beam-line elements.
 - The EBIS cathode has moved during the run. It is still functional, but in danger of breaking in case of a power cut. The procedure to install a new cathode requires baking, therefore a breakdown of the existing cathode would require some down time. A quick two-day installation without baking could be attempted in case of emergency, but it has never been done and the results are unpredictable.
 - Since Wednesday-Thursday the run has been going smoothly.
- HRS
 - The separator has been in stand-by.
- RILIS
 - The Cu run required extra effort in cleaning the optics due to the effect of the UV laser, but apart from that the lasers were quite stable all along.
 - By Friday the lasers will switch to a Mg scheme.
- Targets
 - The target currently on the GPS frontend (ZrO₂, #622) gave excellent yields.
 - The SiC target for the next Mg run was finished and will be installed tomorrow afternoon. A back-up target is being prepared in case of failure.
 - The LIEBE tests were postponed to next year. In the last week of the year GPS will run some tests of molecular beams, while on HRS a standard UC_x unit will be installed.

Physics and schedule

- The INTC session last week was a difficult one for proposals. Only four proposals and one LOI were recommended for approval by the Committee, which correspond to 41 out of 140 requested shifts.
- Some stable-beam tests with MEDICIS are scheduled to take place next week.
- It is important for interested users to register for the ISOLDE workshop in order for Jenny to know the number of participants (especially for coffee breaks and dinner). Intended participants who have not registered yet are kindly asked to do so as soon as possible.
- During the Hg collections taking place two weeks ago, the ISOLDE solid-state-physics team succeeded in performing the first-ever Perturbed-Angular-Correlation measurement on molecules in gas phase. HgI₂ and HgCl₂ were studied. This is a remarkable achievement given the difficulty to prepare the PAC sample without losing the radioactivity. Hg was a test case and provides important information to exploit when later attempting again the case of Cd.

- The ^{59}Cu experiment studied the $^{59}\text{Cu}(p,\alpha)$ reaction, of interest for nuclear astrophysics, in particular p-process nucleosynthesis. The reaction is decisive for the temperature threshold of an alternative nucleosynthesis mechanism, called the neutrino p-process, which might be necessary to fully explain the observed abundance of some p-process nuclides. The beam was sent to a CH_2 target and the reaction products were detected using a $\Delta E/E$ telescope and an α detector. During the experiment, the (p,α) reaction cross-section was determined at different energies.

Safety

- Preparations are ongoing for the mapping of the ISS field. The shielding is arriving and needs to be in place before the magnet can be energized.
- Interested participants in the November 28th ISOLDE safety courses should register as soon as possible.

Visits

- Guides are still missing for a HIE-ISOLDE visit on November 21st. Hanne will send an e-mail calling for volunteers.

Seminar

- The meeting was followed by the seminar of Christian Smorra from RIKEN with the title "A ppb measurement of the antiproton magnetic moment".

The next PG meeting will take place on Wednesday, November 22nd, at 14:00 in the ISOLDE visitors' room (26-1-022). It will be followed by the seminar of Camilo Granados from CERN with the title "In-gas laser ionisation and spectroscopy".

Minutes taken by VM