

Minutes of the TITAN Meeting

Held on the 4th of April 2008

Present: Jens Dilling, Maxime Brodeur, Christian Champagne, Paul Delheij, Melvin Good, Alain Lapierre, Mathew Pearson, Ryan Ringle, Vladimir Ryjkov.

Y-BOX & TITAN budget

- *Need to order power supply for the Y-box. These P.S. need to be controllable by EPICS.
- *There is 3 different scenarios as shown at the end of these minutes. The 'complete symmetry' one can be dangerous as the beam most likely won't be symmetric between injection and extraction from the EBIT.
- *The TITAN budget starting April 1st is ~15 000\$/trap, which put thigh constrain on the number of PS we can order. It looks like we will go for a phased installation of the PS.
- *Potential PS we can get includes:
 - ~4 unused MPET PS (problem: different vacuum chamber),
 - ~6 bipolar 5 kV ISEG PS from Alain (should be able to hook up to EPICS),Ray Dube/ Mike Macdonald may have some PS available.
- *Mel is working on the Y-box alignment.
- *Some electrodes and bellows are still in the machine shop.
- *The optimistic plan is to close the beam line and pump down before the week-end.

EBIT

- *The two Sikler lenses were aligned within 0.010".
- *No water leak was observed.
- *Alain brought the electron gun up to 2-3 mA. The electrodes are suspect to be contaminated.
- *EBIT beam line is installed; only need to install the bellow. Plan to add the RFA in the EBIT beam line.
- *Chris did fit his data and found an energy spread of about 10-11 eV at 1 keV beam energy.
- *Vlad proposed to install the RFA above the 1st 45 degrees to observe straight up beam from the RFQ. This can be useful when tuning low intensity beam.

MPET

- *The issue of the beating of 'breathing' of the RFQ beam seems to have been settled. Vlad changed the voltage on some steerer including XCB0 (before the 1st 45 degree bend) which was found to be fairly high and possibly over-steering the beam.
- *This optimization increased the beam intensity on MCP0 by a factor of 5.
- *No more beating is observed. The working theory is that we were transporting only the tail of the beam through the bend, which can possibly explain fluctuations in the number of ions.
- *This increased transfer efficiency means that we can possibly deal with lower incoming yields down to about ~ 100 ions/s (Be14 maybe possible?).

- *Vlad optimized the injection for both Na23 and K39 and also determined the axial energy spread of Li6 to be about 8 eV FWHM, in agreement with Chris measurement.
- *Running the system a 1 Hz makes deteriorates the TOF resonance (vacuum problem?) .
- *Vlad improve the signal to noise ration to S/N ~ 4,5. Used to be ~1,2.
- *We know have automated mass measurement, meaning that the switching between different ion species settings is included in the MIDAS program.
- *A 5 +/- 3 ppb mass shift with AME03 for Na23 was observed. This can be due to electric fields imperfections.
- *A 30 +/- 5 ppb shift for K39 was observed. If it was due to electric field imperfections, it should have been about 10 ppb. The nature of that discrepancy is still unknown and under investigation.
- *Two hypothesis: number effect (# ions in the trap affect the measured cyclotron freq?) or the mass of K39 AME03 is not quite right?
- *Possible contamination in the trap from K41 can be ruled out as its natural abundance is only 5% (vs 95%) and the K39-K41 distributions are enough separated in time to have different capture timing.
- *Vlad proposed to have OLIS Ar40 beam to do a K39-Ar40 comparison. OLIS won't be available until probably April 26-27th.
- *Vlad discussed with Don Dale about auto-switching between ISAC and off-line ion source beam. That means that ISAC have to allow us to control some of the ISAC electrodes.
- *The RF amplifiers are still at the company. They haven't found any problems so far, but they didn't open them yet.
- *Mat Pearson will need to vent the Y-box section bellow the RFQ this week and around April 22nd for the polarized beam time.

General

- *Z. Ke is coming from Apr. 14th until the 22nd to work on Be11 data analysis with Ryan ;-)
- *G. Gwinner will be there on Apr. 21-22nd and think to have a sabbatical at TRIUMF next year. Due to thigh budget, the testing of the cooler trap might be done next year using TITAN EBIT. But we will have to make to be able to shoot through the cooler trap magnet.

TITAN Switchyard Power Supply Requirements

Complete Symmetry

- Quads in both transfer lines locked to same supplies (4 supplies)
- All 36 degree benders locked to same supplies (2 supplies)
- All kickers locked to same supplies and no Y steering (2 supplies and 2 switches)

8 power supplies + 2 behlke
~ \$8,400

Nonsymmetric Steering out of EBIT

Same as above except we allow for nonsymmetric transport in and out of EBIT

- Independent steering into EBIT line (with Y steering)
- (7 supplies and 4 switches)

13 power supplies + 3 behlke
~ \$14,900

Nonsymmetric Steering and Nonsymmetric Quads

Same as above except we decouple the quads

- Quads in transfer lines are independent
- (8 supplies)

17 power supplies + 3 behlke
~ \$18,100