

TITAN Meeting Minutes

March 10, 2011

Attending: VS, ATG, BS, AC, BE, AG, SE, MG, PD, JD, MS, EM, MP

1 Attachment. (Aaron's presentation on the importance of the extraction fields for mass analysis)

RFQ: Ernesto

- Vacuum failure over the weekend. The EPICS group tracked the issue down to a faulty fibre converter card. Why this crashed the vacuum is unknown. Jane Richards is investigating.
- Obtained drawings from Design Office to find a location for the channel-tron.
 - Matt Pearson suggested a 90° solution with an EPICS interlock so that the Faraday Cup can stay in.
 - Requires a redesign of some elements.
 - Goal is to have design work finished and ready for installation in May.
 - Concept Deadline is in 2 weeks.

EBIT: ATG, MS

- Magnet warming up since the vacuum went down.
 - Pressure in the gun section shows some strange behaviour this time around.
- The installation frame for TITAN-EC detectors requires modification of the EBIT support structure.
 - EBIT group need a few days warning so that the magnet can be warmed up.
- Bradley-Nielson: test was a failure due to tuning problems at 2kV and vacuum crash.
- Coldhead servicing to start in the afternoon of March 29th. Cryogenics should be able to install the replacement head and start pumping down that evening.

CPET: VS, BS, BE

- Ceramic pieces came back from Do All Grindings.
 - Ceramic rod installed + wiring to electrodes
- Platform is being prepared for offline set-up. (Desk is gone)
- Power supplies are being ordered. Should take ~2-3 months for the shipment to arrive for tests with the offline set-up.
- The Switch test is being prepared.
 - Trap is being checked for shorts.
 - GSI switch is working with the titanlab computer and Labview.
 - Will test single, dipole and octopole electrodes.
- Daryl's switch deadline is next week (hopefully)

LabView License:

- Pierre Amadruz is looking into the issue.

PPG: PD

- 2 units are being assembled.
 - Approximately 2 weeks for delivery
 - Issue: VME crate: # of slots? Do we need a TDC? Size?

- Could potentially use the empty slots in the MPET VME crate.

MPET: SE

- Vacuum is worse after the EPICS crash
 - May need to bake the ion pump again
- Tests need to be done to understand our systematics.
 - We have no understanding of the systematics from the Rb beamtime
 - Needs to be done before the short is fixed in the post MPET beamline
 - Currently, the shifts are now ~10ppb (50ppb?)

GSI Switch:

- Invoiced arrived from GSI.
- Can we get a rental rate since the switch wasn't working until October?

TITAN Desk:

- The desk is gone and a temporary table has been set-up
- Potential safety issue with people falling back down the stairs? Mel to investigate.
- A new desk has been ordered.

TITAN-EC: AG

- Investigating options for automatic cooling system for SiLi detectors
 - System should be permanent and semi-automatic.
- Will use the EBIT VME crate for the DAQ card
- Beamtime in Aug or Sept, depending on the targets run then

Time of Flight

$$T(v_{RF}) = \int_{z_0}^{z_1} \sqrt{\frac{m}{2(E_0 + q(V(z_0) - V(z)) + E_r(v_{RF})(1 - B(z)/B(z_0)))}} dz$$

- Only E_r depends on what happens in the trap (get from solving equations of motion)
- The rest depends on the particulars of the extraction electrodes.

Integration?

- EVA fits many quadratics to approximate the fields
 - Nice because the integral is known in a closed form
 - Do these approximations lead to systematic shifts?
- Better to interpolate the fields and then numerically compute the integral?

Effect of Extraction Fields

- fc with singly charged trap extraction:
- 6020883.2767(486)
- fc with highly charged trap extraction:
- 6020883.2781(486)

$$\text{Diff} = 0.0014 = 3\% \text{ of } 1\sigma$$