

HERMES

HERA Coordination meeting

J Stewart

March 2006



Initial Difficulties

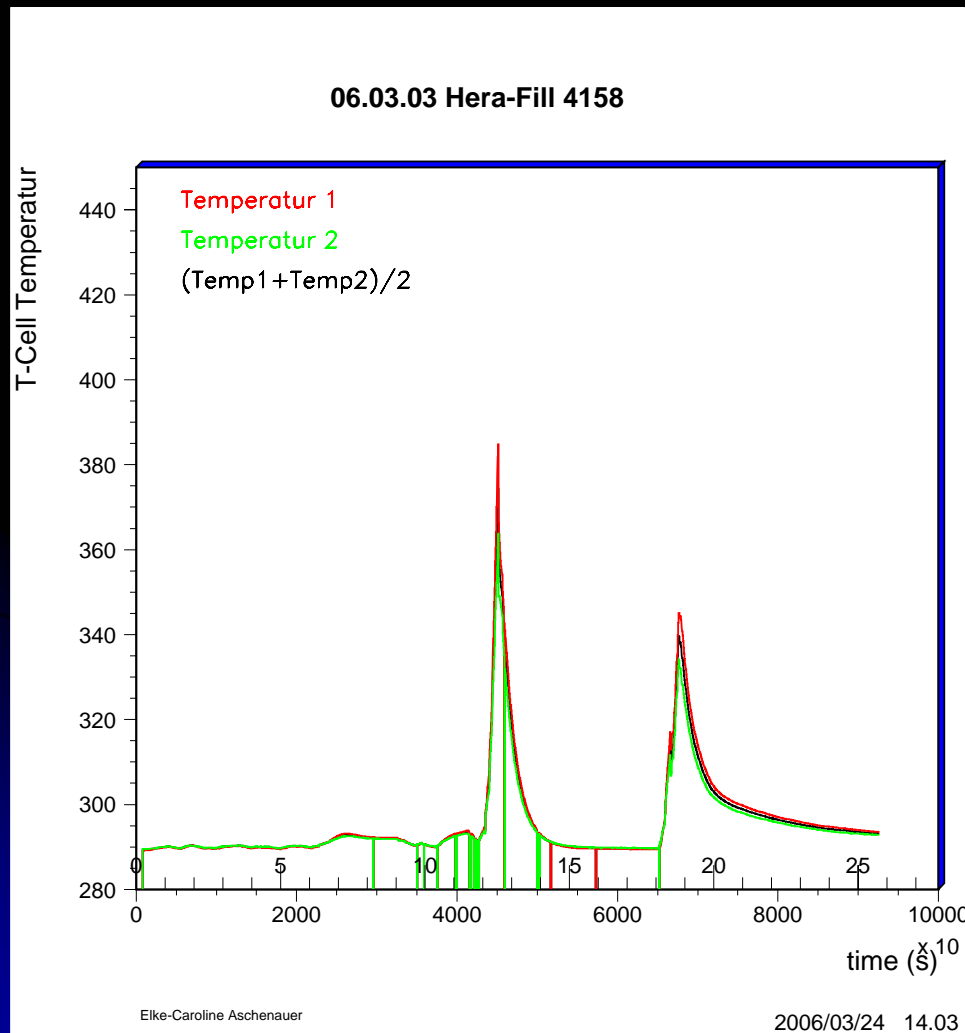
- DAQ was very unstable.
- **Target Cell gets hot!**
- PS2 could not run with magnet on.
- DVCs top overheated with magnet on.
- H0 did not work so no triggers with magnet on.
- Beam kicked in horizontal due to magnet.
- PS2 gate valve leaks!
- Magnet cryogenics is not stable.

March 1 Access was very FULL!

Status in March

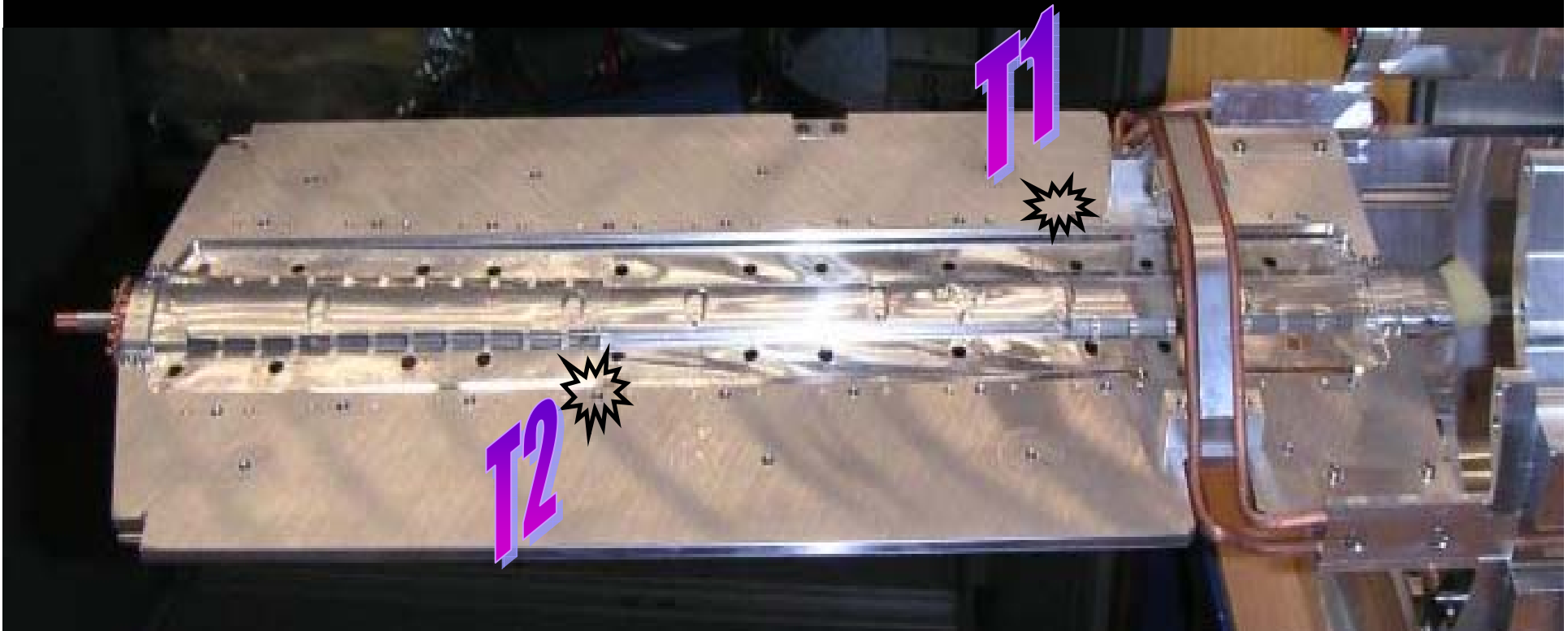
- All problems with forward spectrometer were corrected.
- Background rates are low. We can take data with 1.4GeV threshold and 45Hr beam lifetime.
- Re-occurring problems with the magnet cryogenics.
- Target temperature problem has become worse

Target Temperature up till 1 week ago

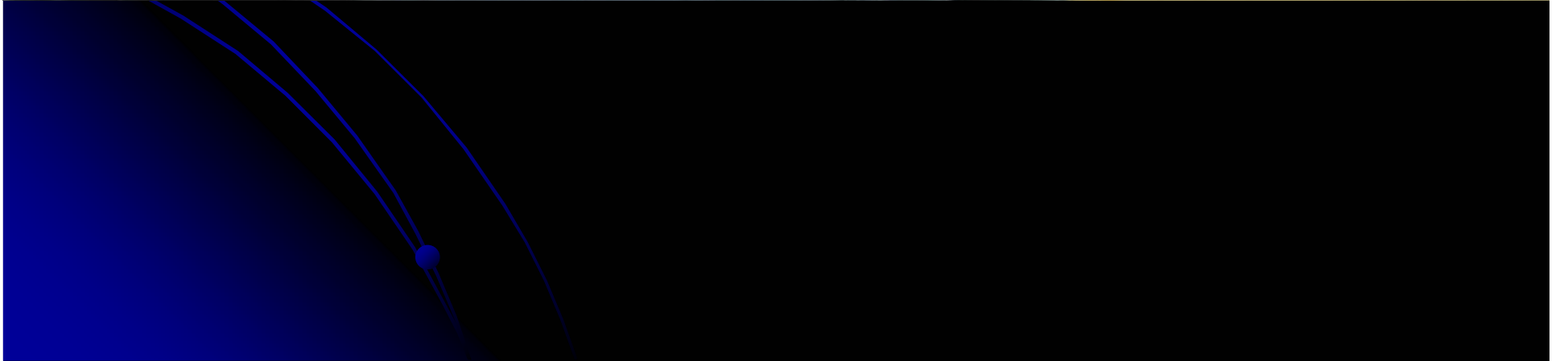


- See ~100C increase in temperature for 30mA injection. Temp drops after start of ramp.
- Max temp 450C.

Target Cell Thermometry



- T1 is hotter than T2
- T1 is nearer to the C3 collimator and the cooling!



Possible causes

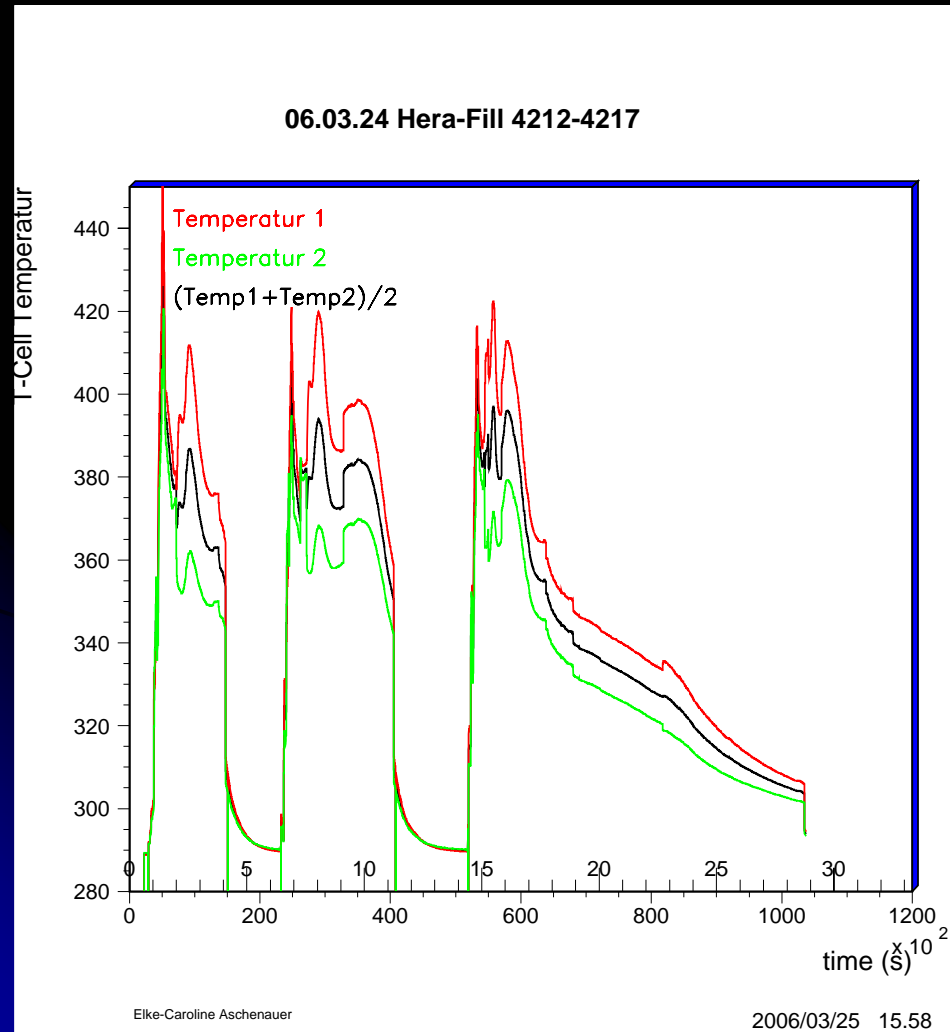
1. The thermal contact on the left of the target is better than that on the right.
2. The heat load is coming from the C3 collimator. (need to improve cooling)
3. We have confused the thermometer positions.

Proposal:

Put a thermometer somehow on C3 next access.

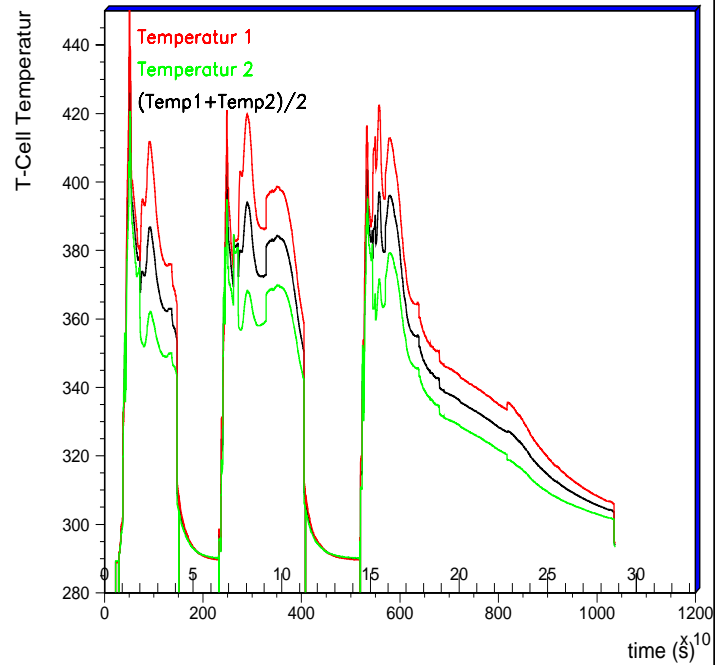
Prepare to measure temperatures in test chamber vacuum.

Target Temperature Now



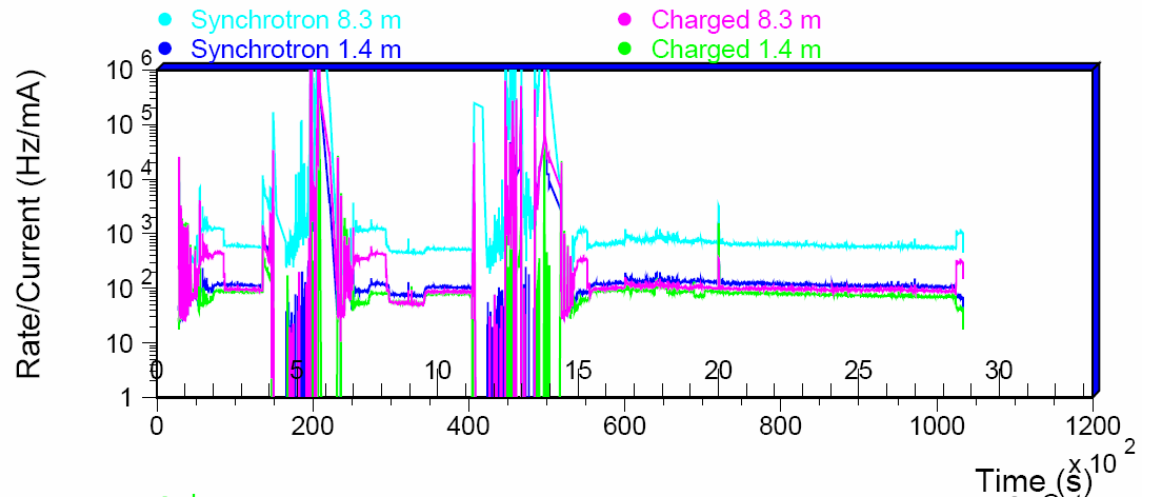
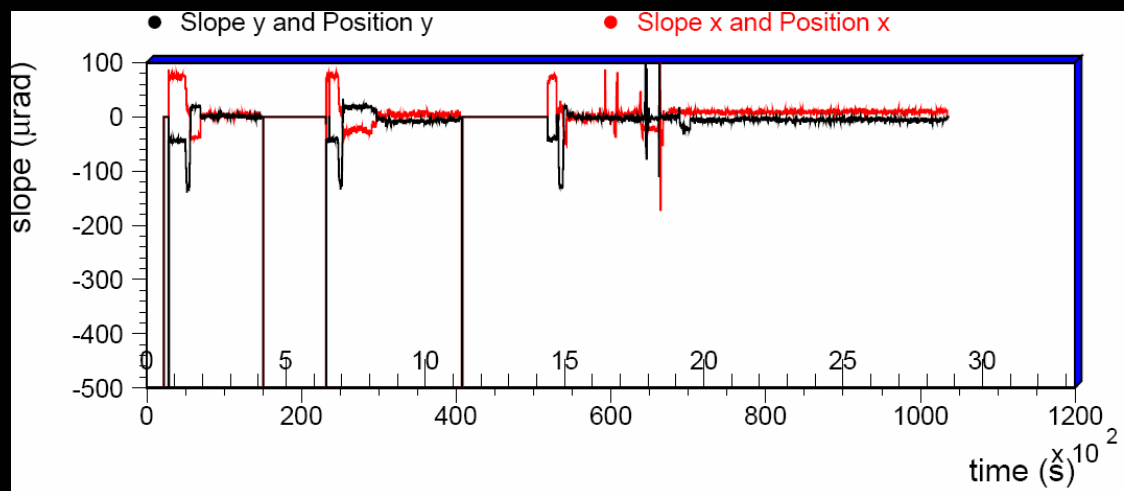
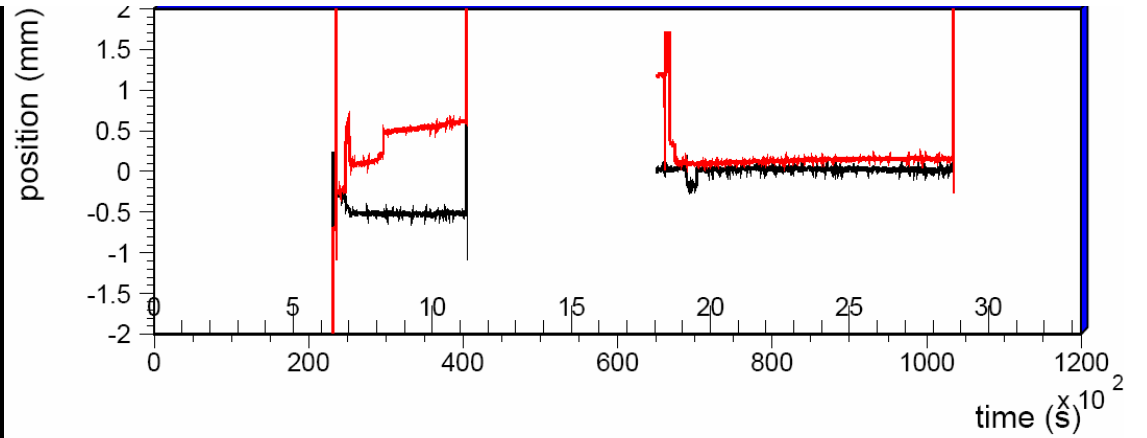
- The target temp doesn't decay smoothly after ramping.
- See correlations in beam conditions.
- Both detectors inside vacuum have noise correlated with the temperature.

06.03.24 Hera-Fill 4212-4217

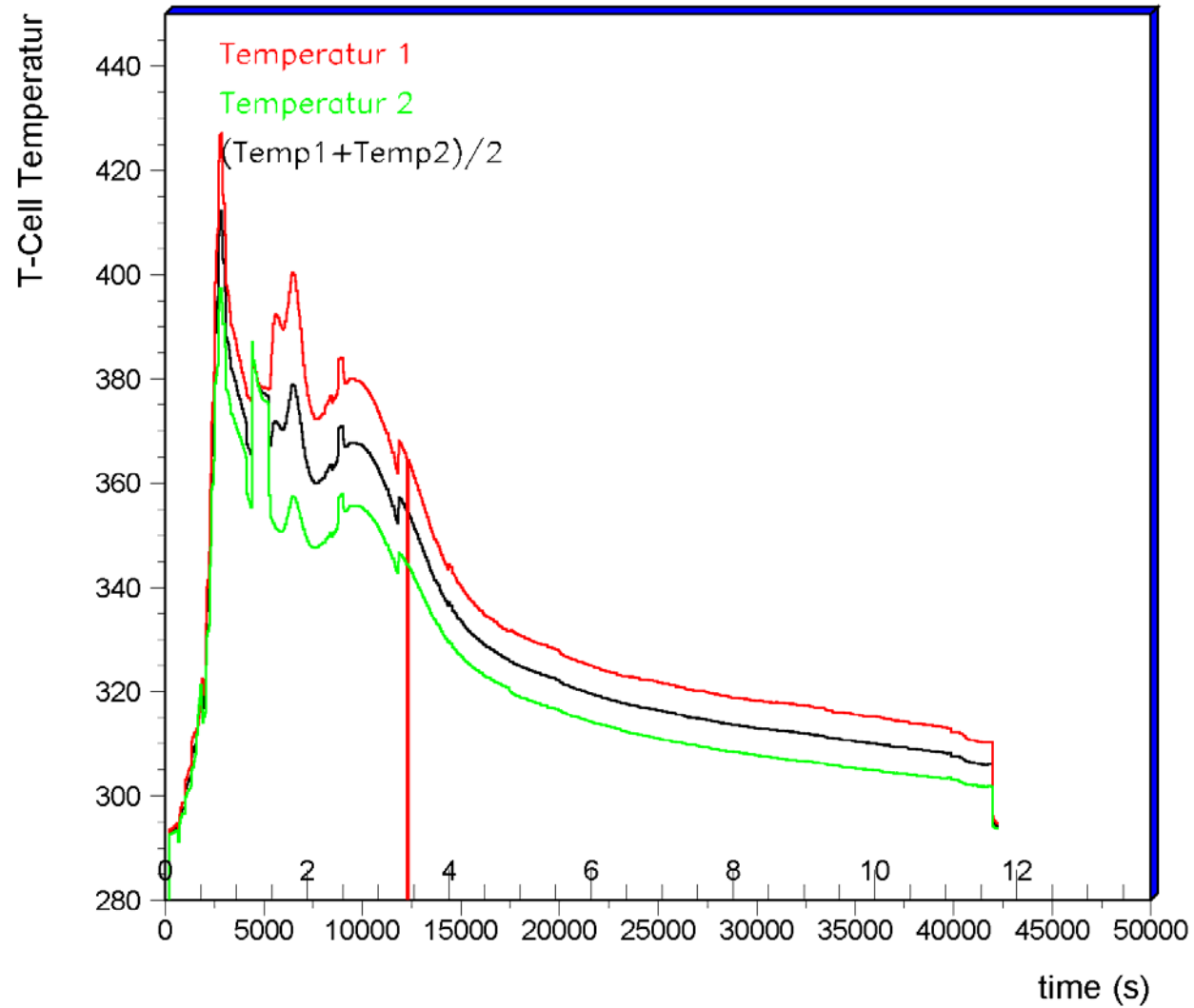


Elke-Caroline Aschenauer

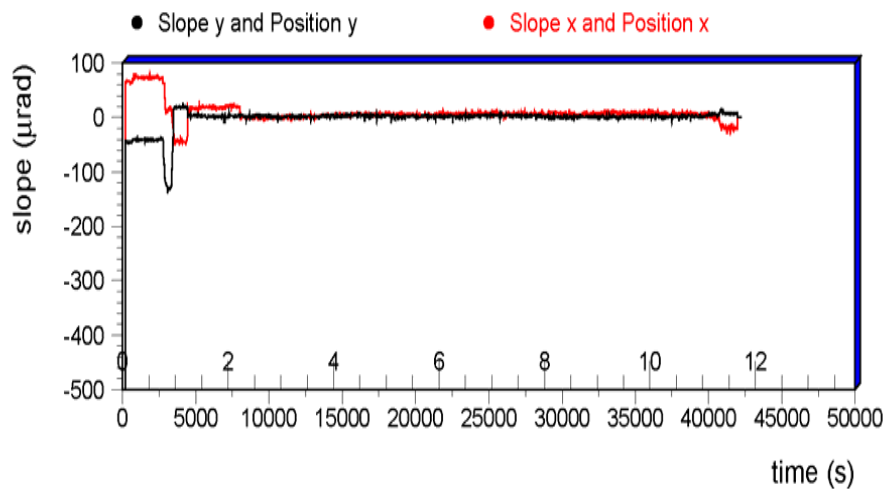
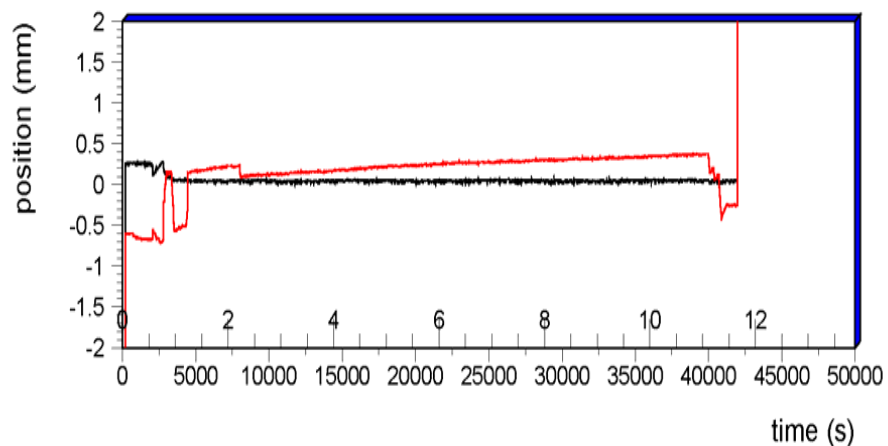
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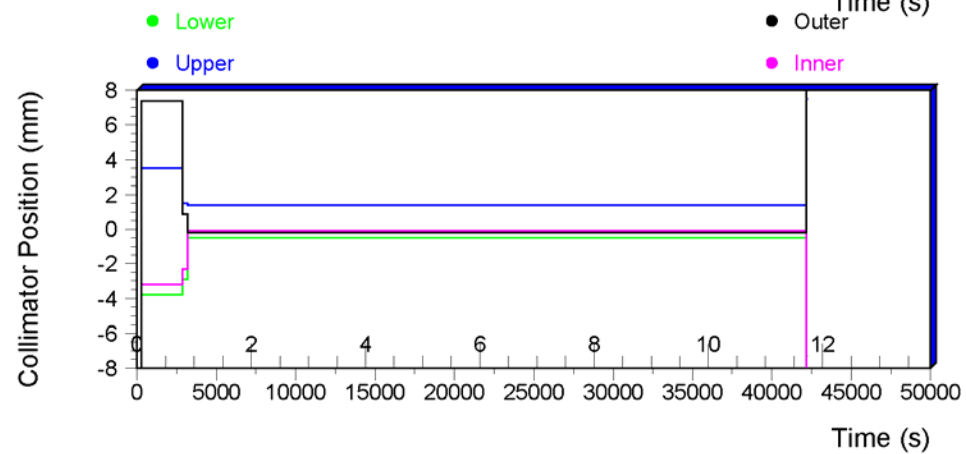
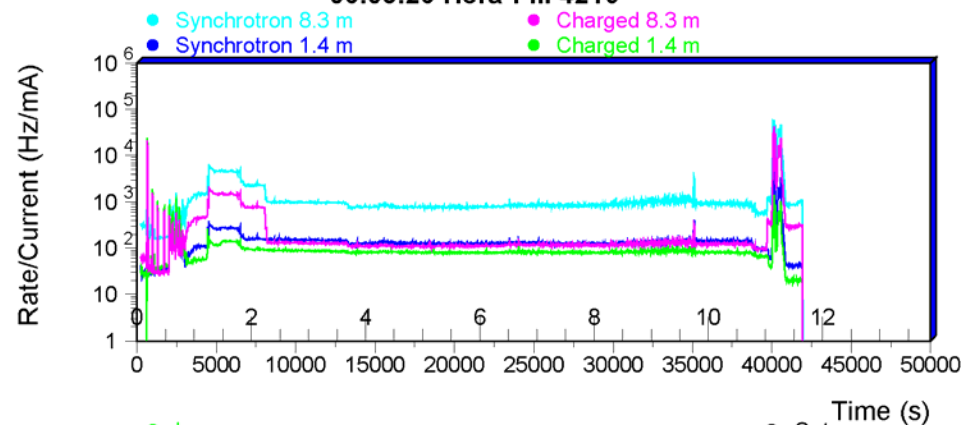
06.03.26 Hera-Fill 4219



06.03.26 Hera-Fill 4219

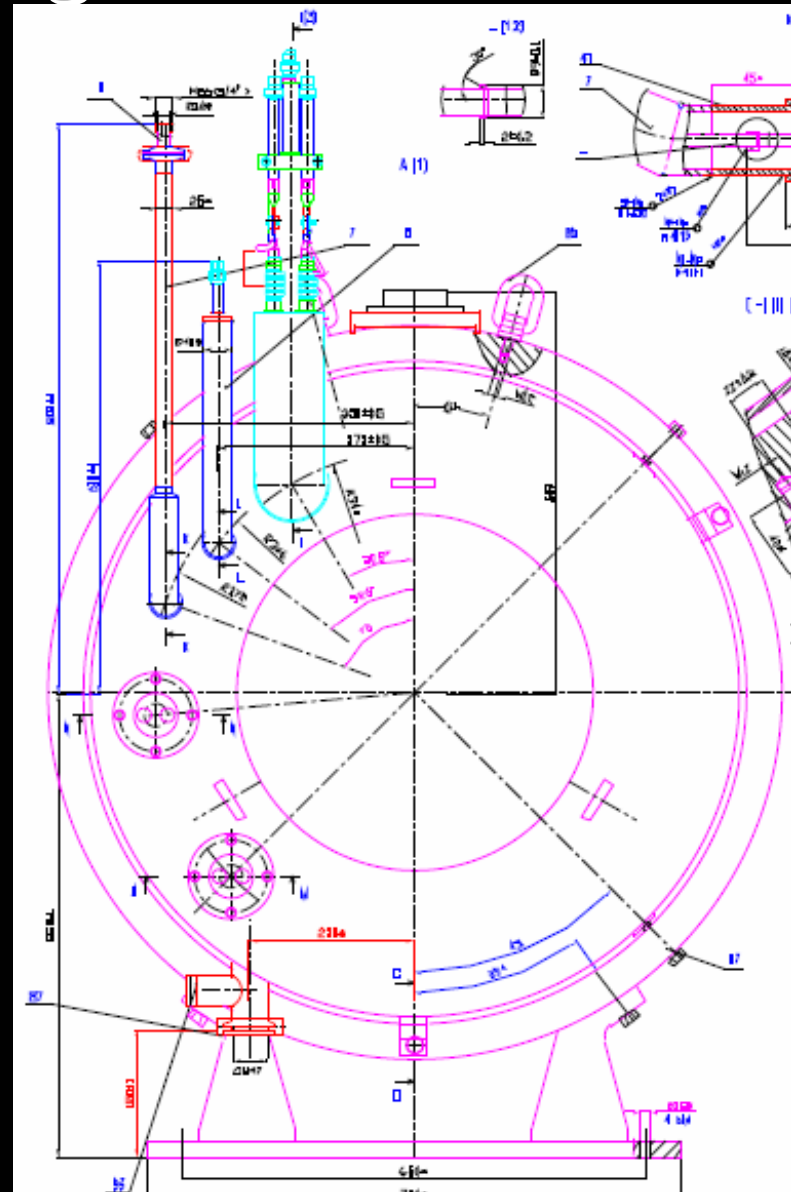


06.03.26 Hera-Fill 4219

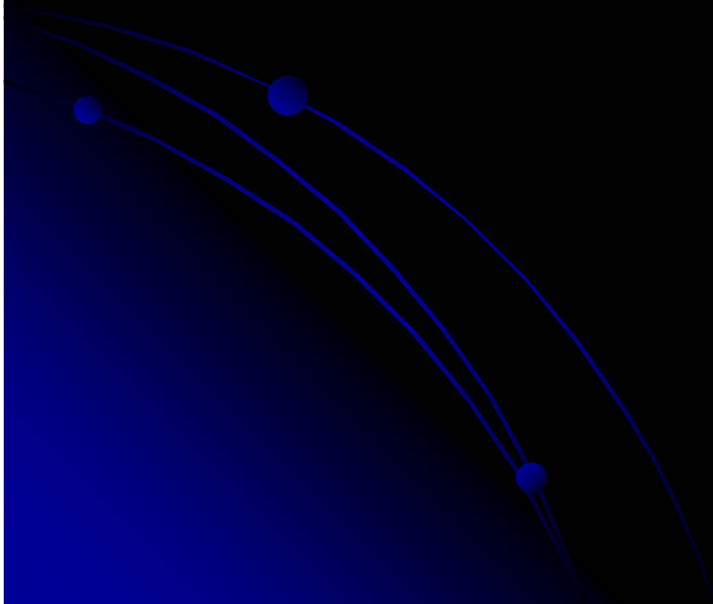


Recoil Magnet

- Magnet is filled next to where the current leads enter the cryostat.
 - Hot gas from the transfer line quenches the magnet.
 - Have to keep the transfer line a bit open.
 - PID has proven difficult.

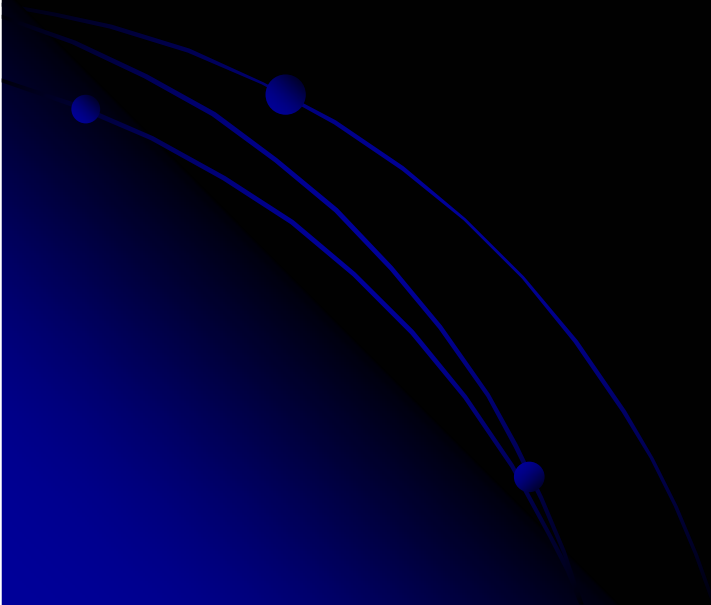


Recoil Detector Upgrade

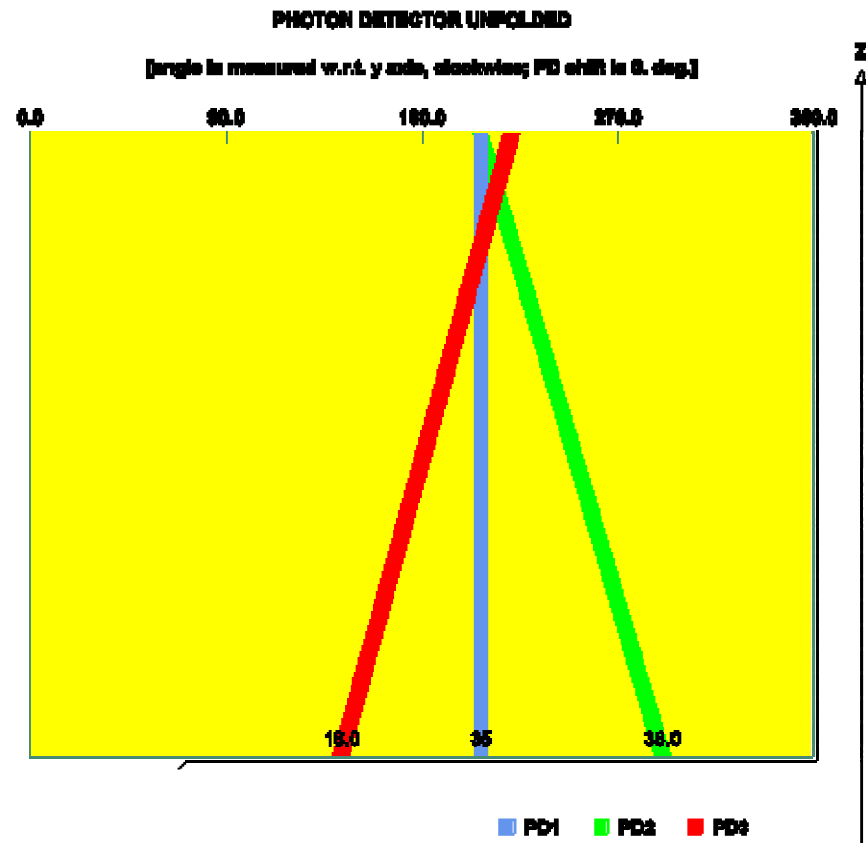
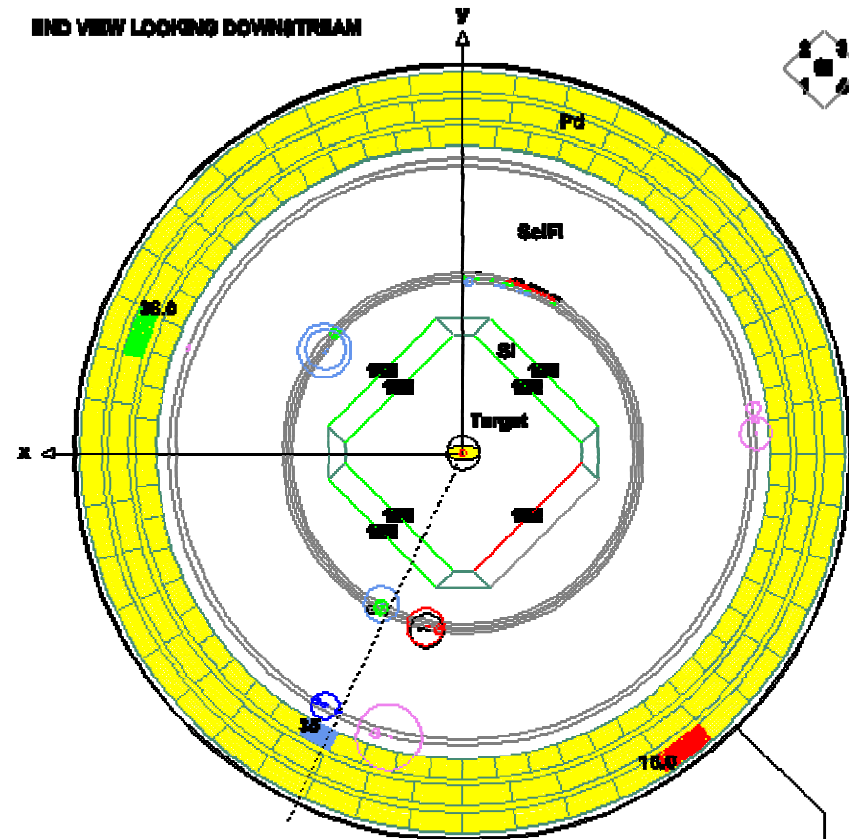


Photon Detector

- Read out continuously.
- Background low.
- Timing is adjusted.
- Detector has no problems.



Photon Detector

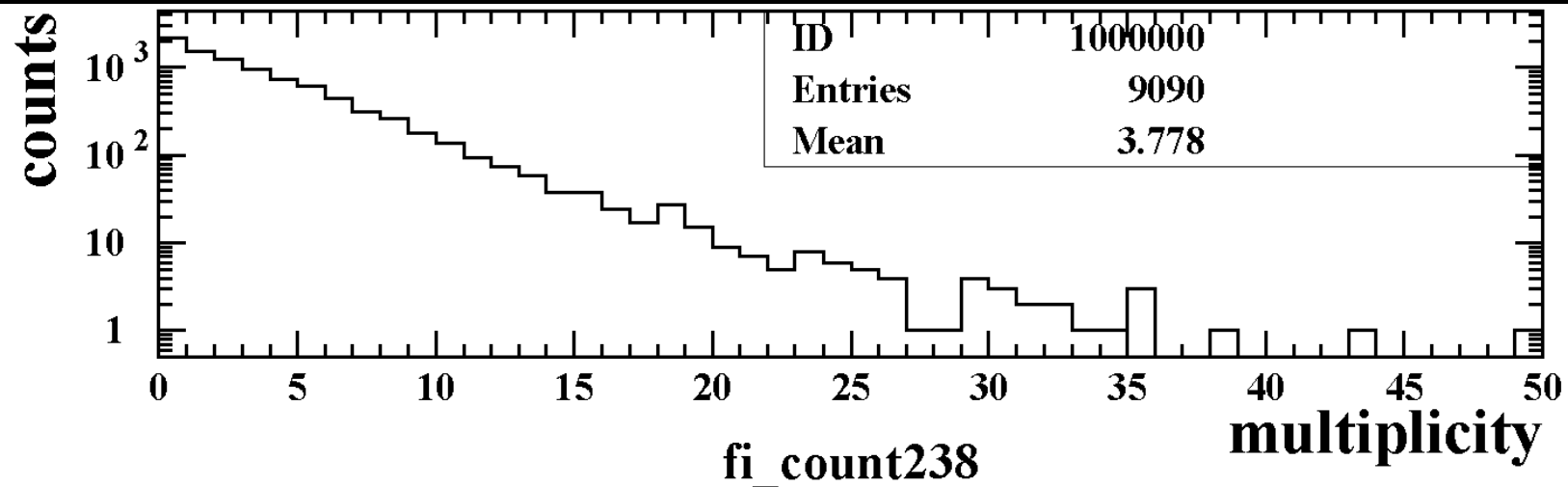


Event number: 7886845
Date: Tue Mar 21 08:53:03 CET 2006
Input file: xta.davanti

■ Thresholds OFF

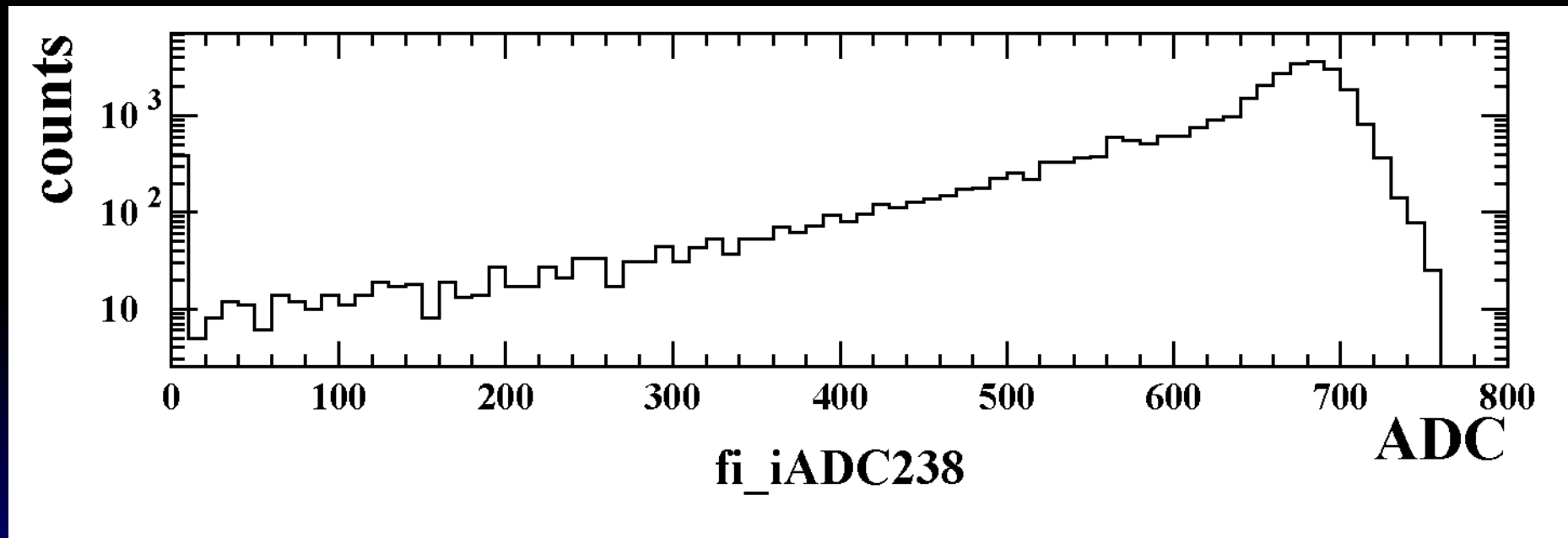
SciFi Detector

- First studies look Good



- Multiplicity much less than one hit per module.

SciFi Detector



- ADC spectrum looks as expected.

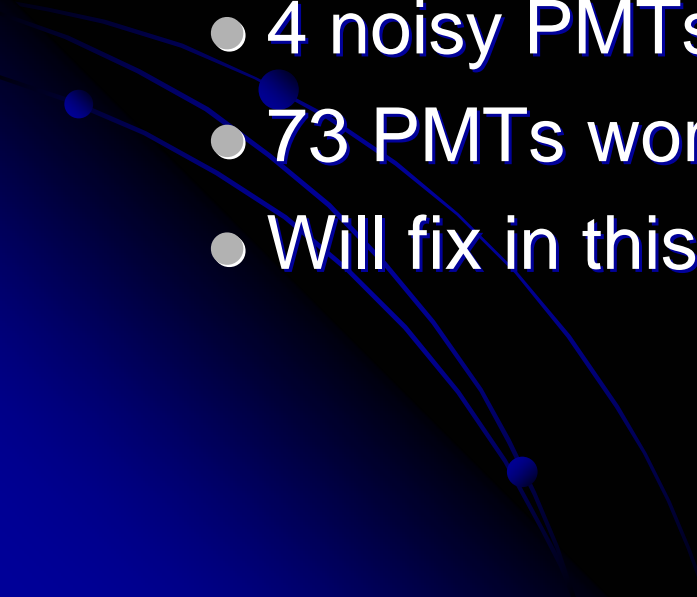
SciFi

- Tracking is running and already producing results.
 - Efficiencies:

SciFi 1+2	0.987
SciFi 3+4	0.987

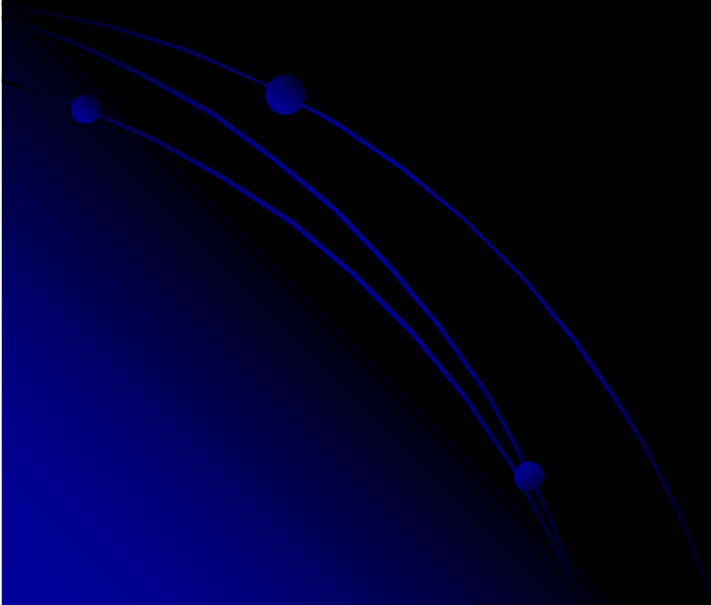
- Better than computed in test experiment.

SciFi detector

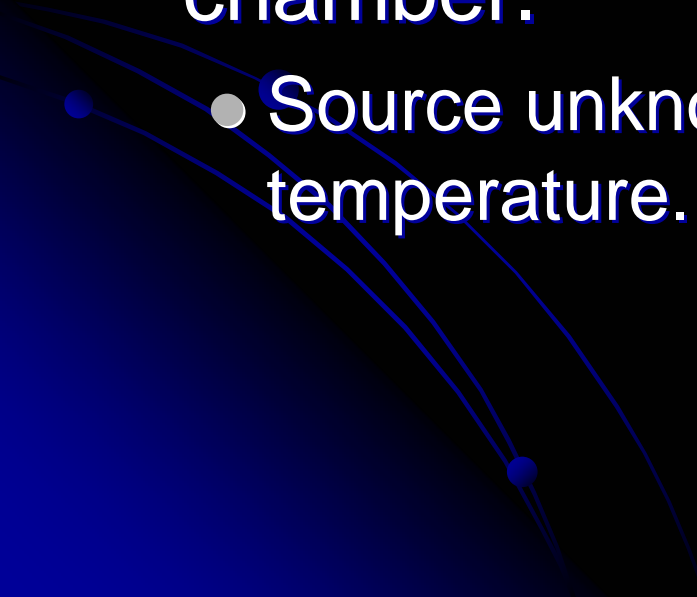
- Read out continuously.
 - Background is low.
 - Only minor technical difficulties.
 - 1 bad PMT
 - 4 noisy PMTs.
 - 73 PMTs working fine.
 - Will fix in this access.
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Silicon Detector

- Serious noise seen if beam is present.
- Detector is well behaved without beam.
- When the target is hot the leakage currents are large.

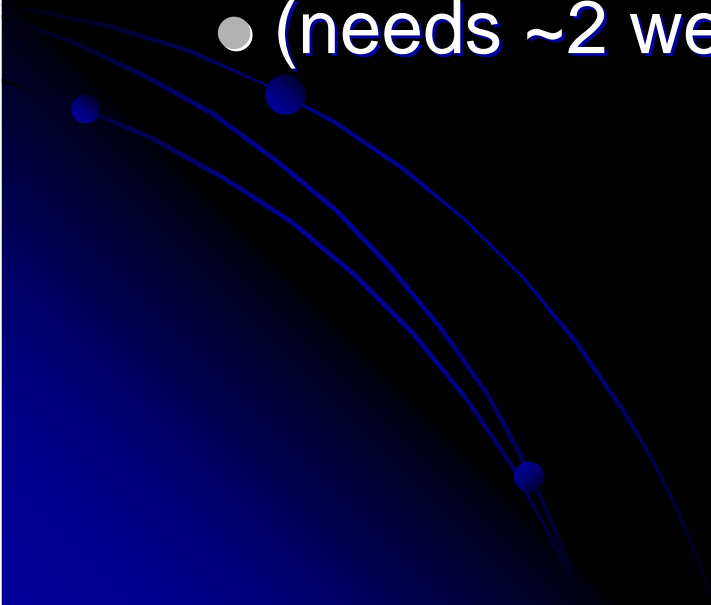


Silicon Noise

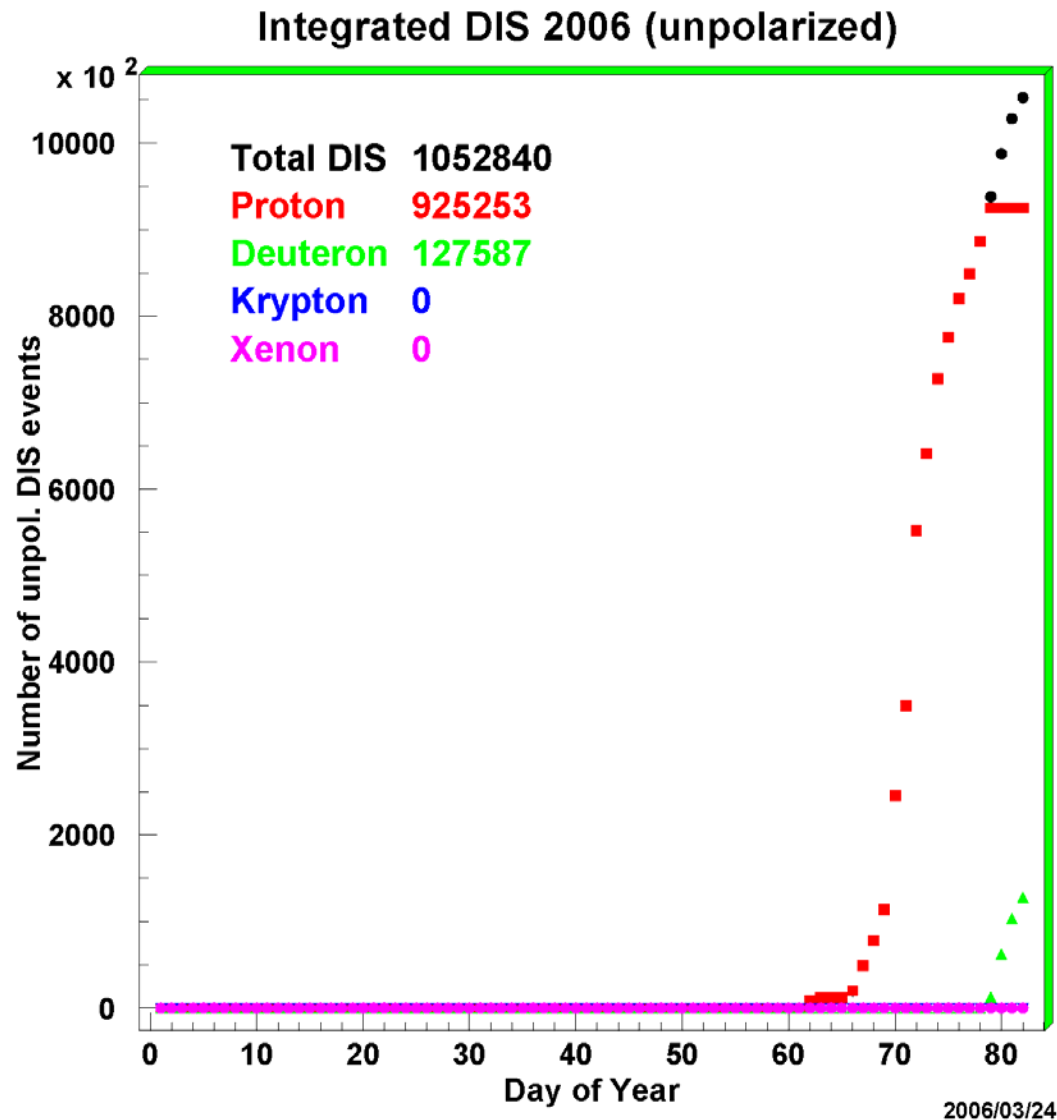
- Both the Lambda wheels and the new silicon detector have noise problems.
 - Noise analysis of the Lambda wheel indicates a large amount of light inside the chamber.
 - Source unknown. But correlated with target temperature.
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Silicon What to do now?

- Try to find where the light is coming from.
- Try to measure and correct the noise if possible.
- Design an additional RF/light shield.
 - (needs ~2 weeks to install)



Running Status



- Spectrometer is in good shape.
- All detectors outside vacuum are fine.
- Data taking efficiency is dominated by magnet problems.