

saGDH Analysis Update

Assorted Stuff and Target Analysis

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Polarized Helium-3 Collaboration Meeting

ARC 333, June 21, 2006

Master Database

MySQL server is hosted on **uvapos1.jlab.org**

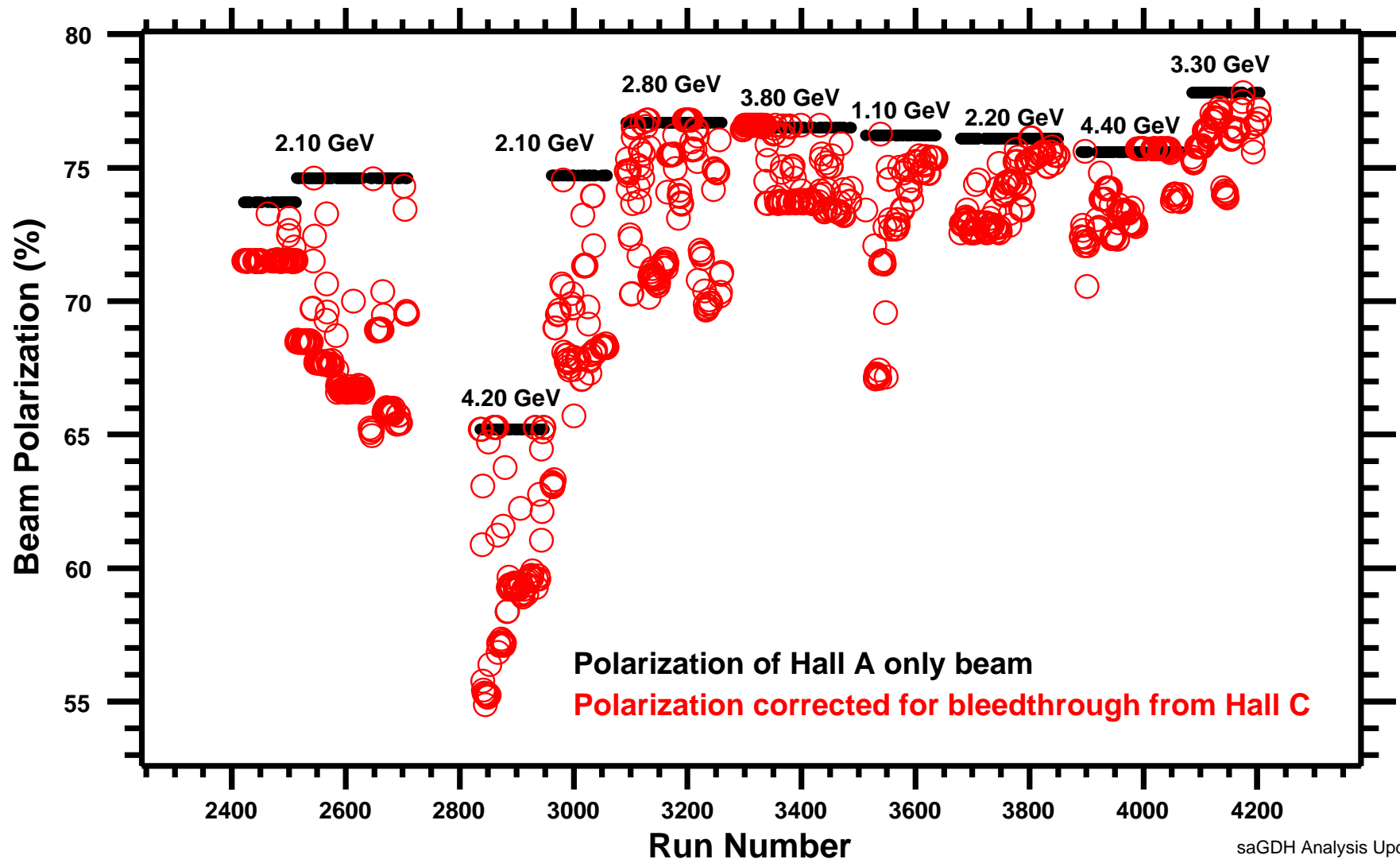
Contains a plethora of information (by run or by timestamp) from:

1. Shift Summaries from HALOG
2. Paper Run Summaries
3. Target Logbook
4. Start/End Run Summaries from MSS and HALOG
5. Epics Data from raw data file
6. (same) with cuts on beam trips
7. “Machine Updates” from ELOG
8. Kathy’s Target Epics Logger
9. Scalar Information (coming soon...)

Connectivity with ROOT 5.*, PERL, etc, talk to me or Vince for access!

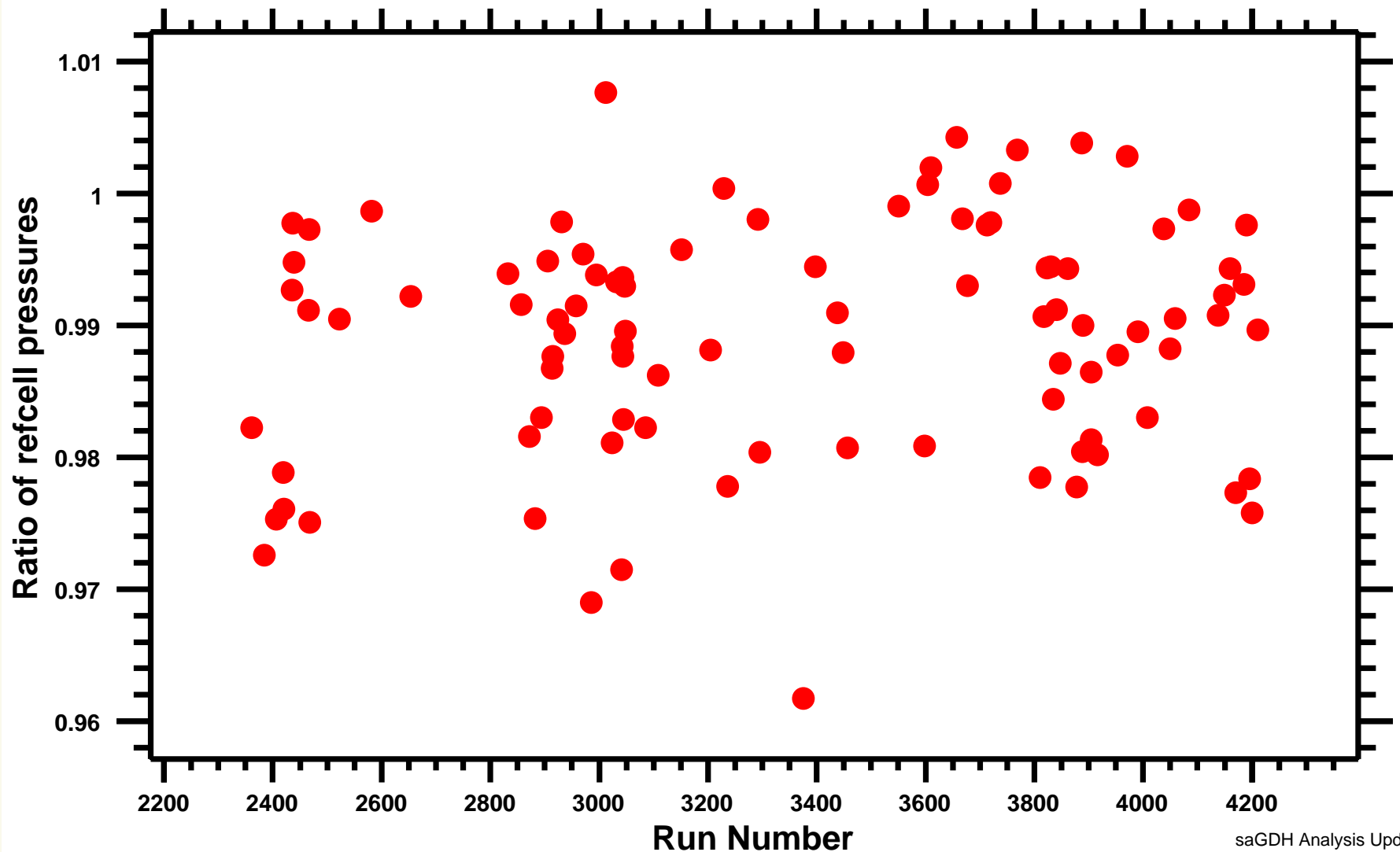
Corrected Beam Polarization

A few more small issues to resolve, but basically...



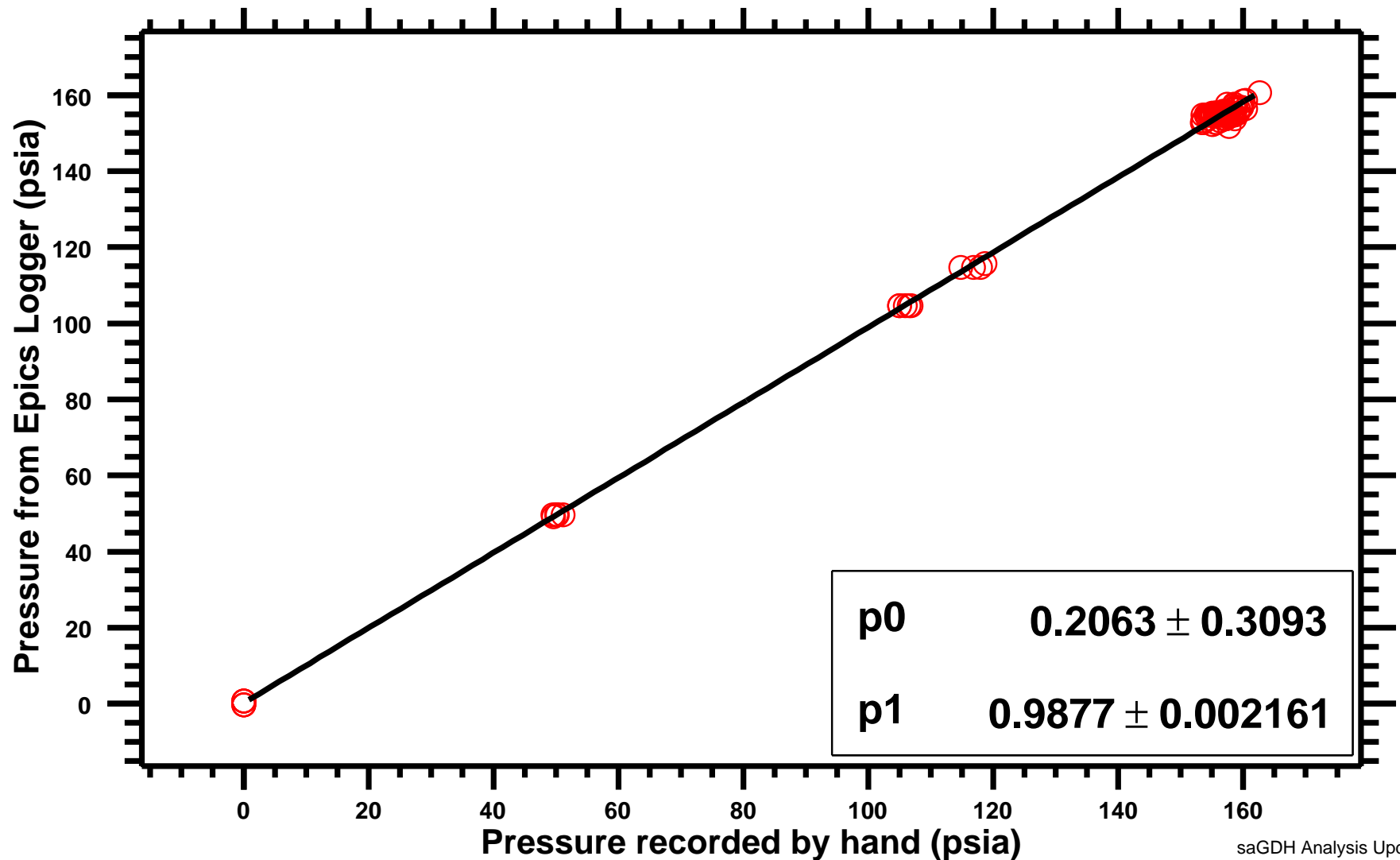
Ref Cell Pressures

After subtracting out nearest empty refcell pressure reading...



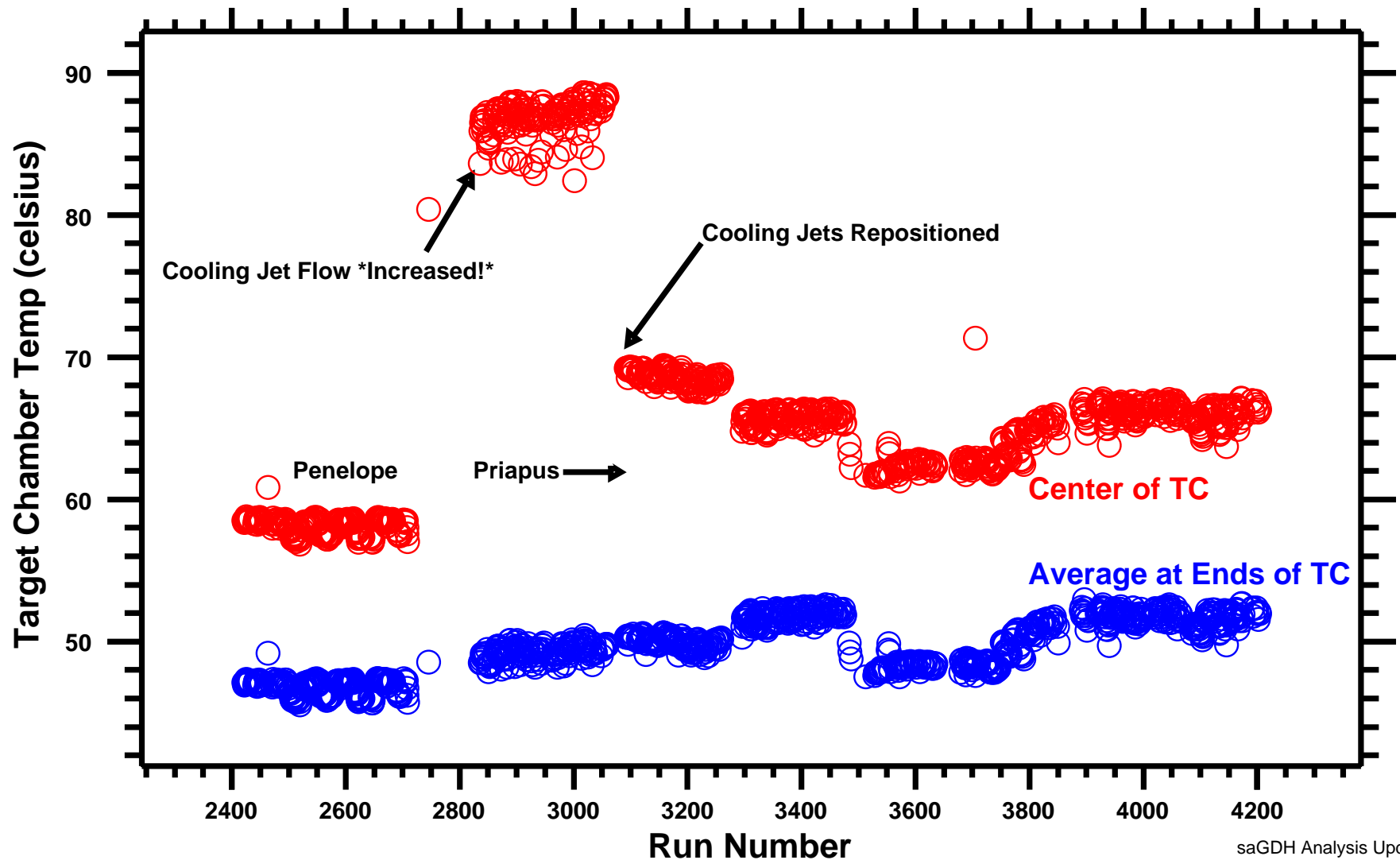
Ref Cell Pressures

A small systematic difference between the readings...



Temperature Tests

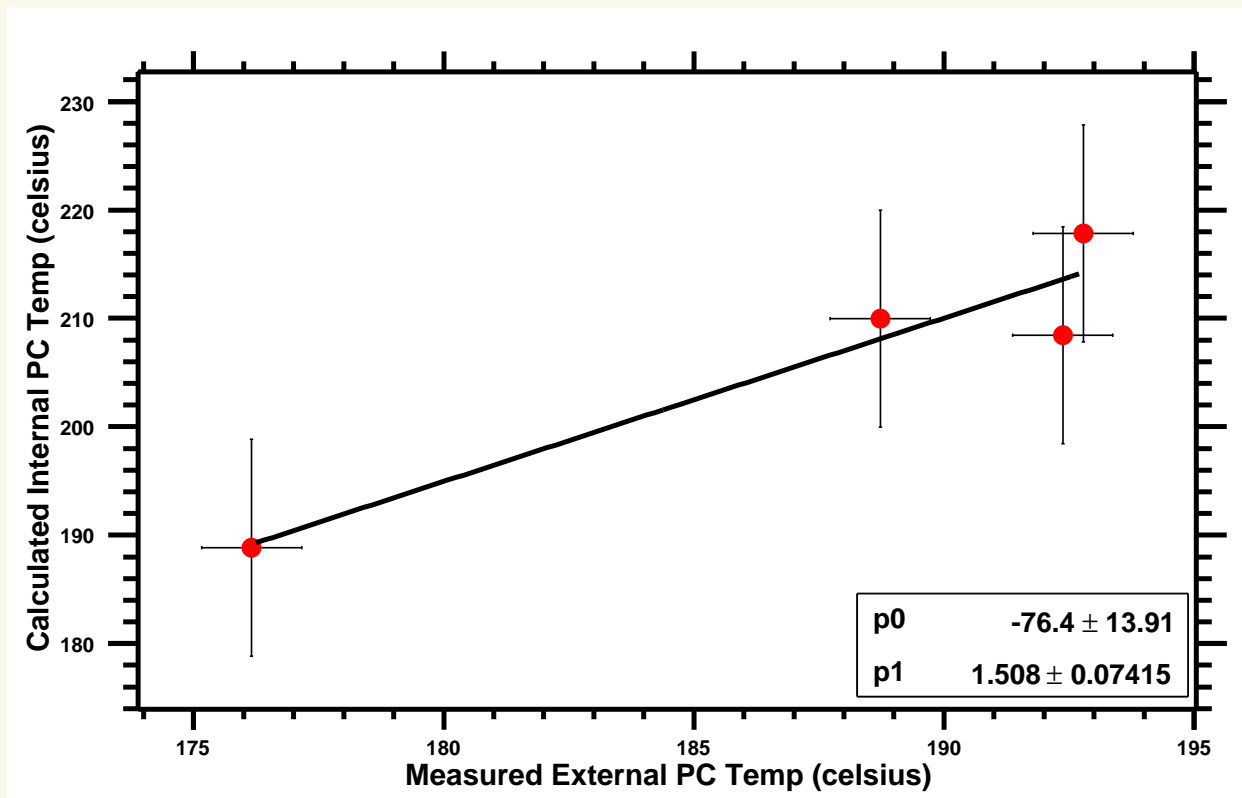
Larger than usual temperature gradient in target chamber...



Temperature Tests

...but, results are not that sensitive to this!

$$\langle T_{\text{TC}}^{-1} \rangle = \int_0^L T_{\text{TC}}^{-1}(z) \frac{dz}{L} \approx 2 \left[T_2 + \frac{T_1 + T_3}{2} \right]^{-1}$$

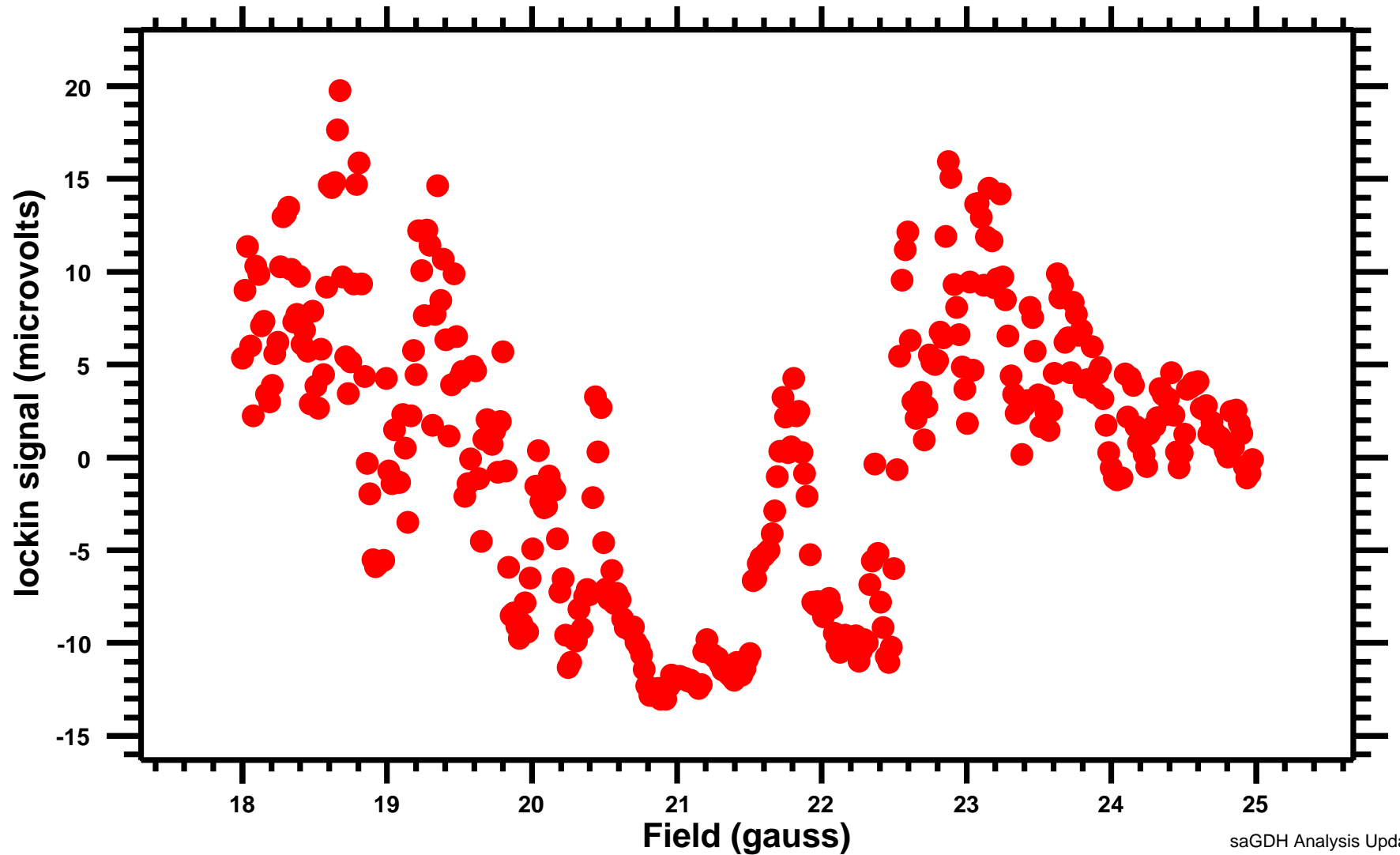


Water Calibrations

1. Took a total of 9 water calibrations.
2. Three were before the start of the run.
3. Six were after the start of the run.
4. Position of pick up coils were changed significantly between these two sets, but was stable during production running.
5. “Noisy sweeps” were cut using max derivative figure of merit.
6. Ratio of up and down sweeps used to estimate T_1 .
7. Using this T_1 , data were fit to approximate analytical solution to Bloch equations.

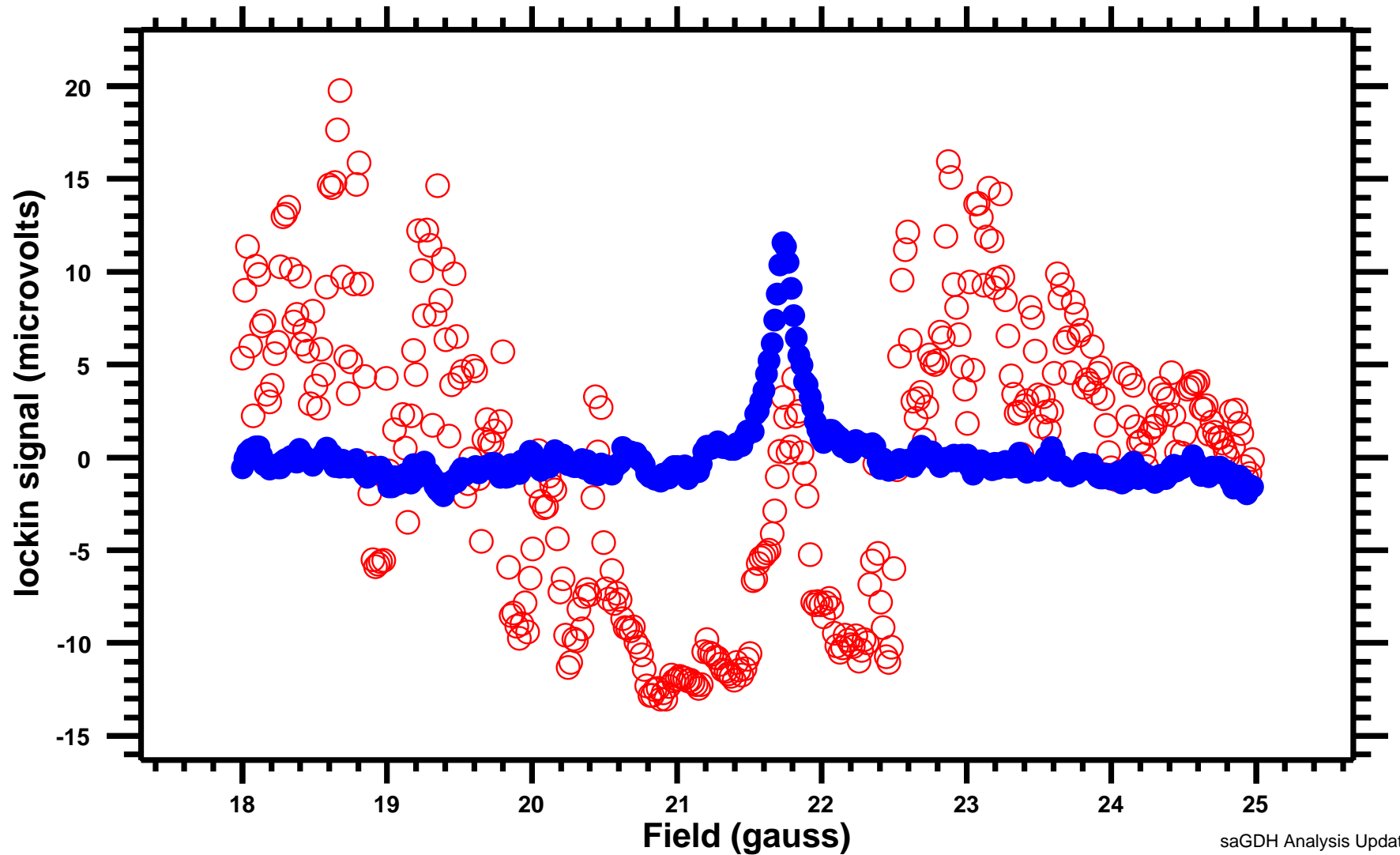
Water Calibrations

Typical water signal before “noisy” signal cuts...



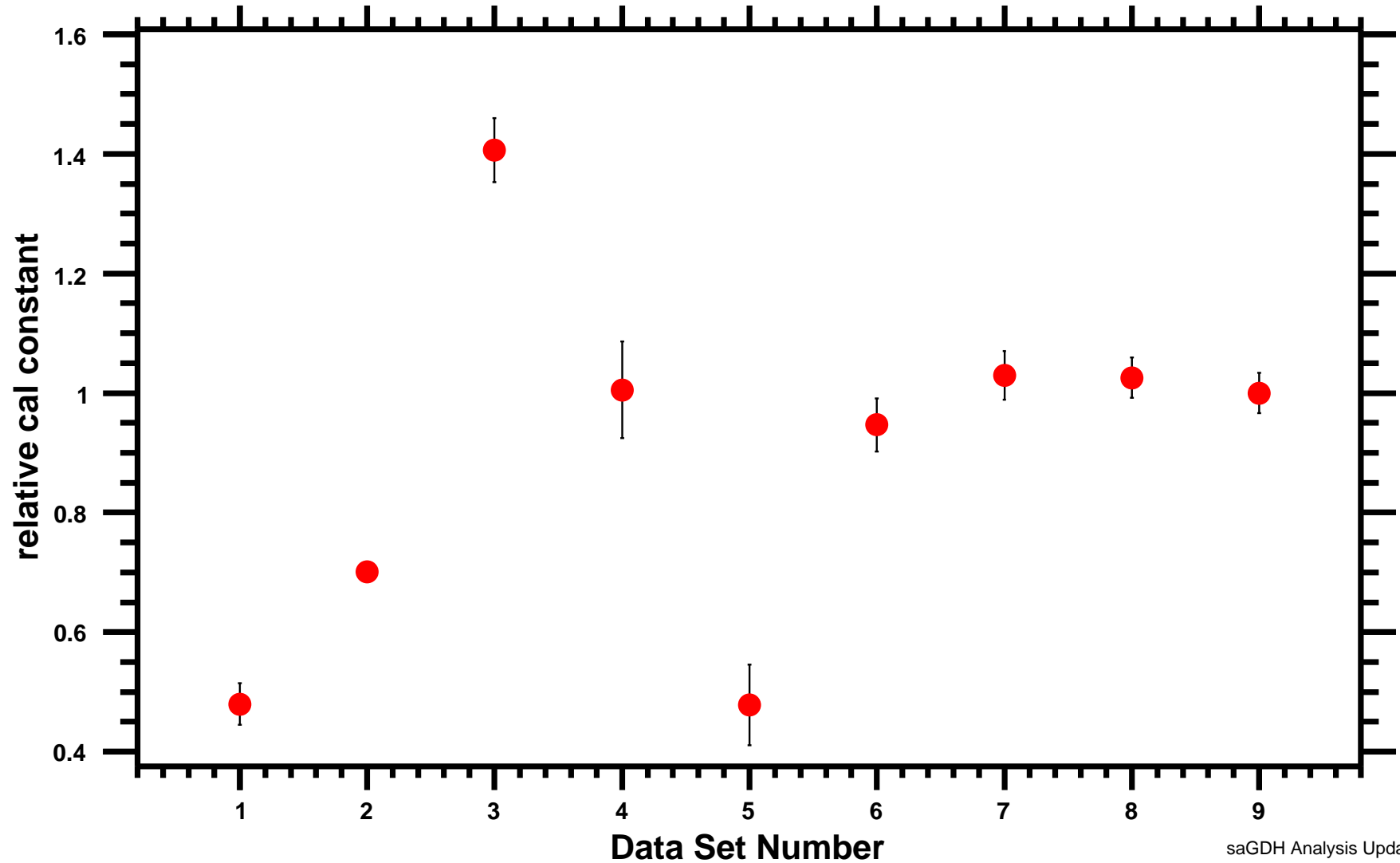
Water Calibrations

Getting rid of just a few bad sweeps gives...



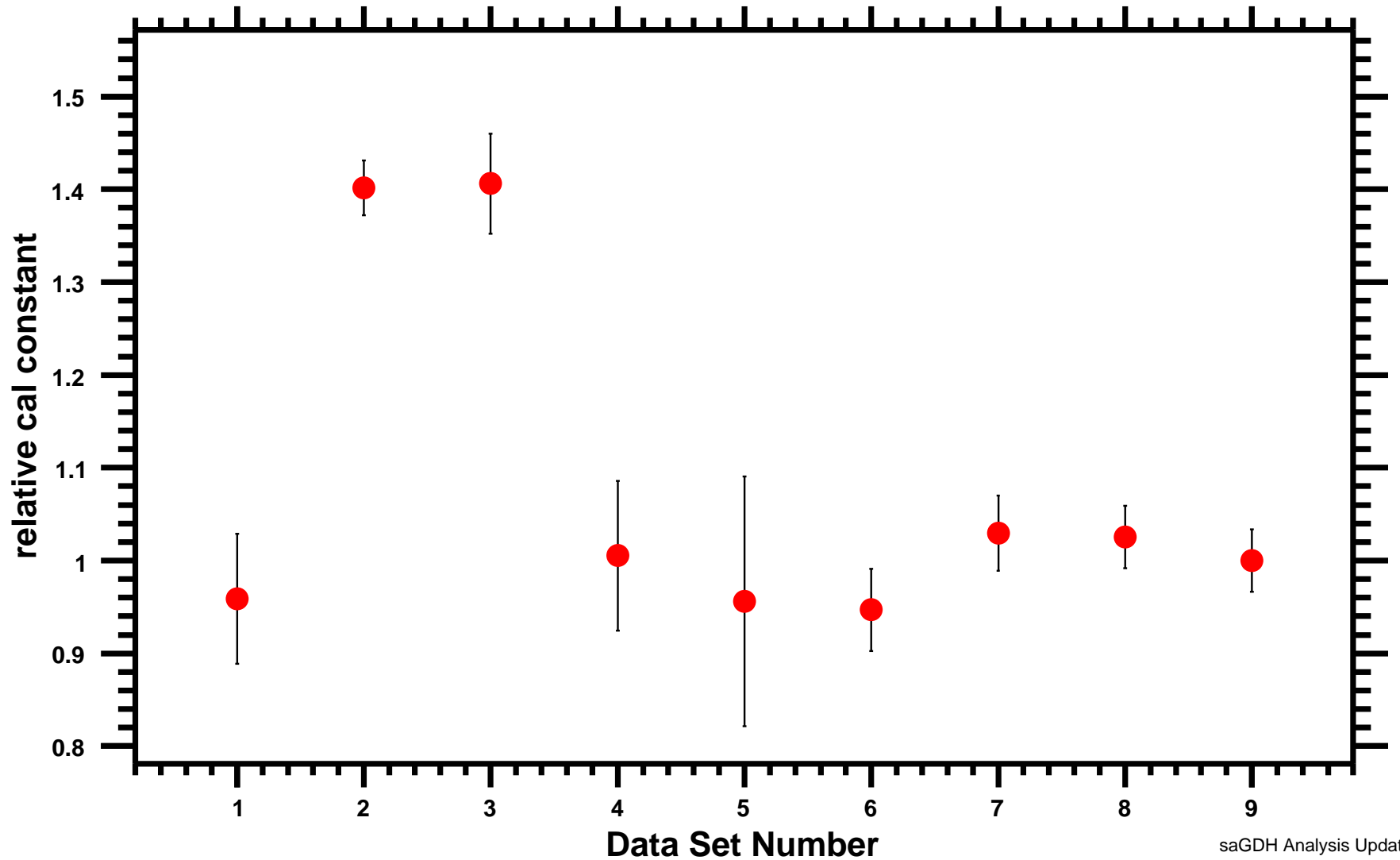
Water Calibrations

Errors bars are stat only from fit!



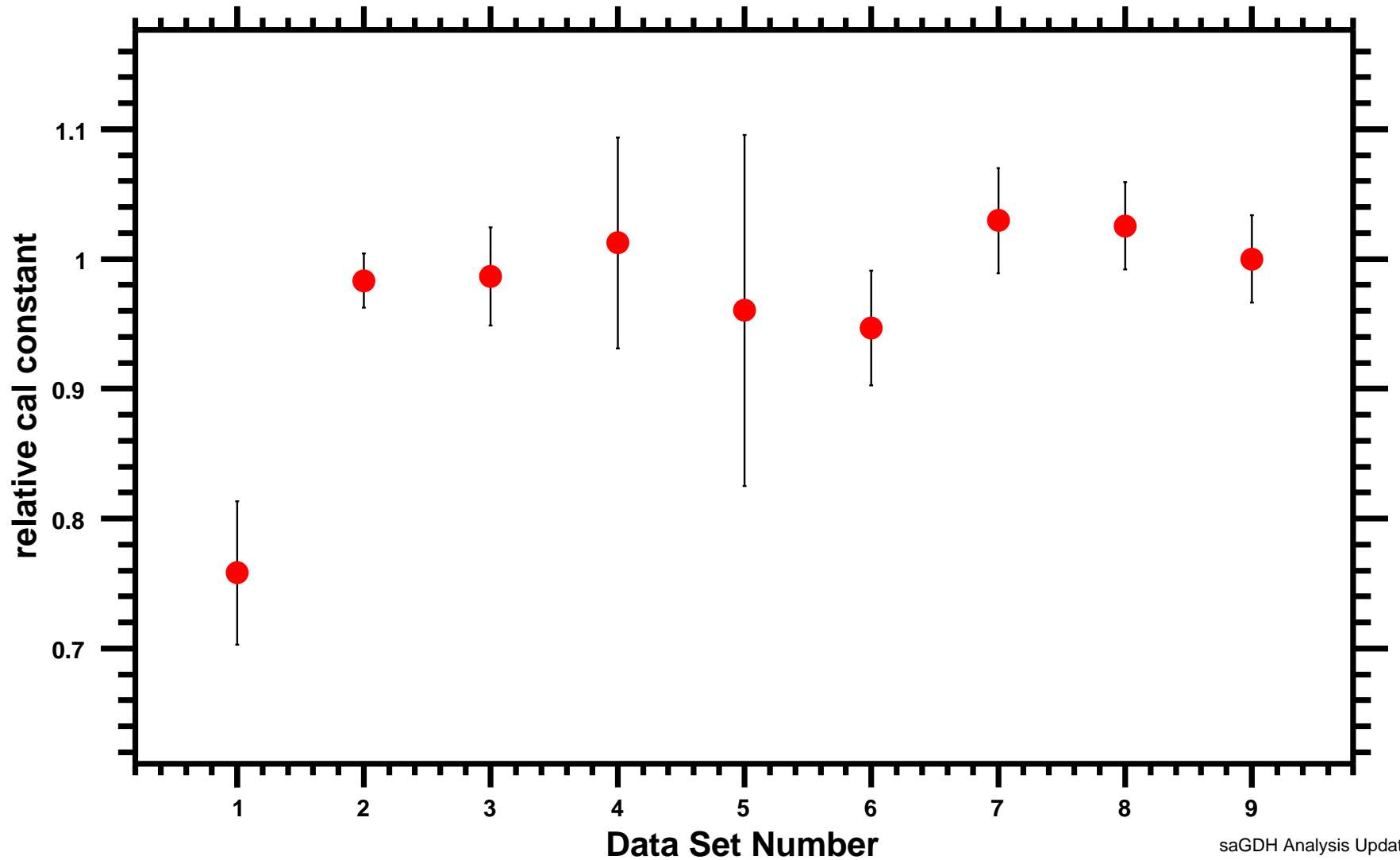
Water Calibrations

Dividing out preamp gain...



Water Calibrations

Dividing out flux factor...



Polarimetry Summary

1. Water calibrations look good.
2. I am still trying to decide whether we can use the pre-running water calibrations, since the coil positions did change alot.
3. EPR and water give good agreement.
4. I am still trying to establish the best way to combine the calibration constants.
5. Lot's of loose ends to tie up...
6. Things look reasonable.