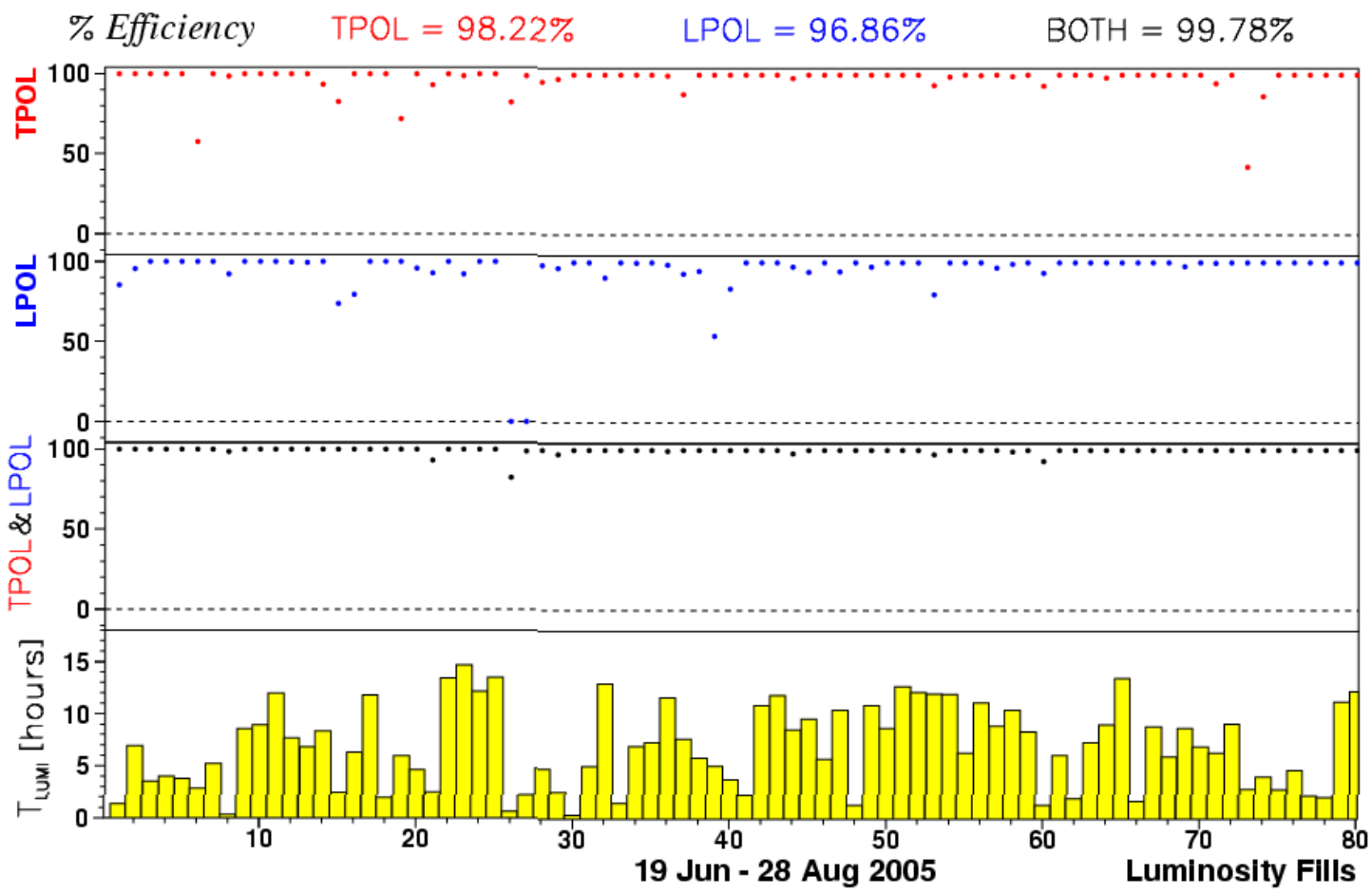
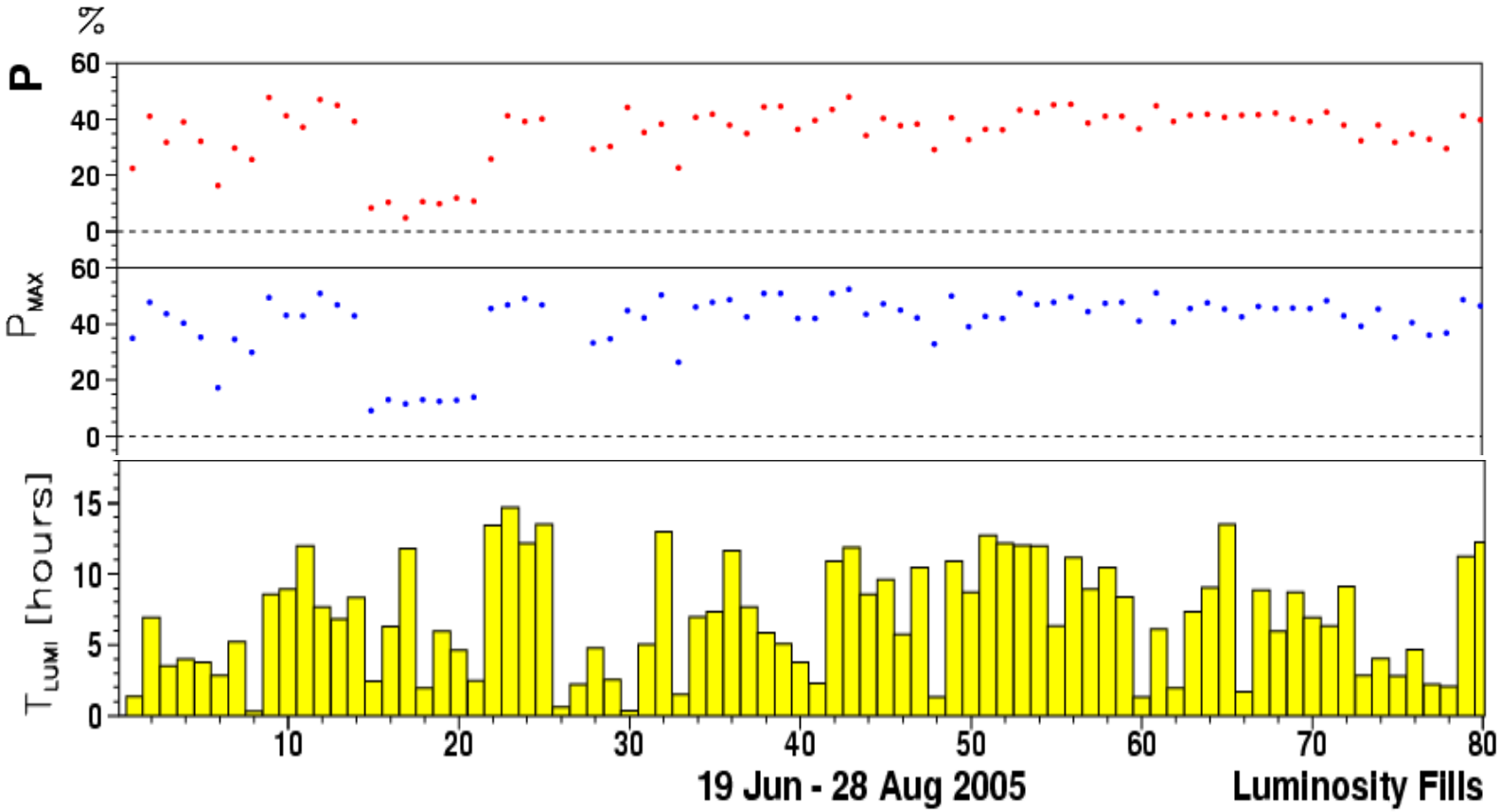
Report from POL2000

Ties Behnke, DESY
for the POL2000 group

Actual operation of the polarimeters: very smooth



TPOL performance



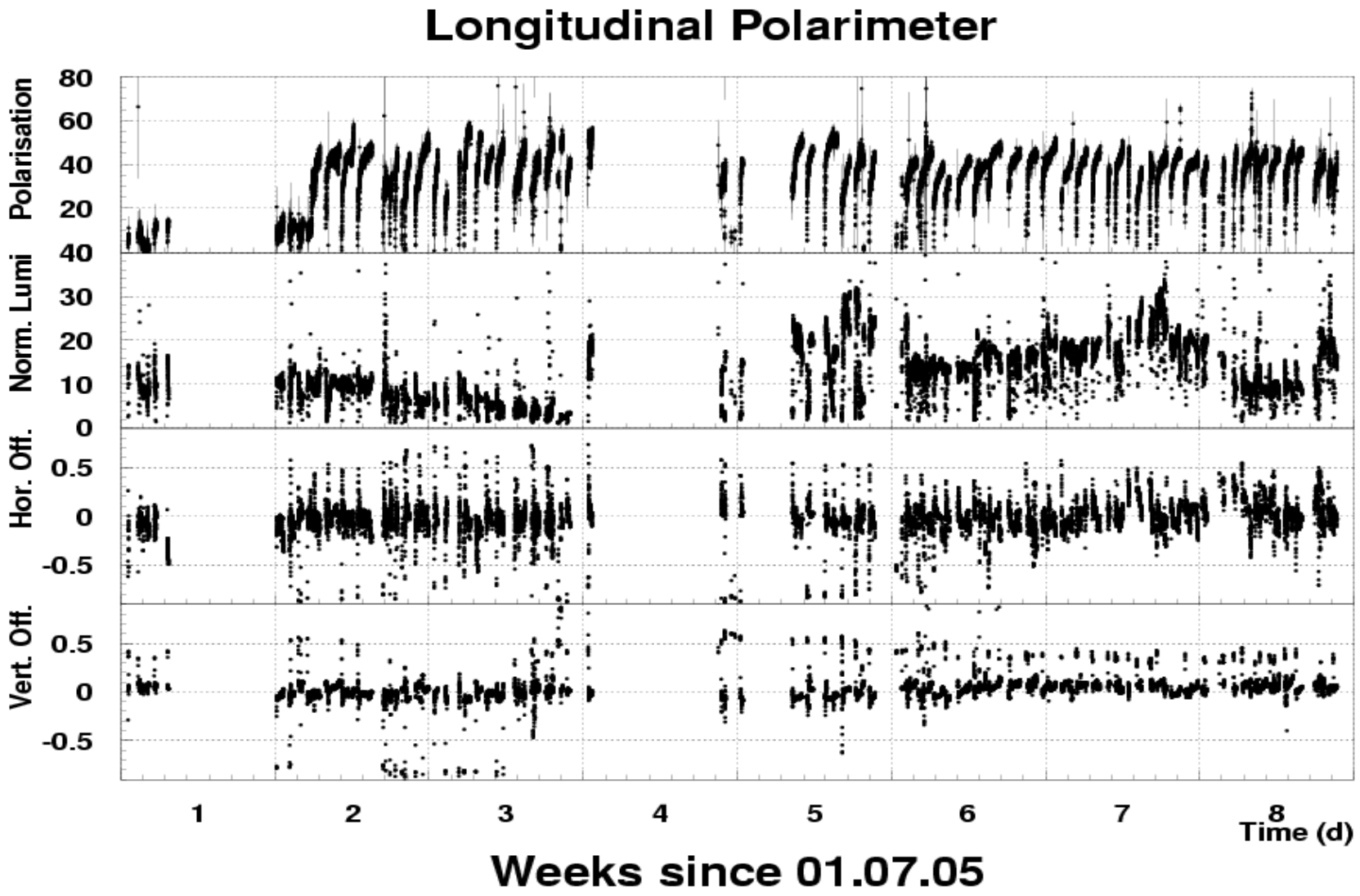
average polarization

peak polarization

time with luminosity

no significant hardware problems, overall smooth operation

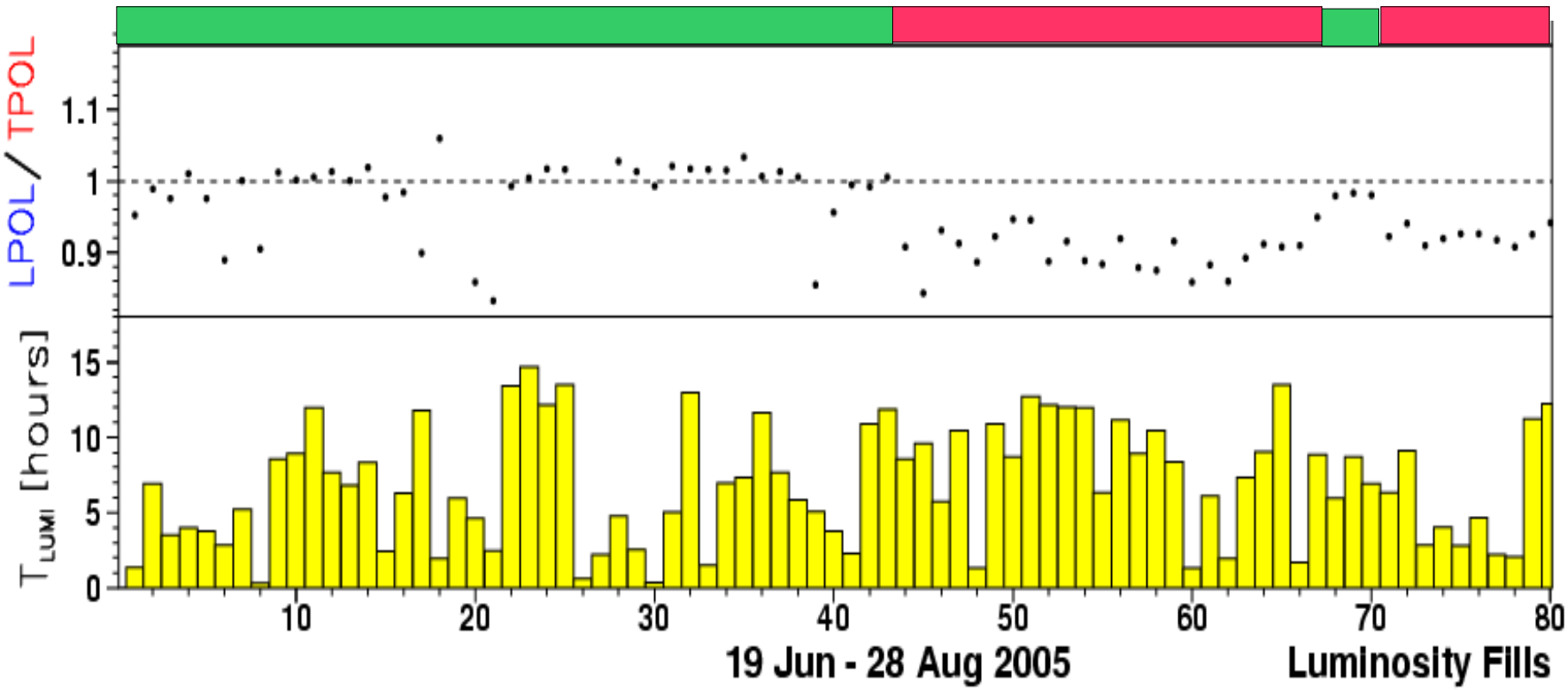
LPOL performance



no major operational problems,
period of low luminosity (week 2,3) was fixed

The main problem

Have observed significant shift in LPOL/TPOL ratio in the last few weeks:



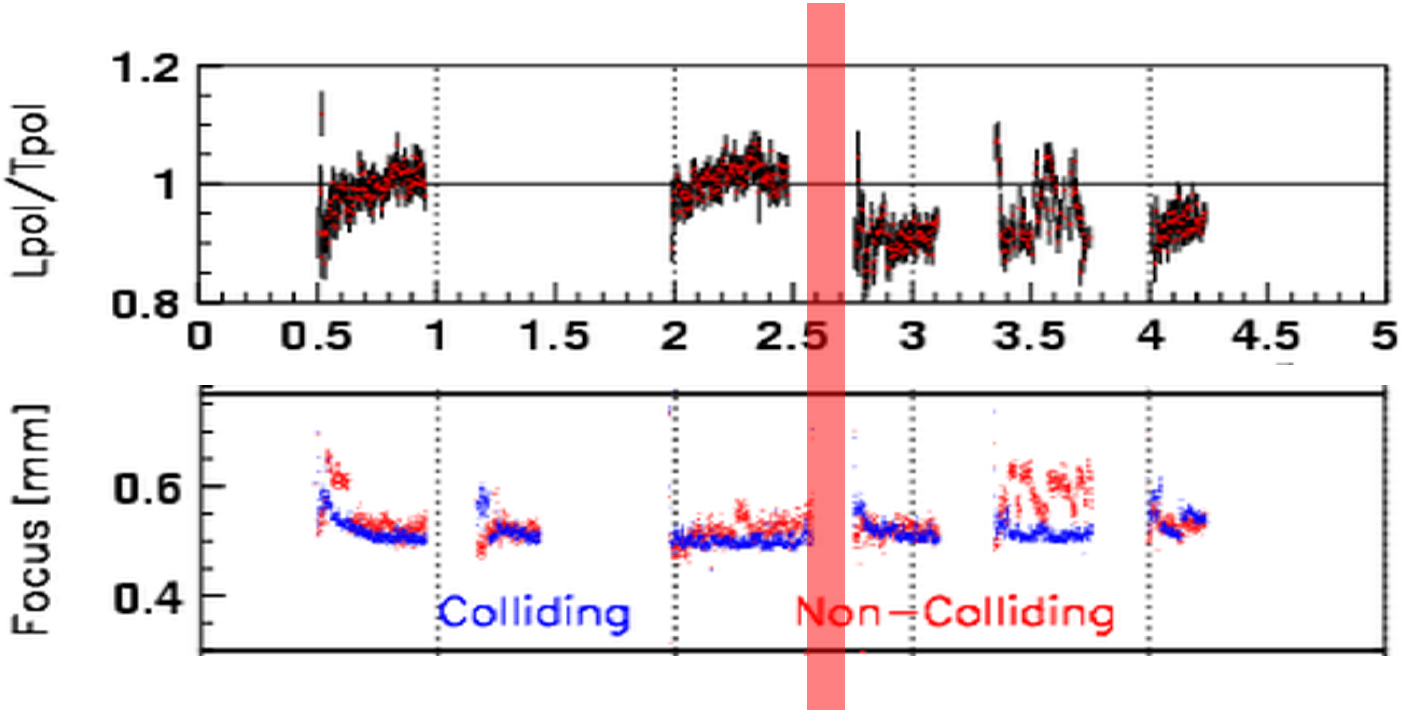
LPOL/TPOL: TPOL

Checks by both LPOL and TPOL groups have not shown any obvious problems.

TPOL:

- stable operation, stable calibration of the device
- no indications of abnormal beam parameters (within precision possible)
- no indications for harware or software problems

remarks: occasional short jumps in the TPOL happen
and are due to a problem after the fast DAQ reset.
Work is underway to „automate" the response and repair.



LPOL/TPOL: LPOL

LPOL:

long list of checks were done to verify performance of LPOL

- optics: understood and fixed reason for low luminosity
- checked alignement, re-surveyed calo in tunnel (installation of new calo)
- checked performance of calorimeter: no problem found

no „smoking gun" effect found so far which might explain LPOL/TPOL being low

LPOL/TPOL

LPOL/TPOL = 0.9-0.95 observed

possible explanations:

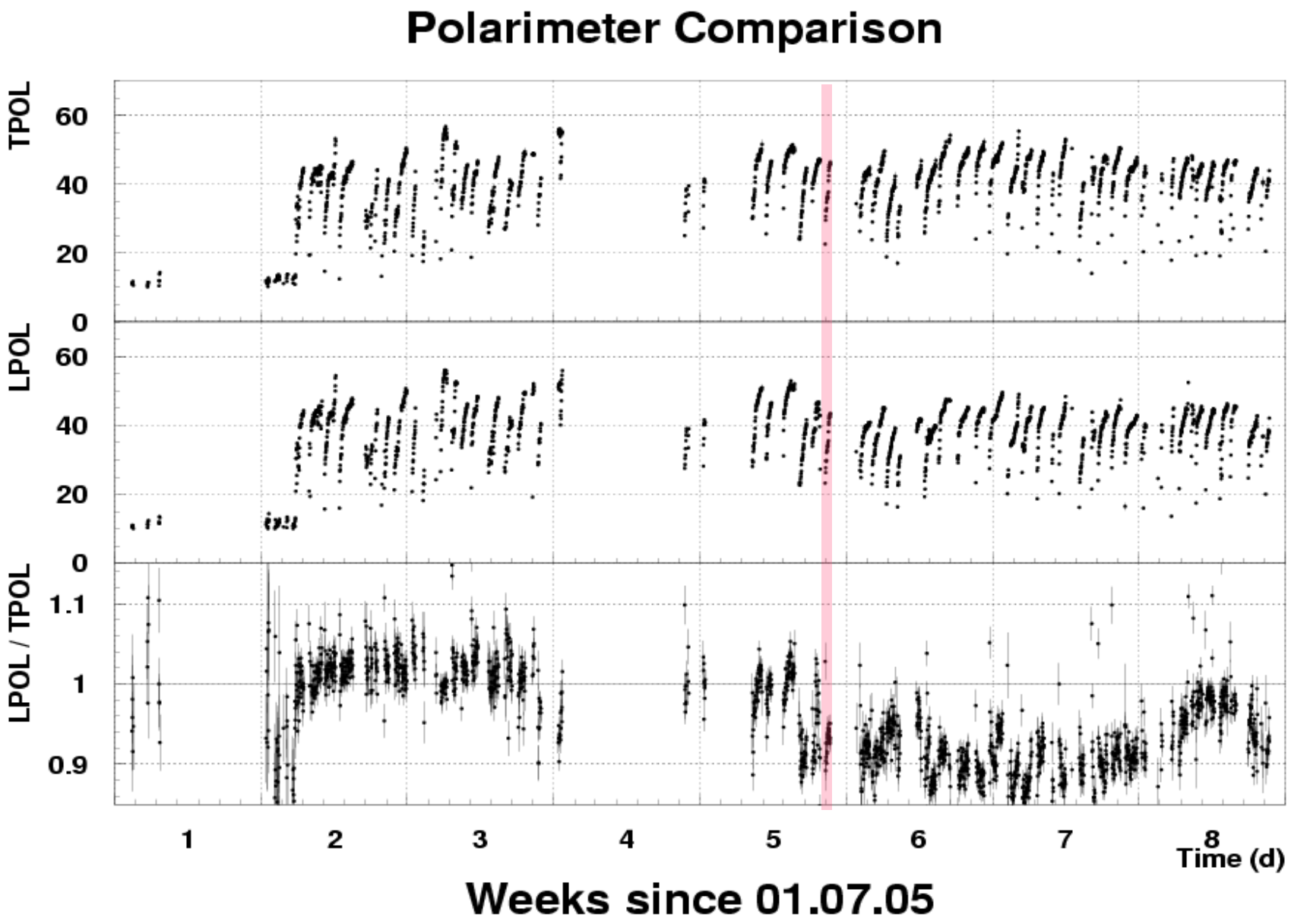
TPOL: measure systematically too high polarisation

Have to assume that analyzing power is better than assumed.
No reason found why this should be the case
Theoretically possible: beam size and divergence in TPOL interaction region happen to cancel each others effects on the focus, but not on the analysing power: unlikely..??

LPOL: measure systematically too low polarisation

No reason found why this should be the case
Wrong linearity corrections has in the past created low LPOl/TPOL ratio, but there are absolutely no data which indicate a similar problem at the moment.

Summary of the situation:



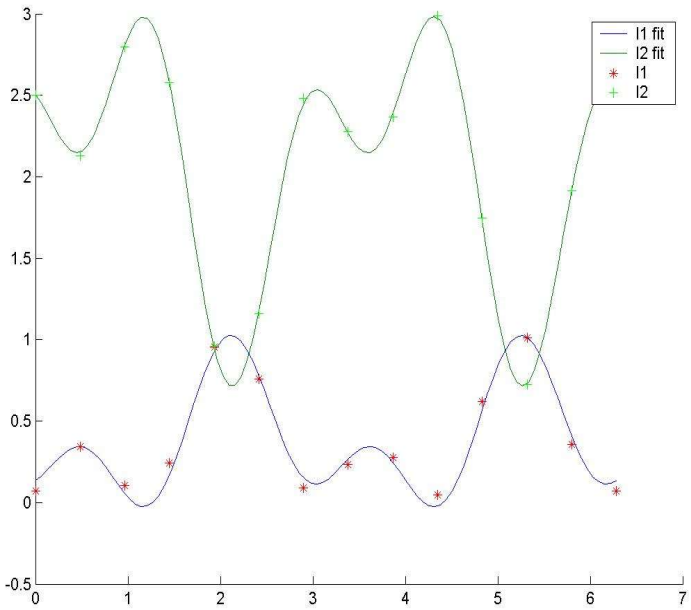
The LPOL cavity

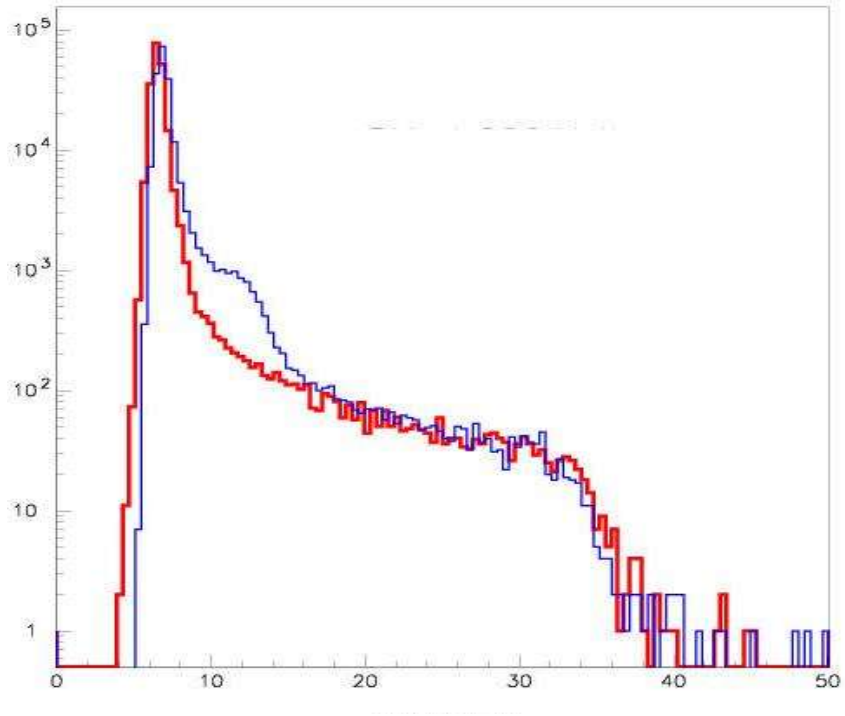
cavity performs well,
stable locking, reliable operation w/o HERA beam

some loss (<10%) with HERA beam

currently working on
understanding the laser
polarisation

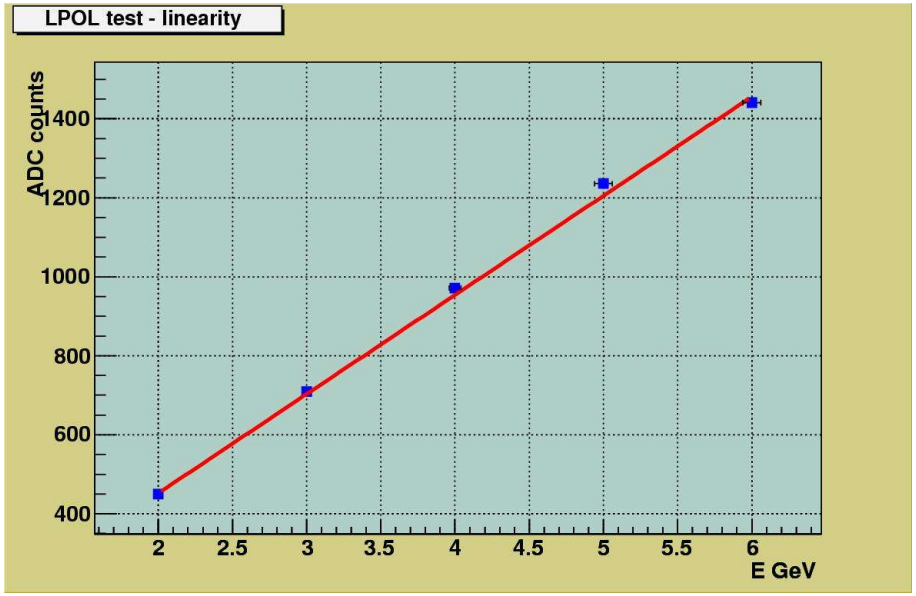
first Comptons observed with
the cavity in the beam





The new LPOL-cavity calo

Calo in beam since June
after quick test beam calibration
Many thanks to HERMES for their help!



- Measurements in DESY test beam (P. Smirnov,Y. Soloviev)
- Linear response, but test beam lower than 12 GeV compton edge

- First measurements taken in HERA beam
- Still need another data taking run to optimise timing
- Measure brems spectra, then comptons

Conclusion

both LPOL and TPOL run smoothly and without major hardware problems

problem of low LPOL/TPOL ratio is not understood

significant work by both LPOL and TPOL groups have not shown any problems or hints on how to solve this problem

We are continuing to investigate

Some progress on commissioning cavity:

- new calo installed
- cavity slowly moves towards first Comptons