Transverse Polarimeter performance around Aug 2005 LPOL/TPOL ratio jumps

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September 5, 2005

On Aug 2, 2005 the LPOL/TPOL ratio jumped down by 10% and recovered after about 3 weeks on Aug 21, 2005.

Below we plot almost all monitored parameters and measurables of TPOL near and during the above mentioned dates.

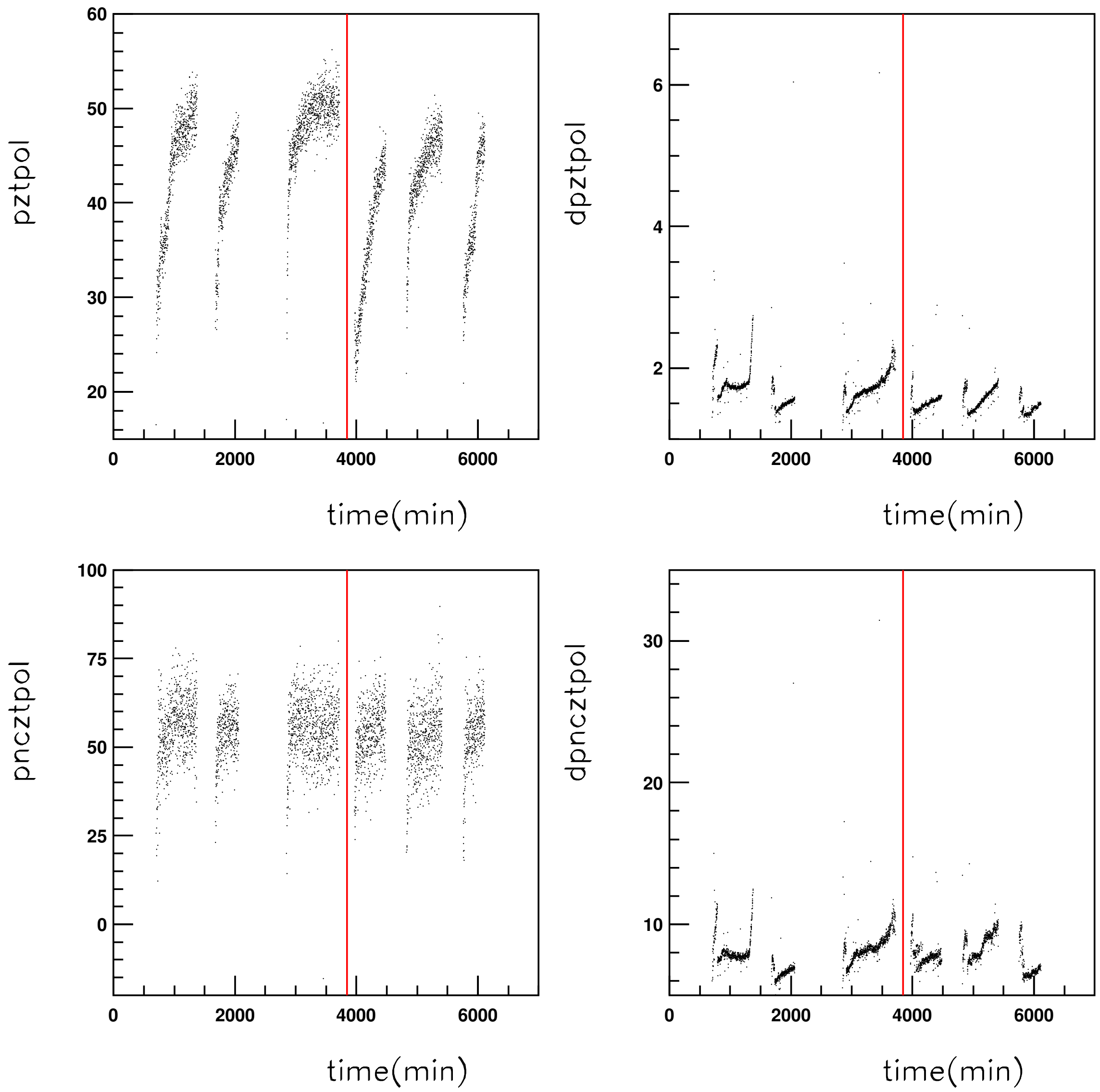
On each plot a vertical red line separates HERA fills with different average values of the ratio i.e. corresponds to a point where the jump occurs.

First bunch of the plots presents a period from 31 Jul to 5 Aug (time 0 corresponds to 31 Jul 00:00), and second bunch is for a period from 19 to 23 Aug (time 0 is 19 Aug 00:00)

At the end, samples of the TPOL raw spectra from the mentioned periods are compared and TPOL analyzing power, focus correction constants are printed along with dates when they have been changed.

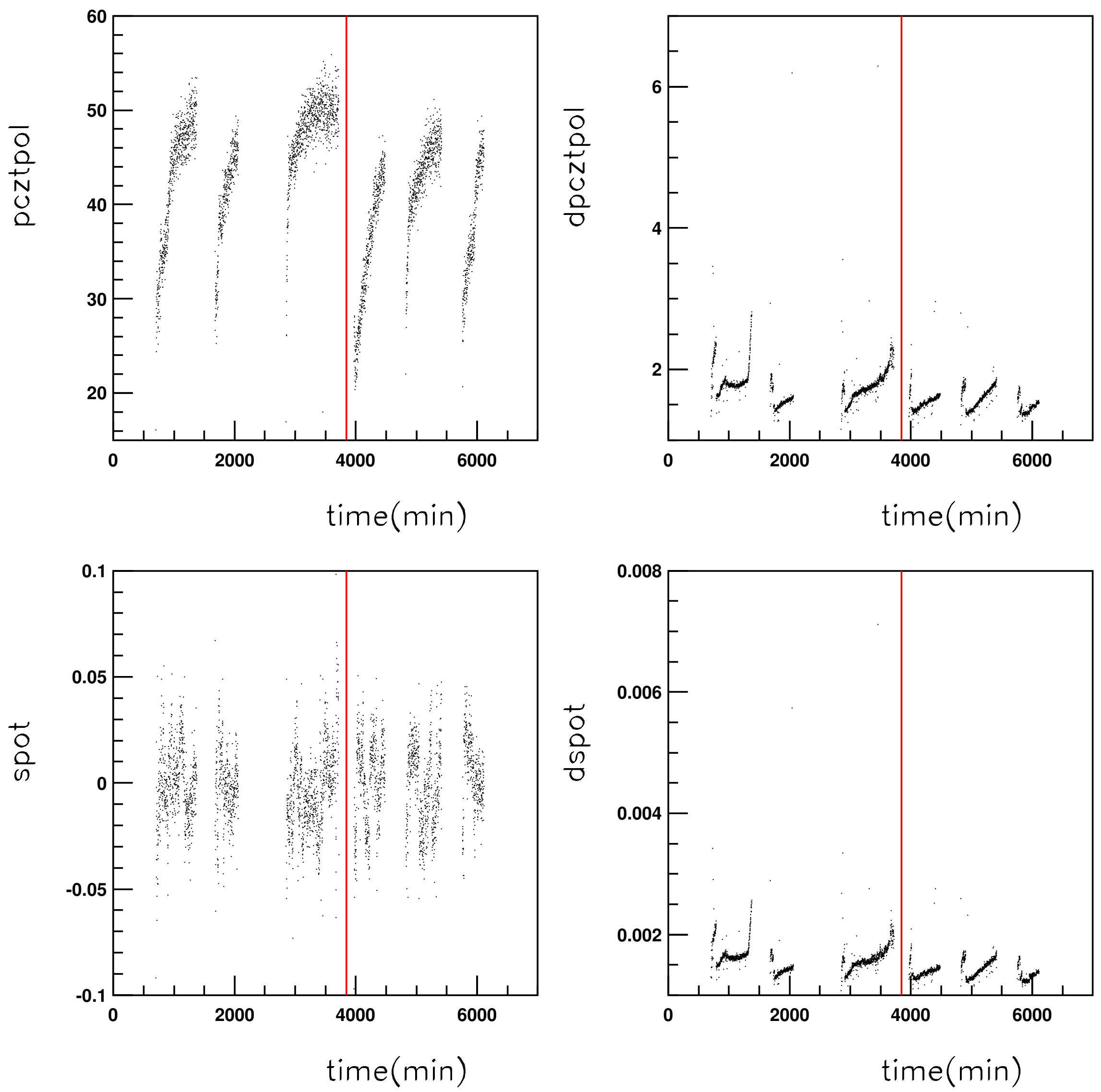
Displayed plots did not show any unusual variation or hint to explain observed ratio jumps and the TPOL essential constants were not altered during the time interval under investigation.

LPOL/TPOL Ratio Jumps Down.



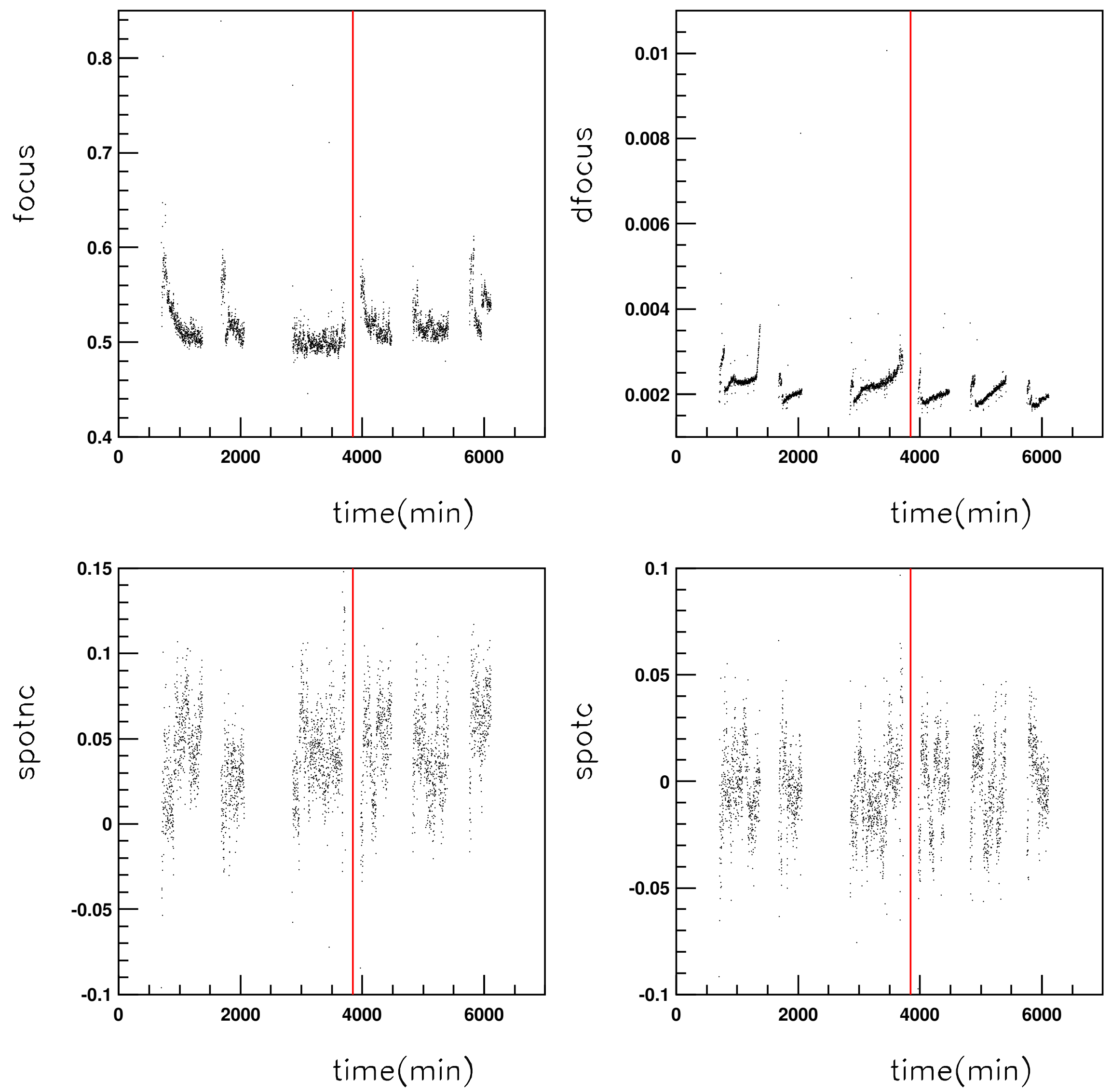
Upper row: Polarisation and its error in percent.

Lower row: Polarisation and its error of non-colliding bunches.



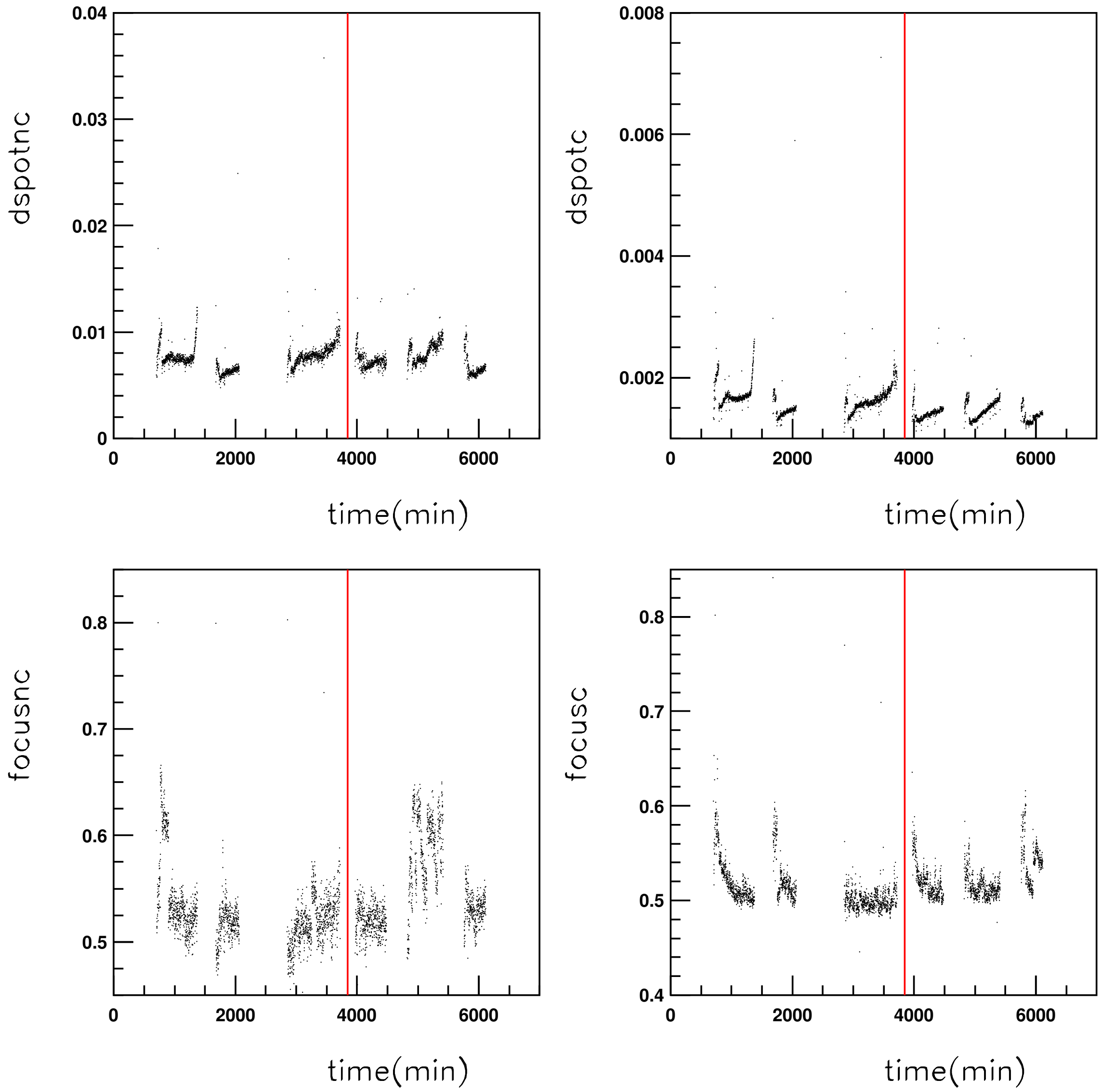
Upper row: Polarisation and its error of colliding bunches.

Lower row: Compton beam position and its error.



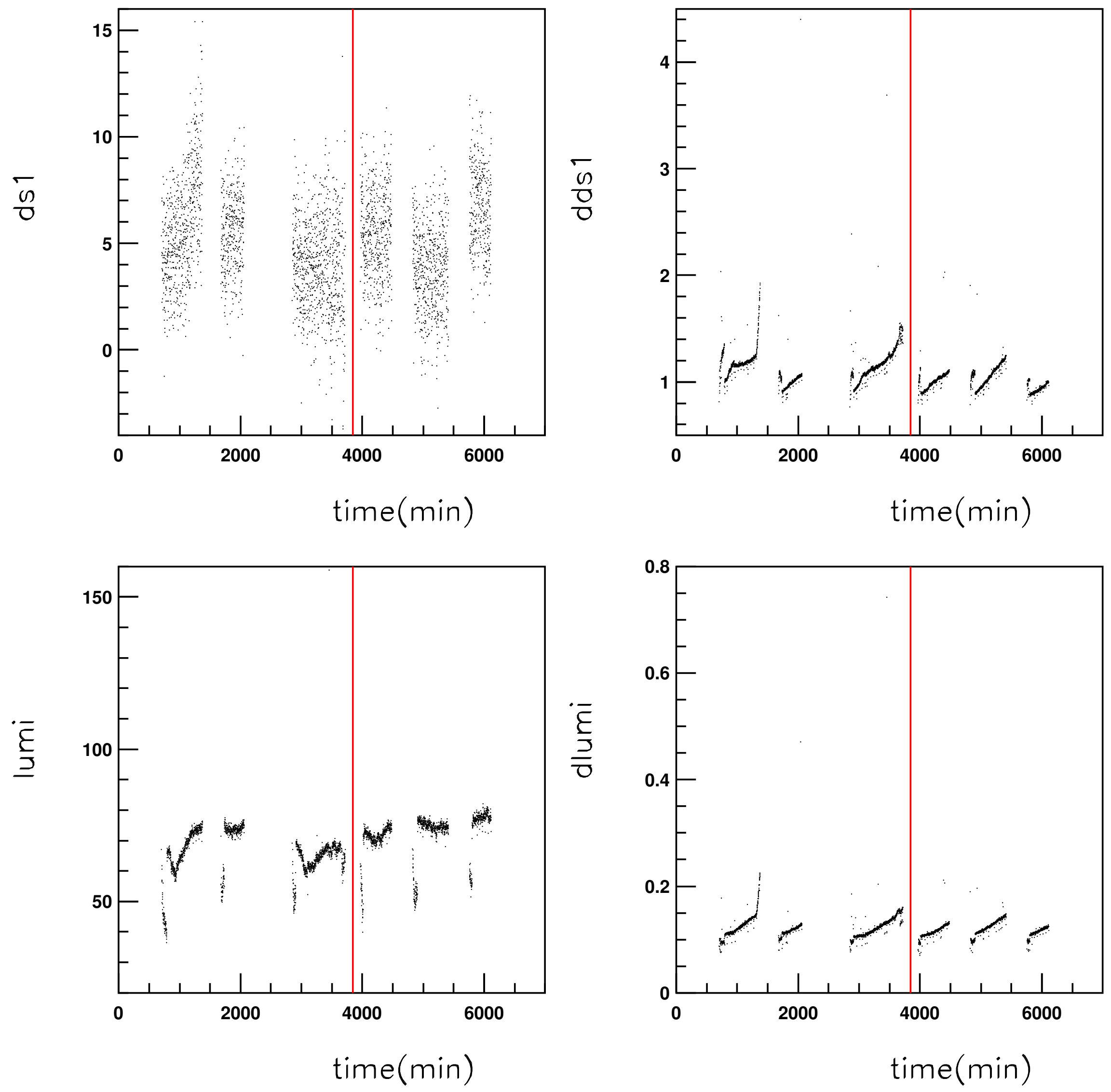
Upper row: Compton beam width and its error.

Lower row: Compton beam position of non-colliding and colliding bunches.



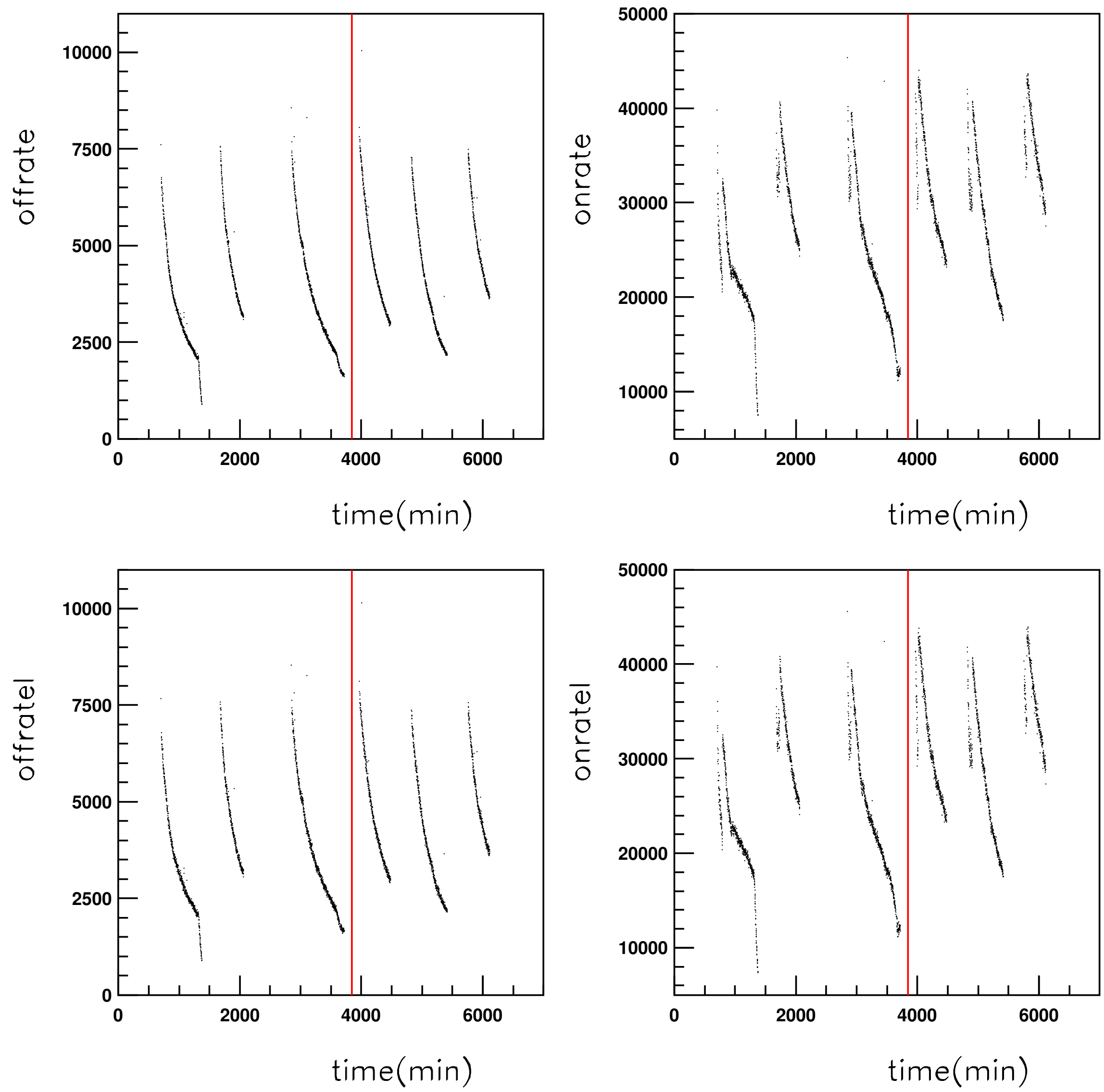
Upper row: Error of Compton beam position of non-colliding and colliding bunches.

Lower row: Compton beam width of non-colliding and colliding bunches.



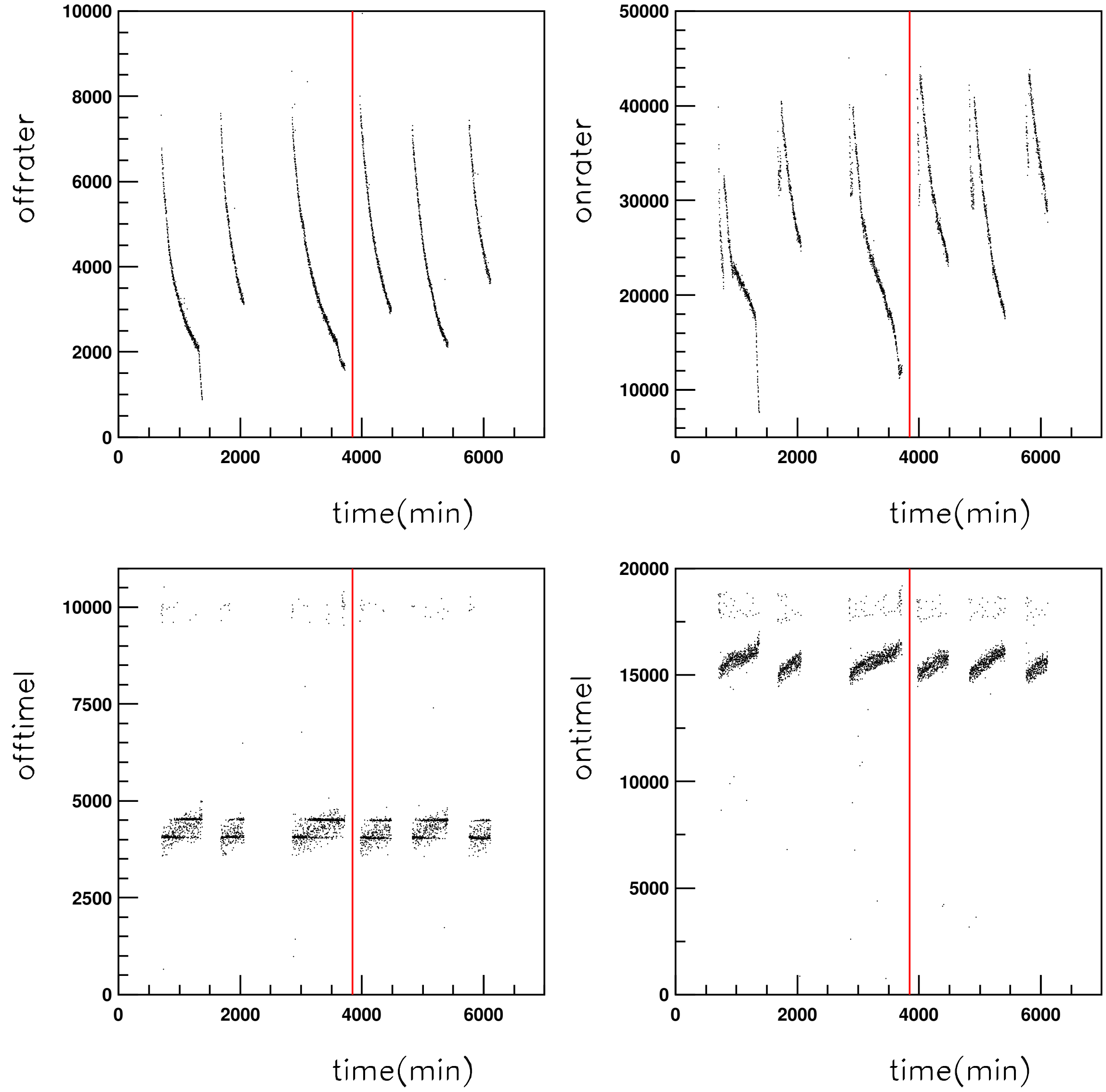
Upper row: ΔS_1 and its error

Lower row: Luminosity and its error.



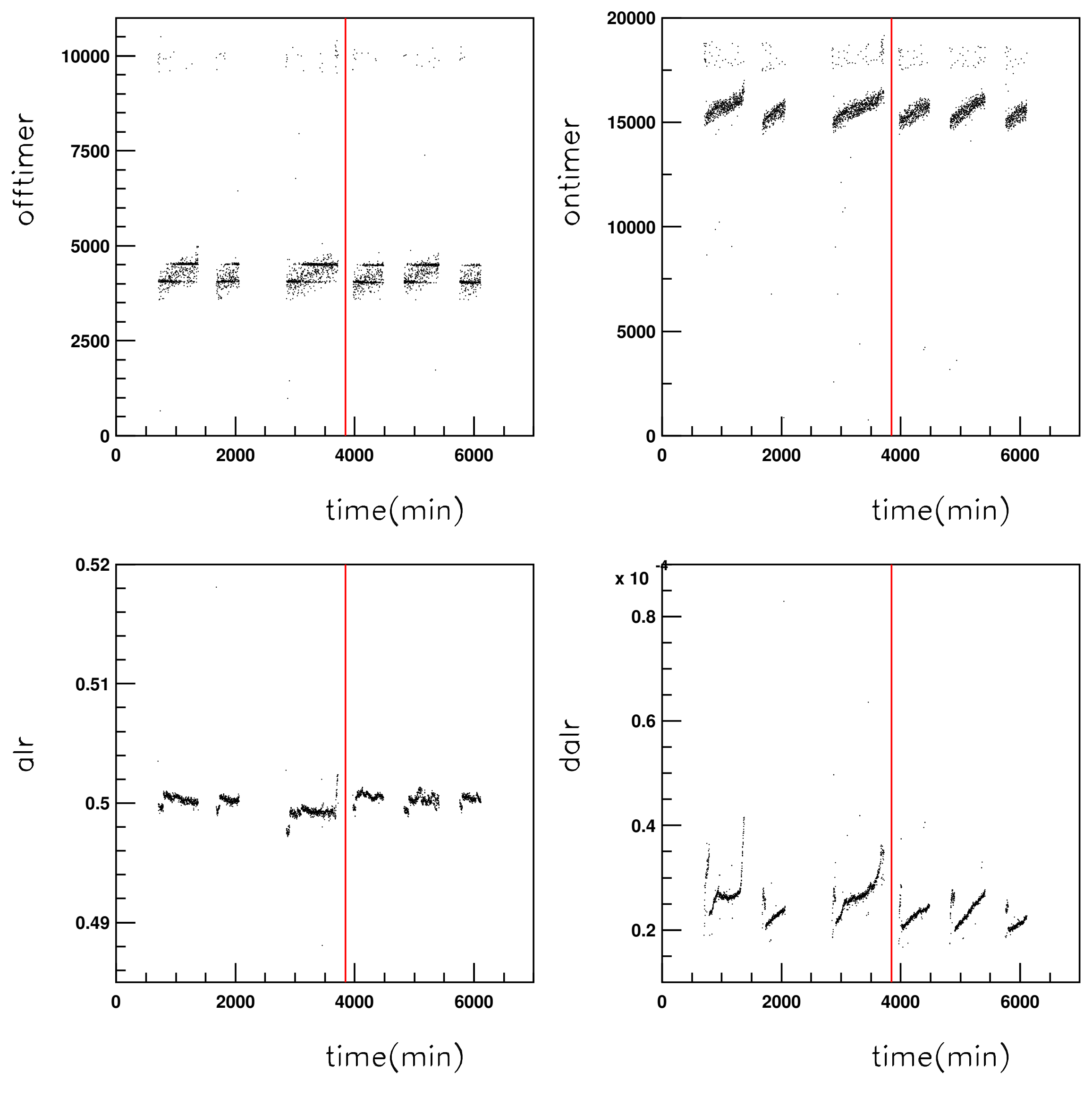
Upper row: Laser off and Laser on rates in Hz.

Lower row: Laser off and Laser on rates for left helicity.



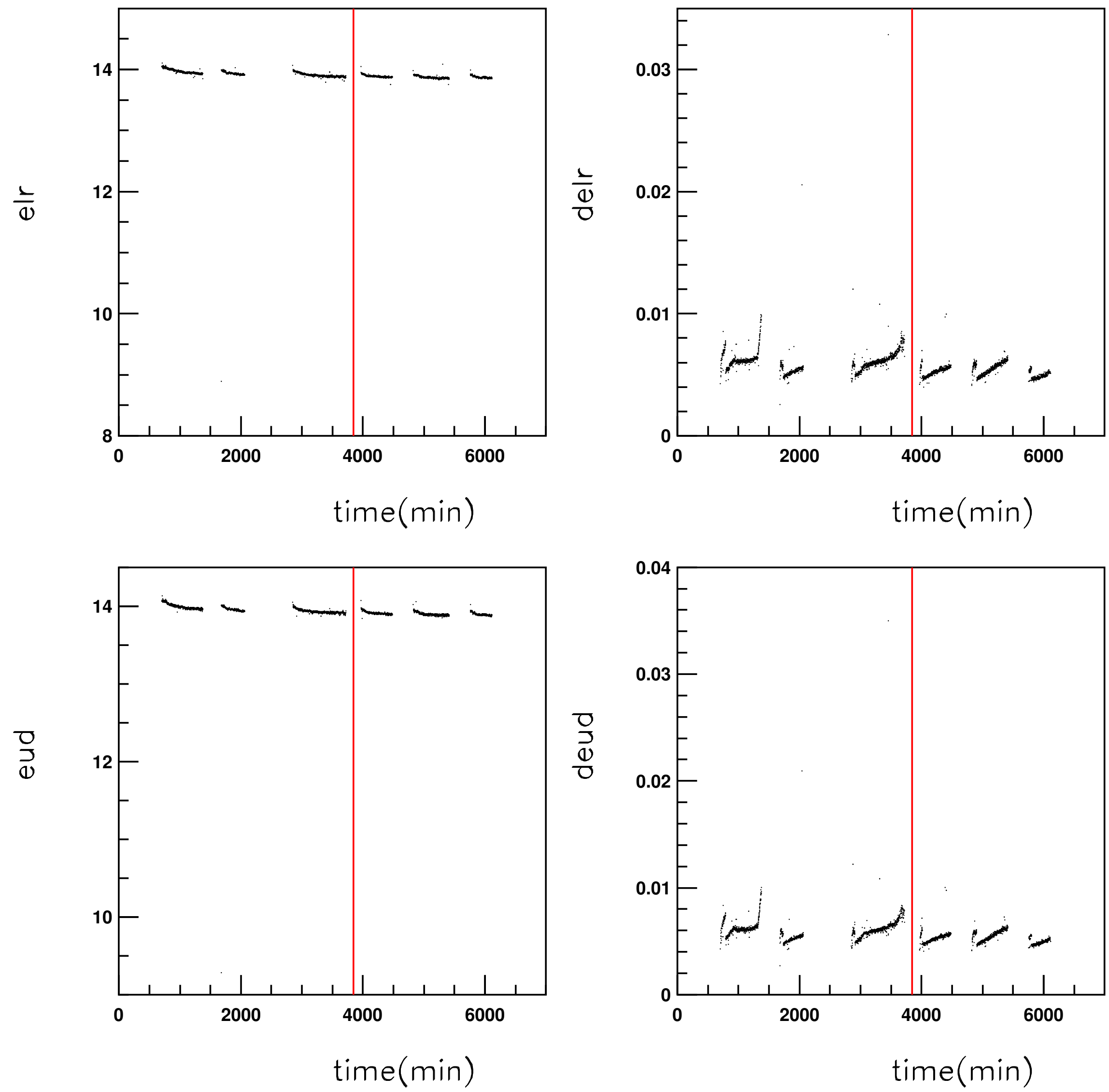
Upper row: Laser off and Laser on rates for right helicity.

Lower row: Laser off and Laser on live times for left helicity in msec.



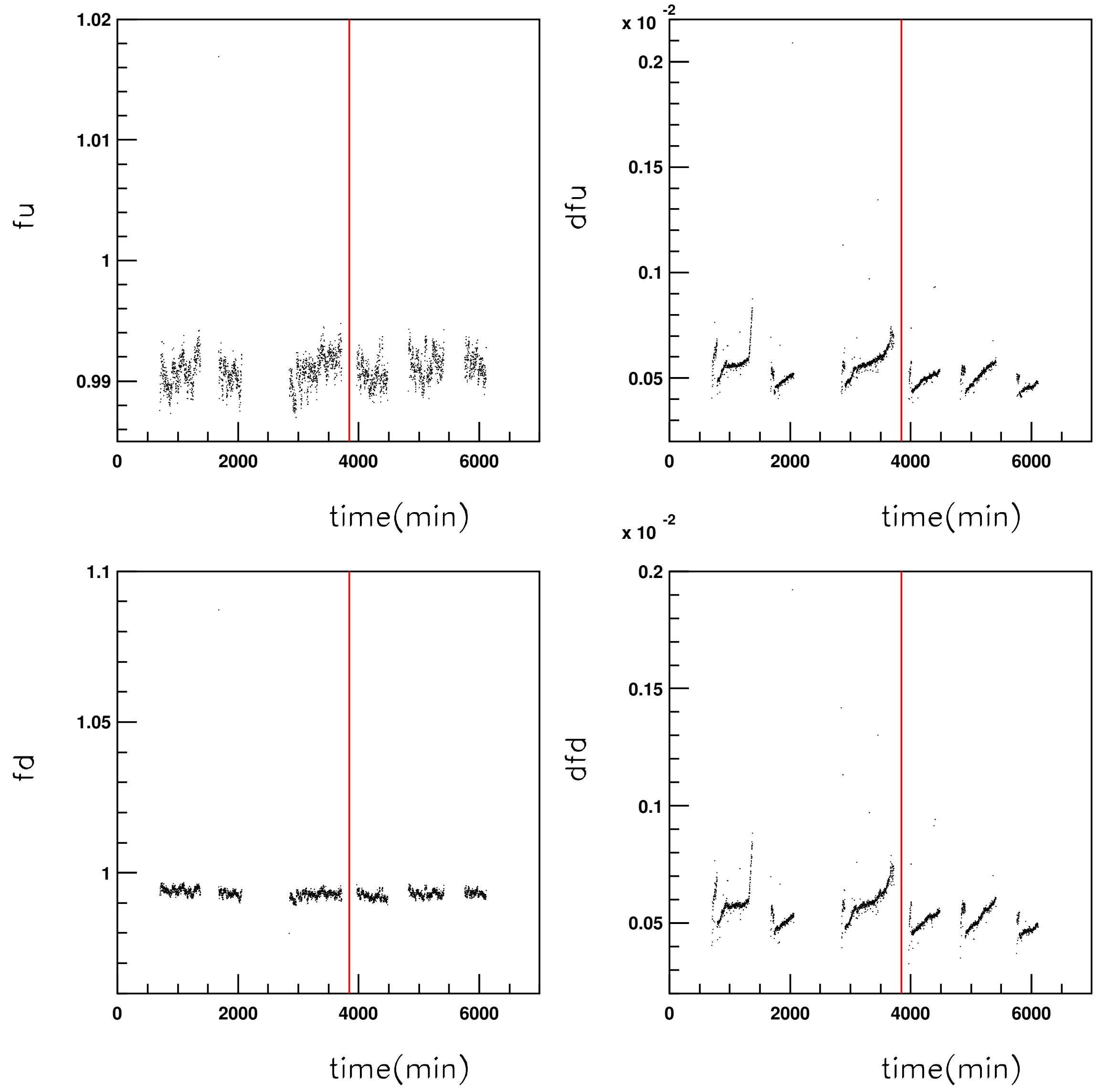
Upper row: Laser off and Laser on live times for right helicity.

Lower row: Calorimeter Left-Right channels asymmetry and its error.



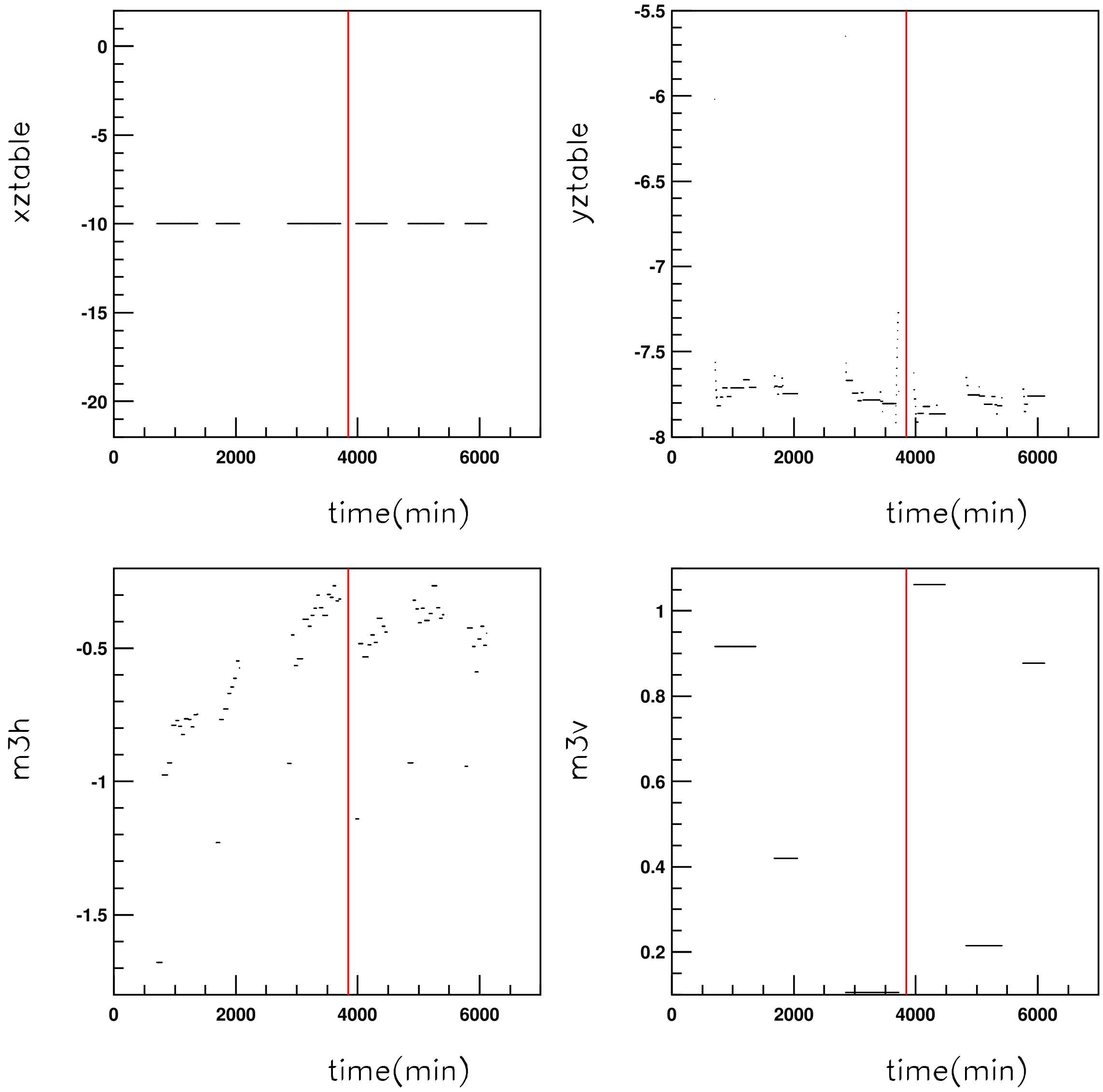
Upper row: Horizontal Compton edge and its error in GeV.

Lower row: Vertical Compton edge and its error in GeV.



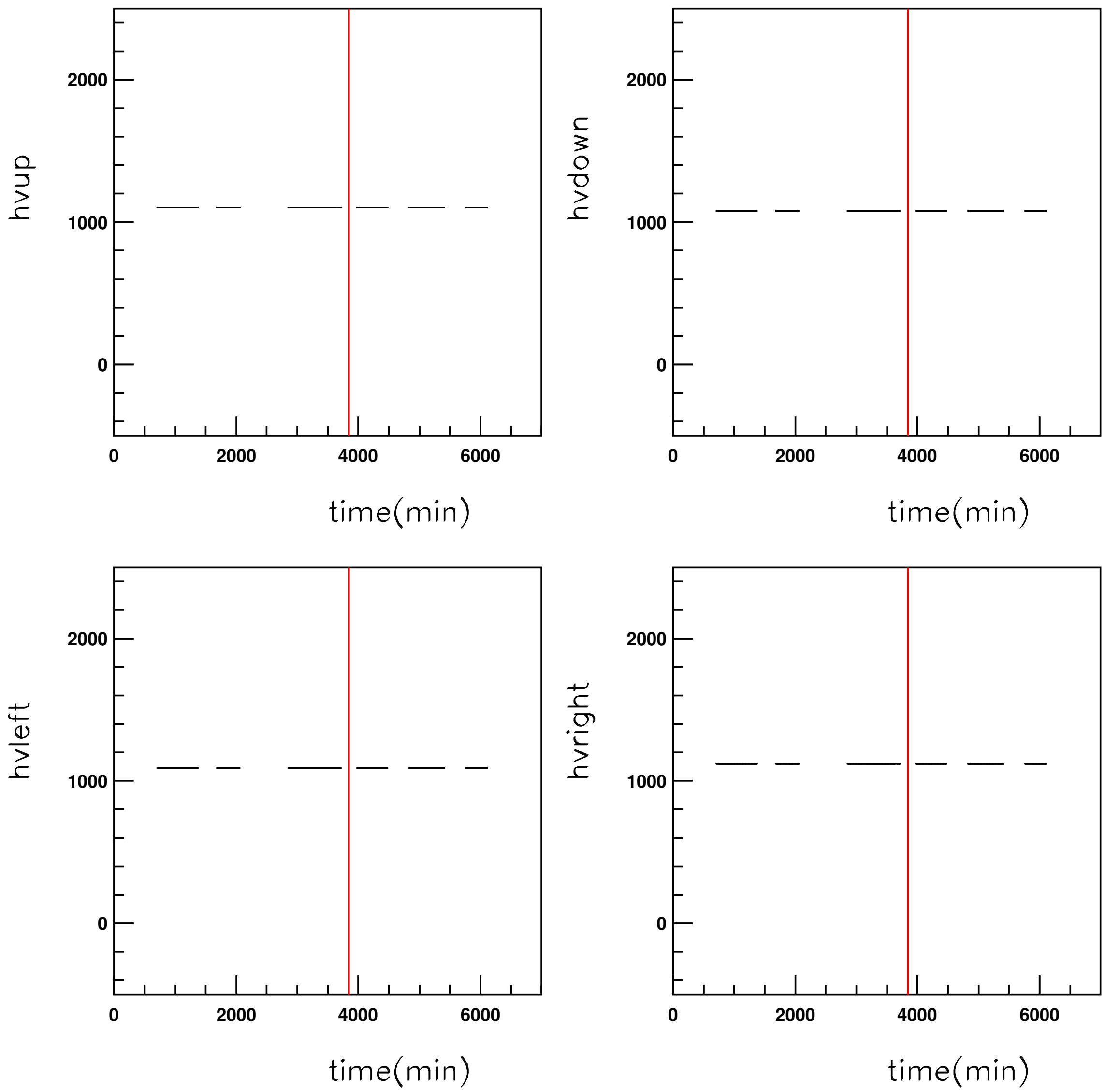
Upper row: Calorimeter UP channel calibration constant and its error.

Lower row: Calorimeter DOWN channel calibration constant and its error.



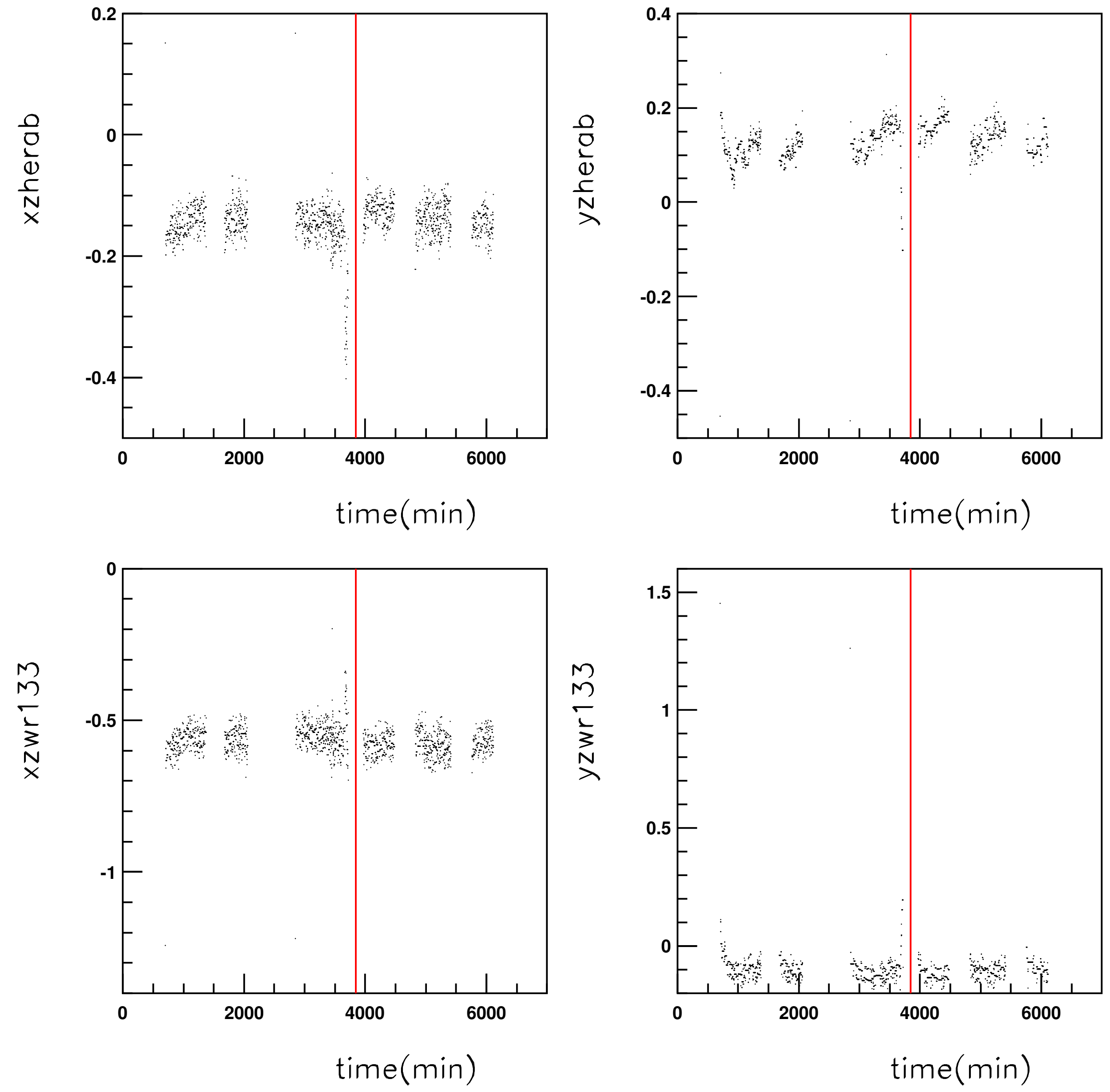
Upper row: Calorimeter table horizontal and vertical positions in mm.

Lower row: Mirror 3 horizontal and vertical positions in mm.



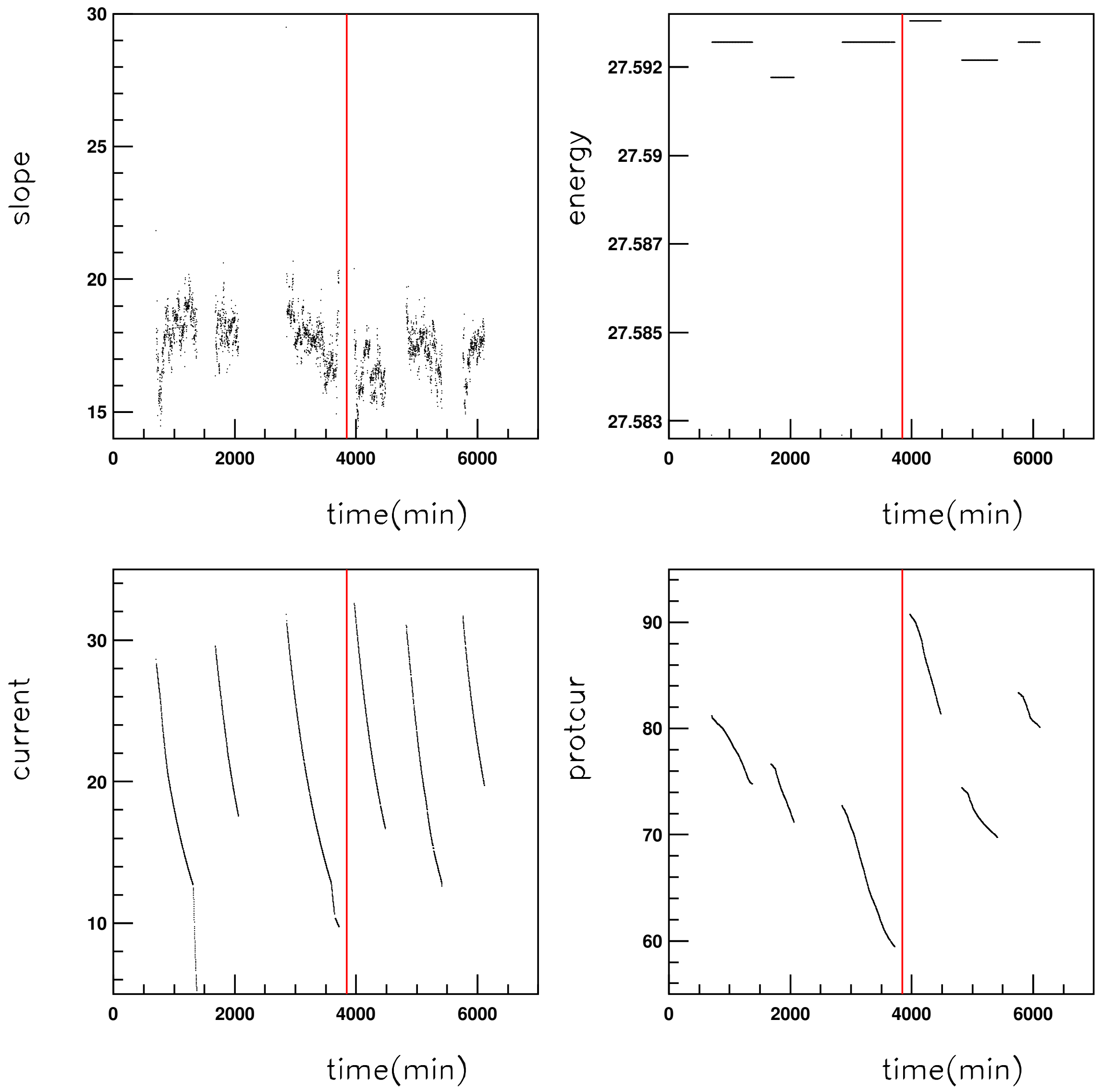
Upper row: Calorimeter UP and DOWN channels HV in Volts.

Lower row: Calorimeter LEFT and RIGHT channels HV in Volts.



Upper row: BPM horizontal and vertical at HERA-B in mm.

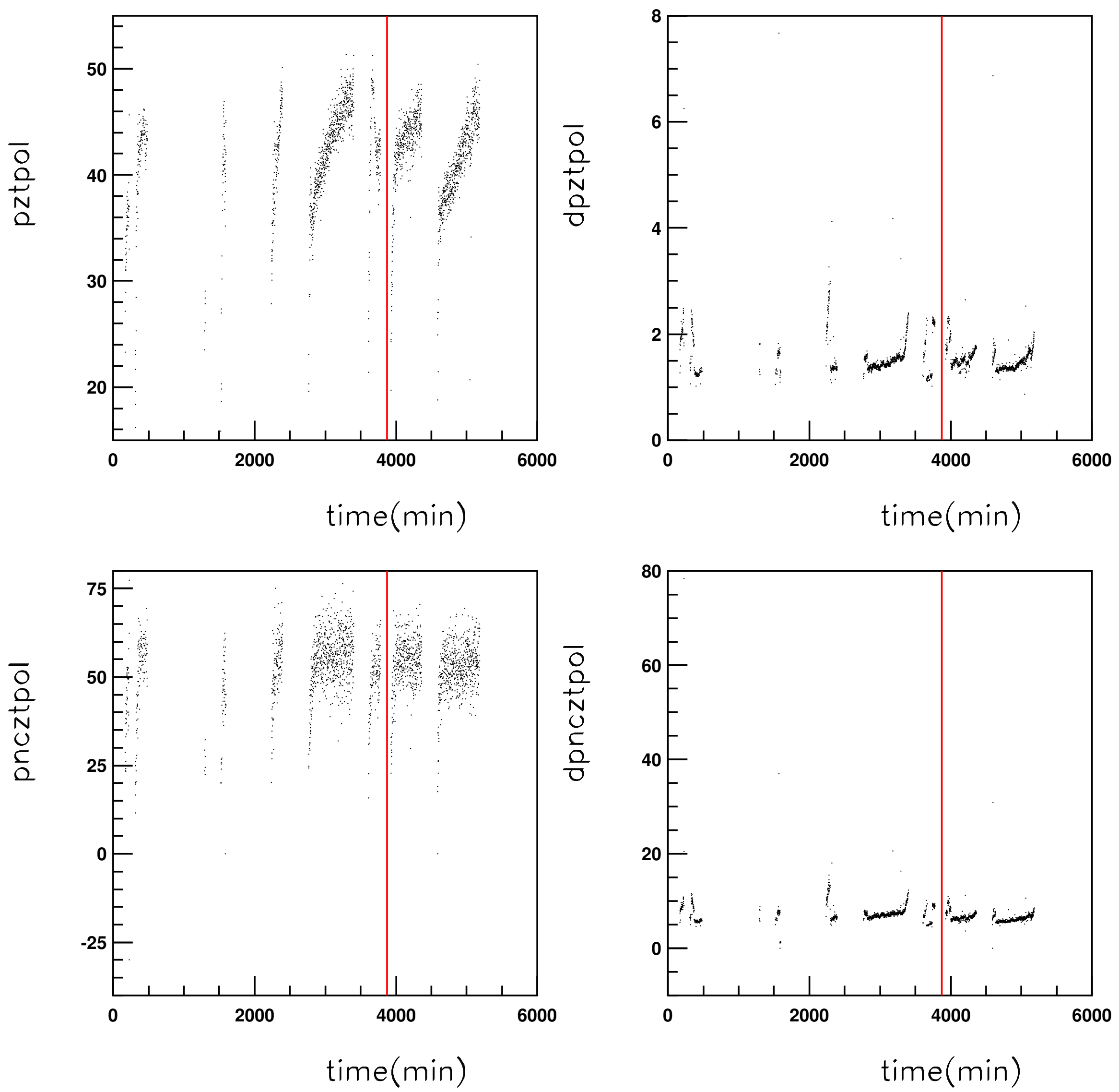
Lower row: BPM horizontal and vertical at Compton IP in mm.



Upper row: Lepton beam slope at Compton IP in arb.units and lepton beam energy in GeV.

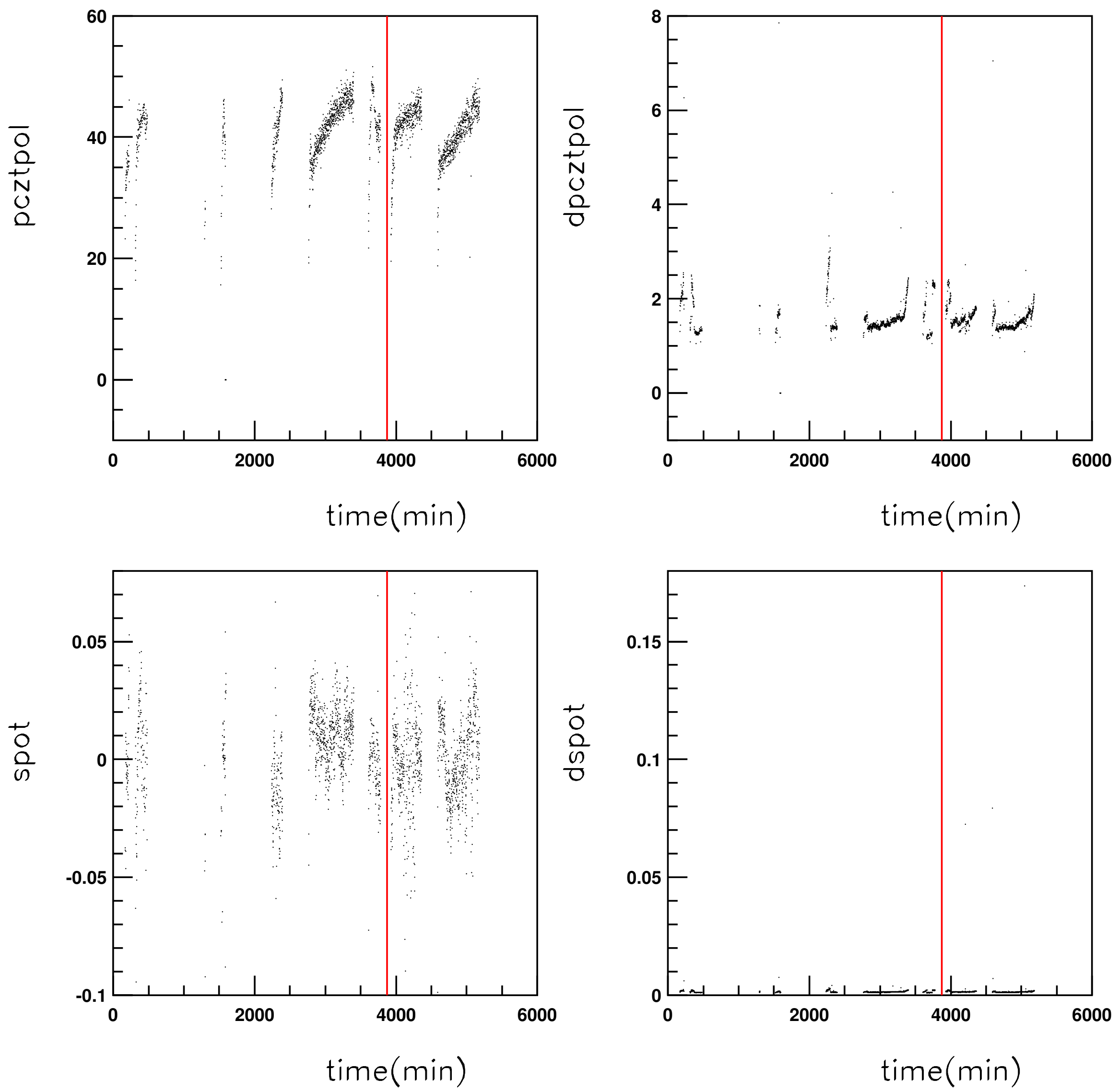
Lower row: Lepton and proton beam currents in mA.

LPOL/TPOL Ratio Recovers.



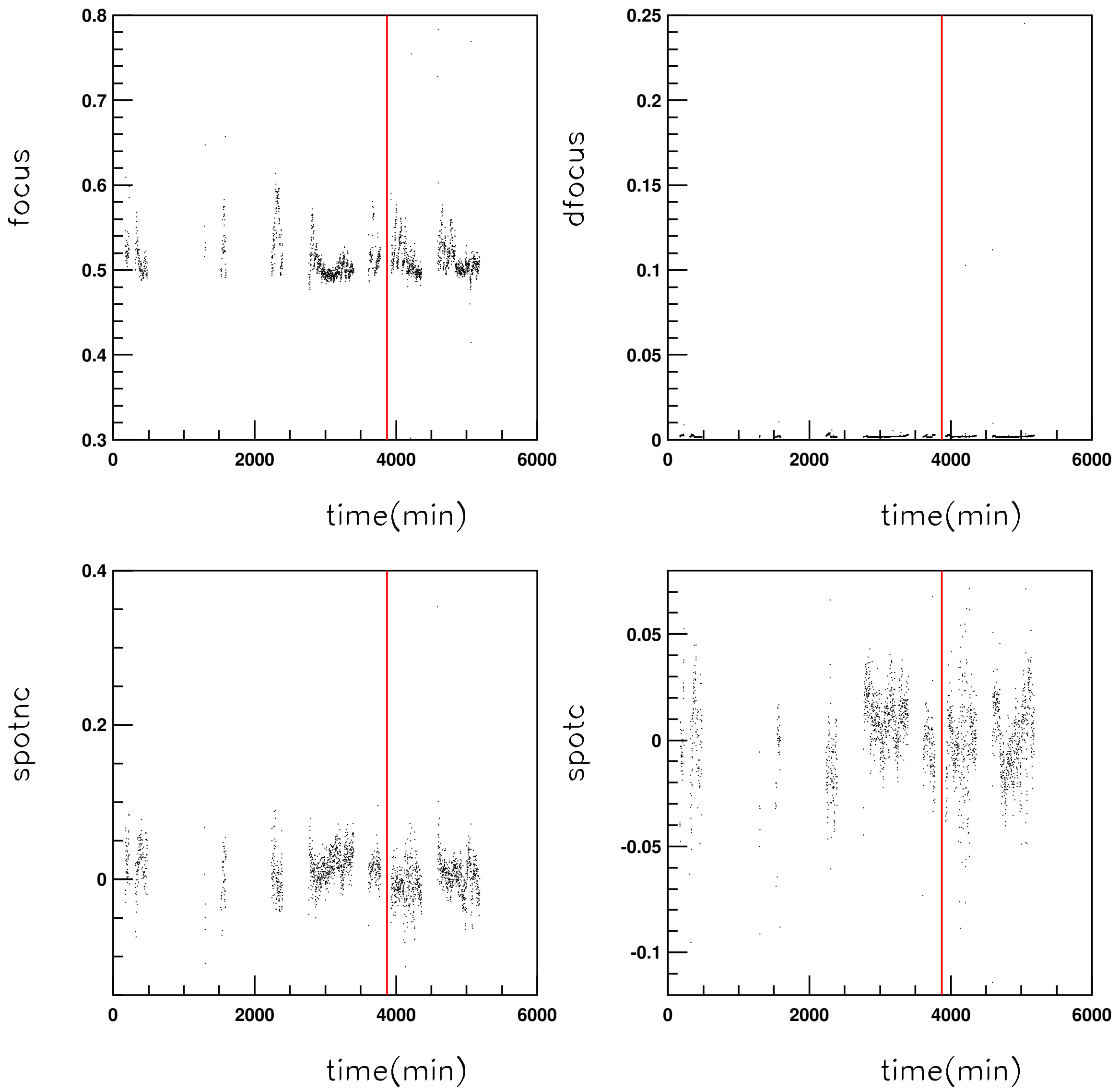
Upper row: Polarisation and its error in percent.

Lower row: Polarisation and its error of non-colliding bunches.



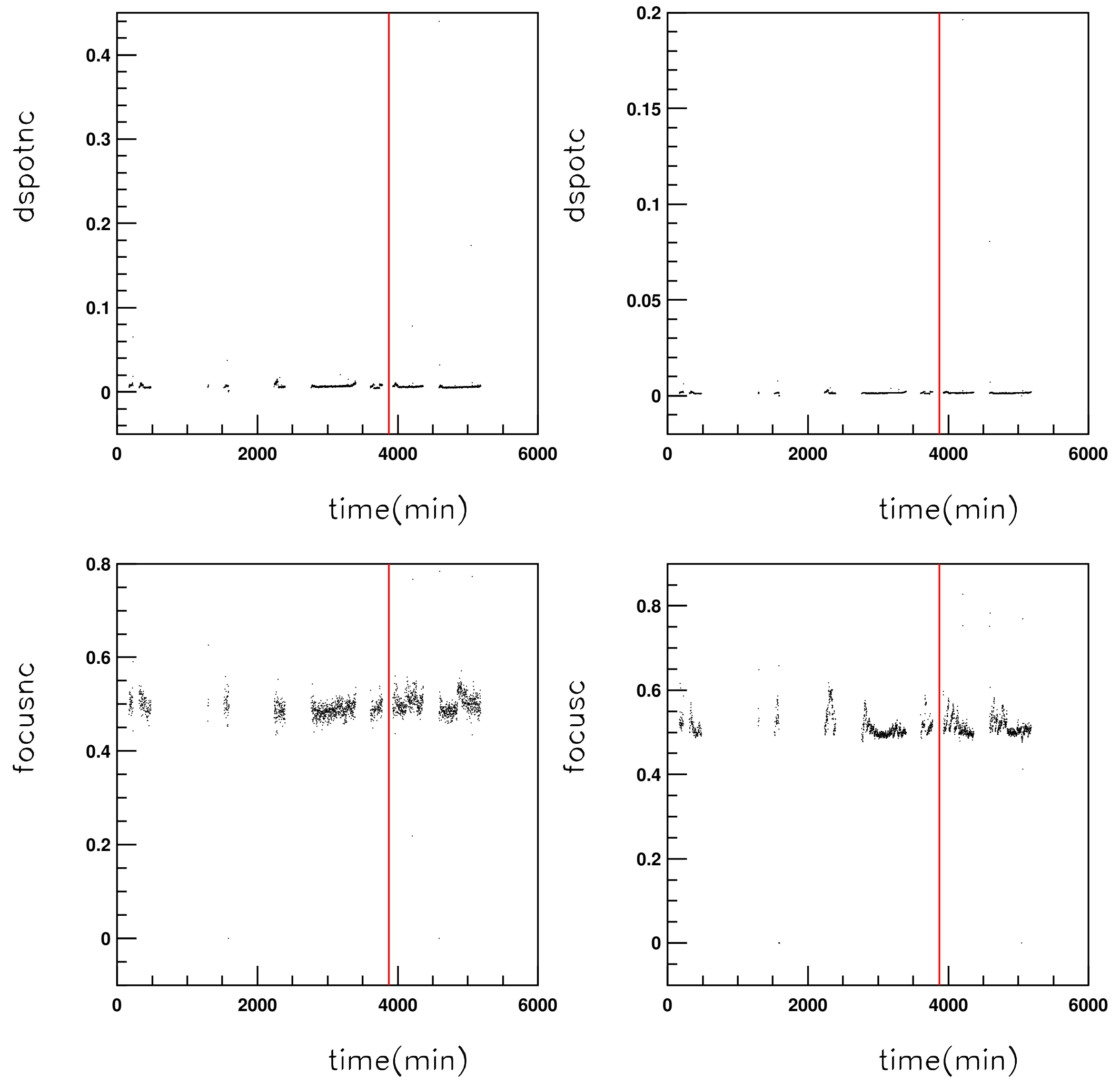
Upper row: Polarisation and its error of colliding bunches.

Lower row: Compton beam position and its error.



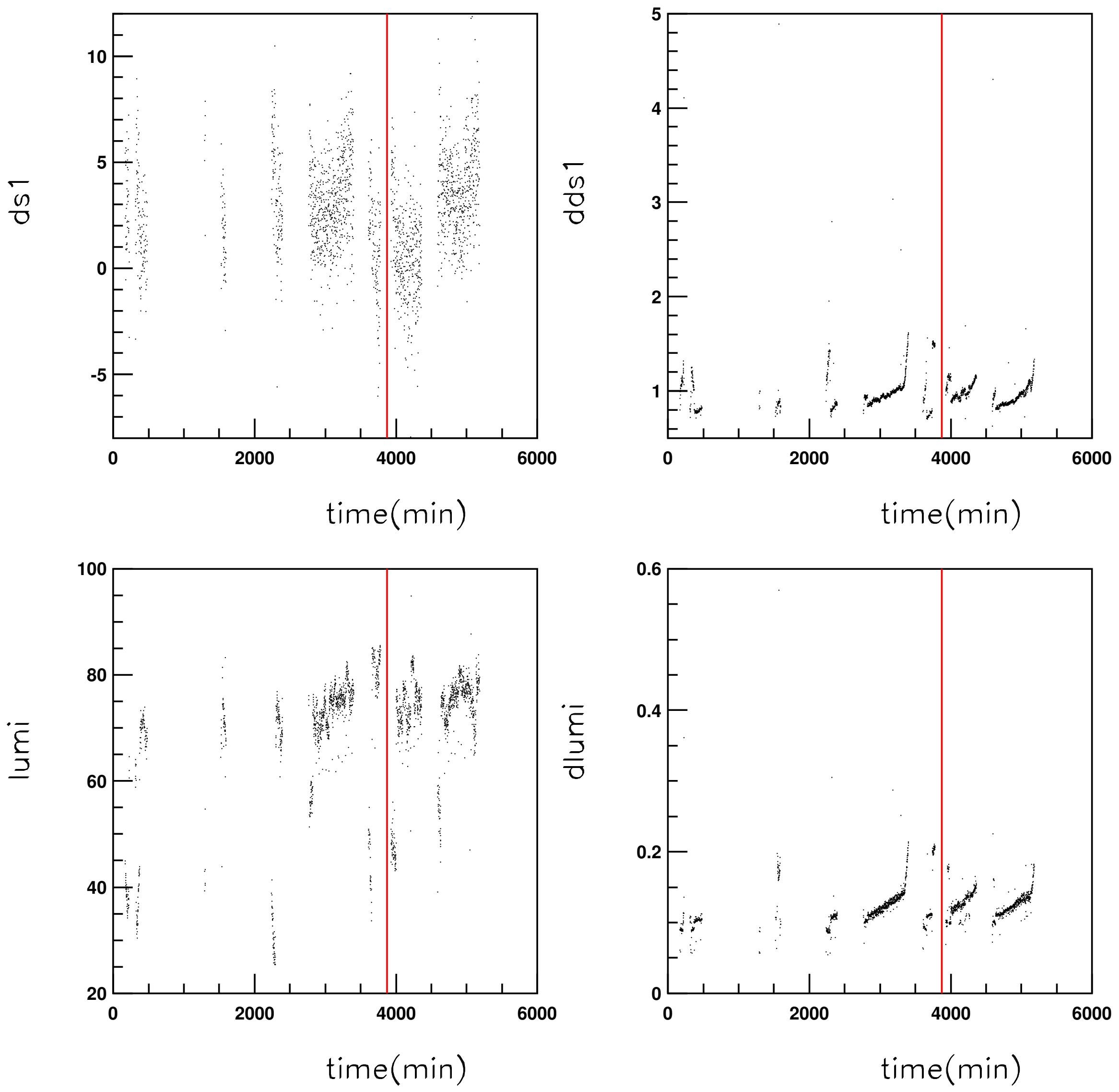
Upper row: Compton beam width and its error.

Lower row: Compton beam position of non-colliding and colliding bunches.



Upper row: Error of Compton beam position of non-colliding and colliding bunches.

Lower row: Compton beam width of non-colliding and colliding bunches.



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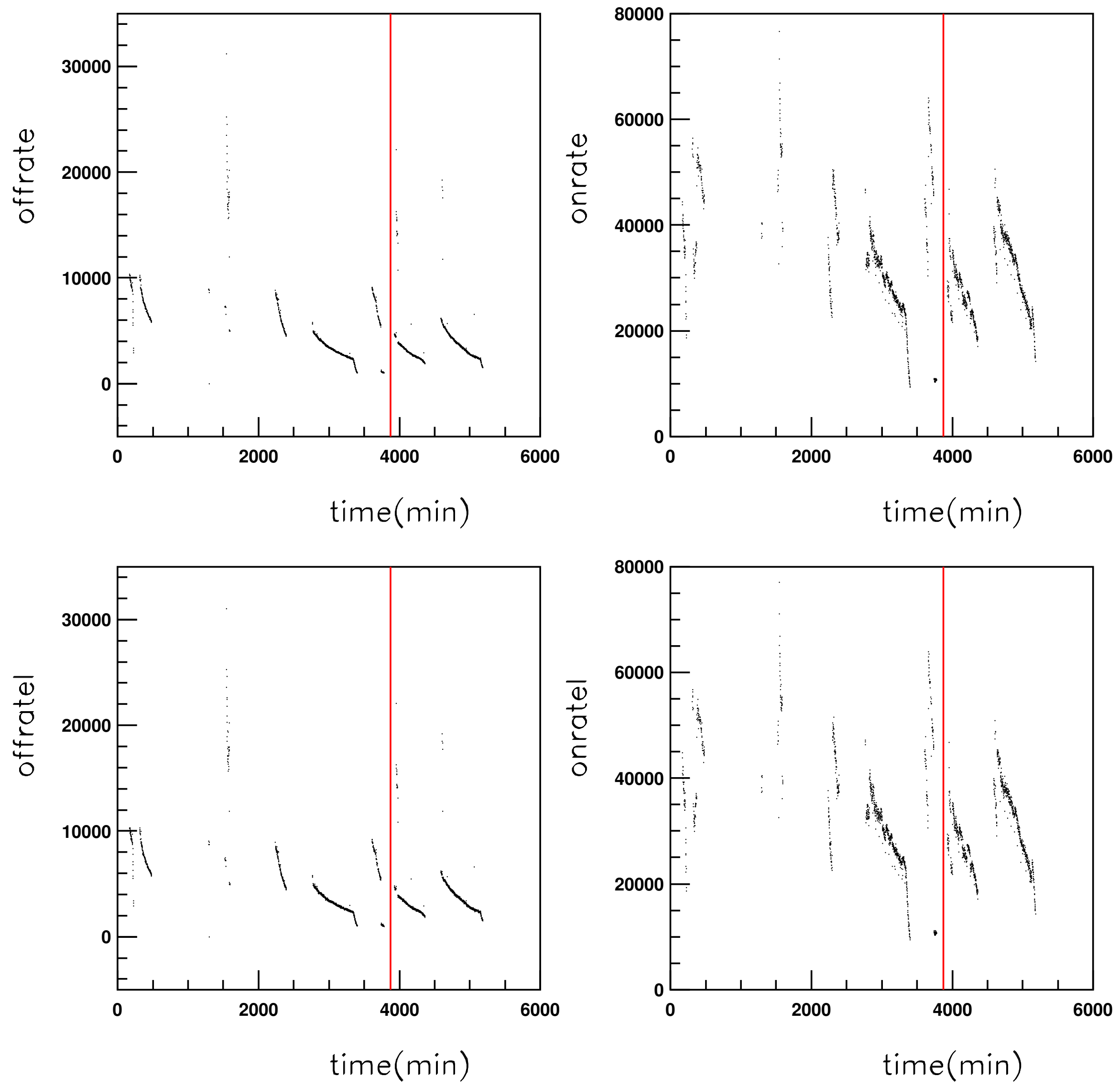

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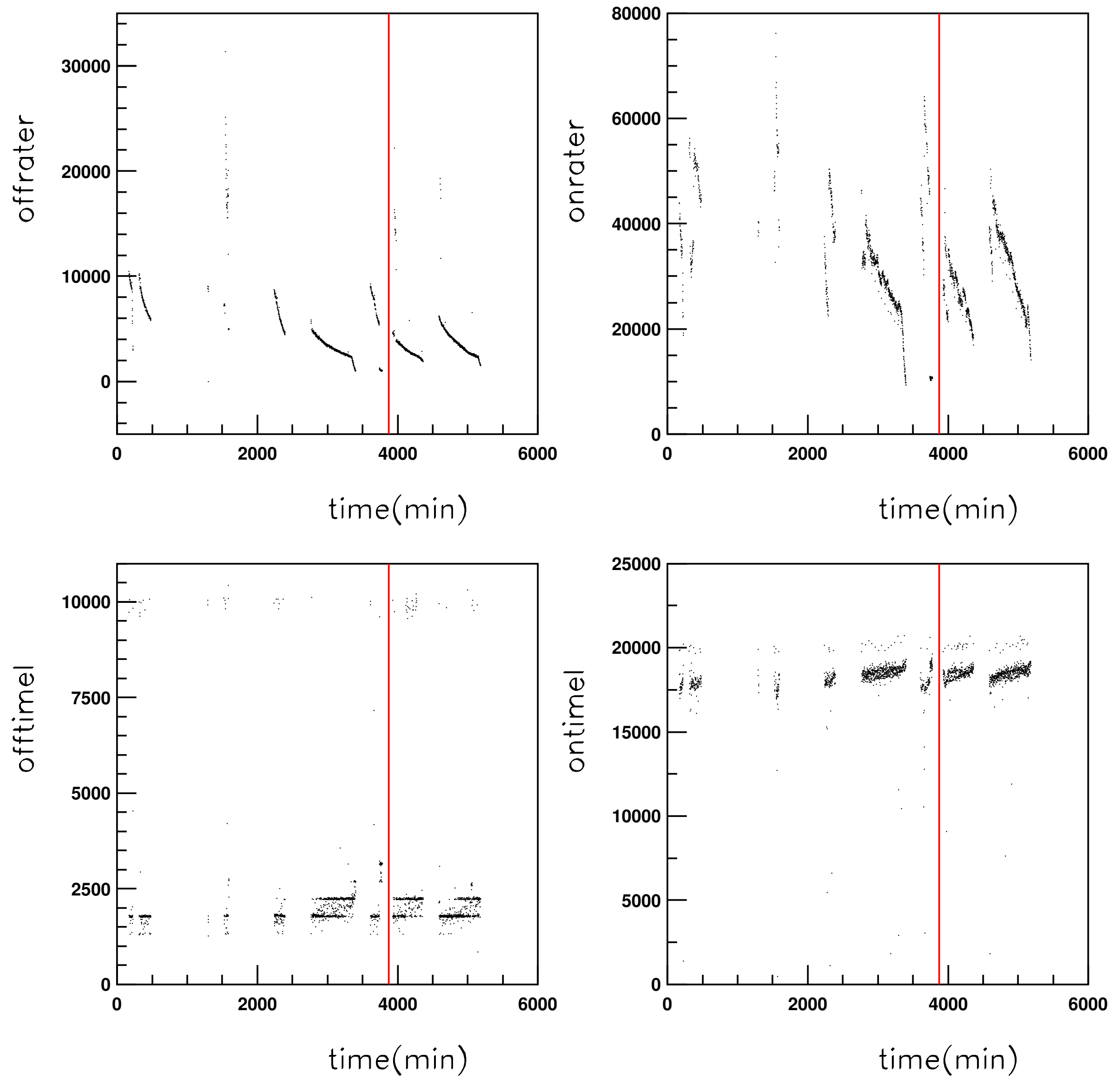
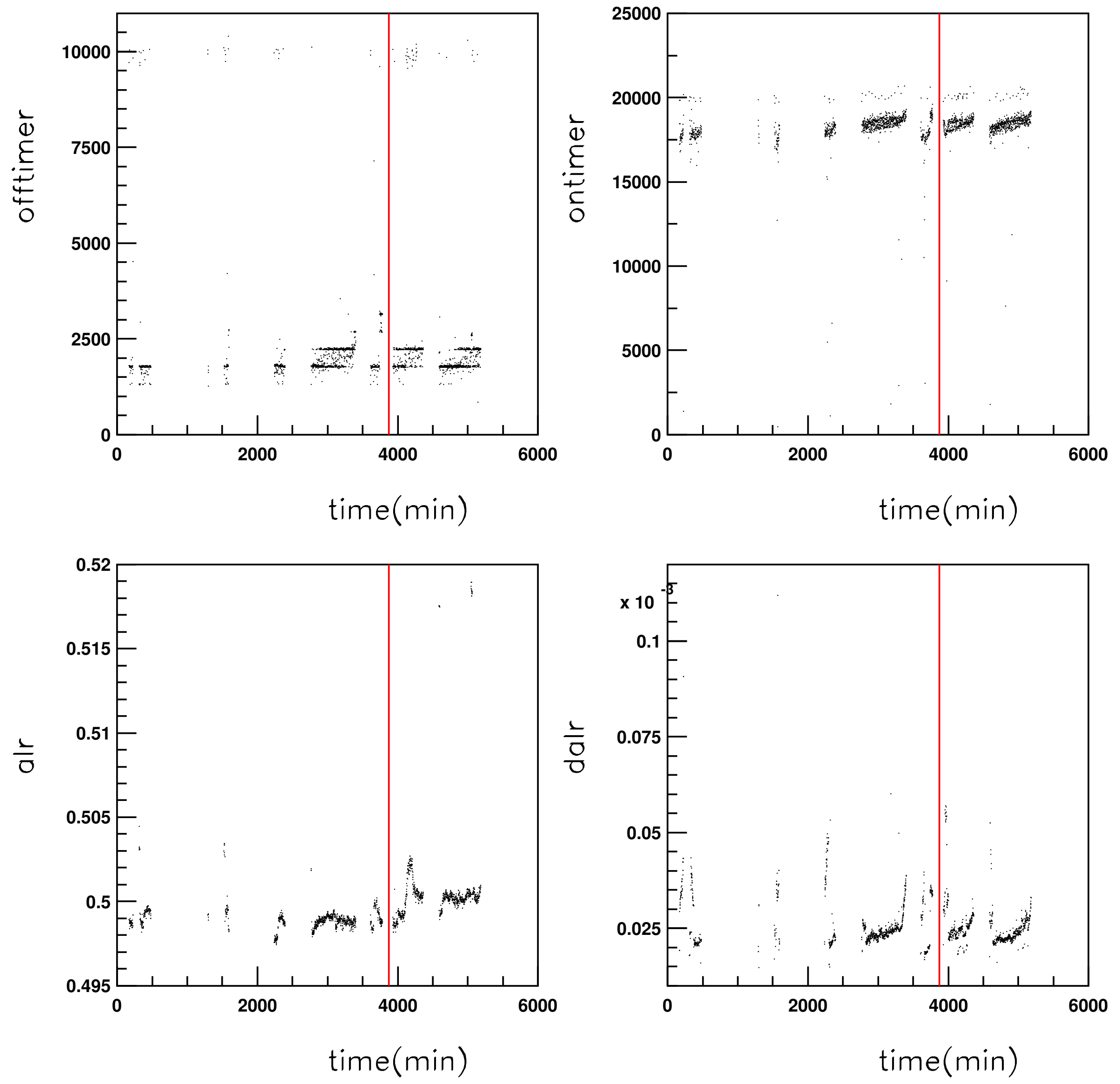


Upper row: Laser off and Laser on rates for right helicity.

Lower row: Laser off and Laser on live times for left helicity in msec.



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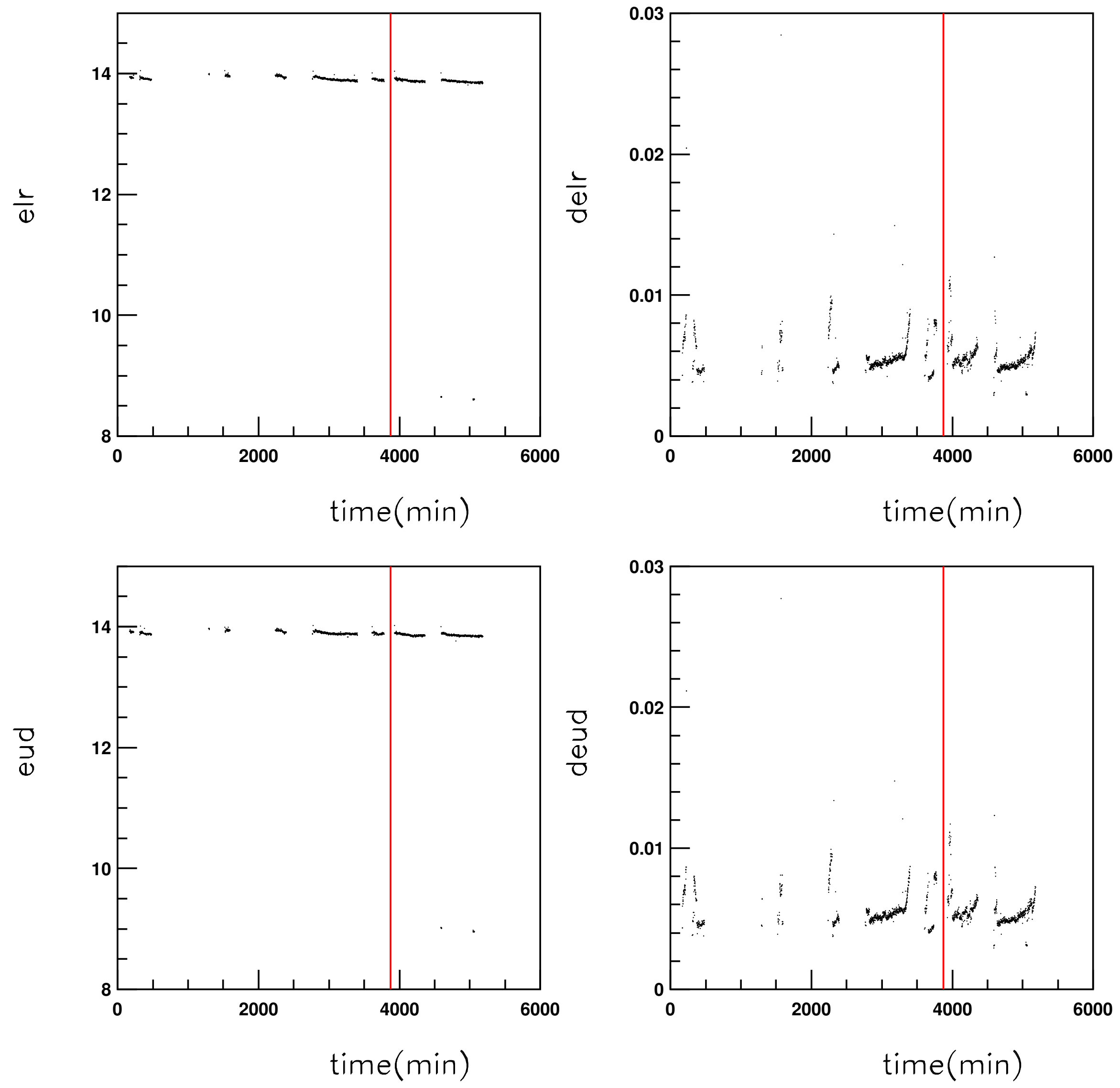

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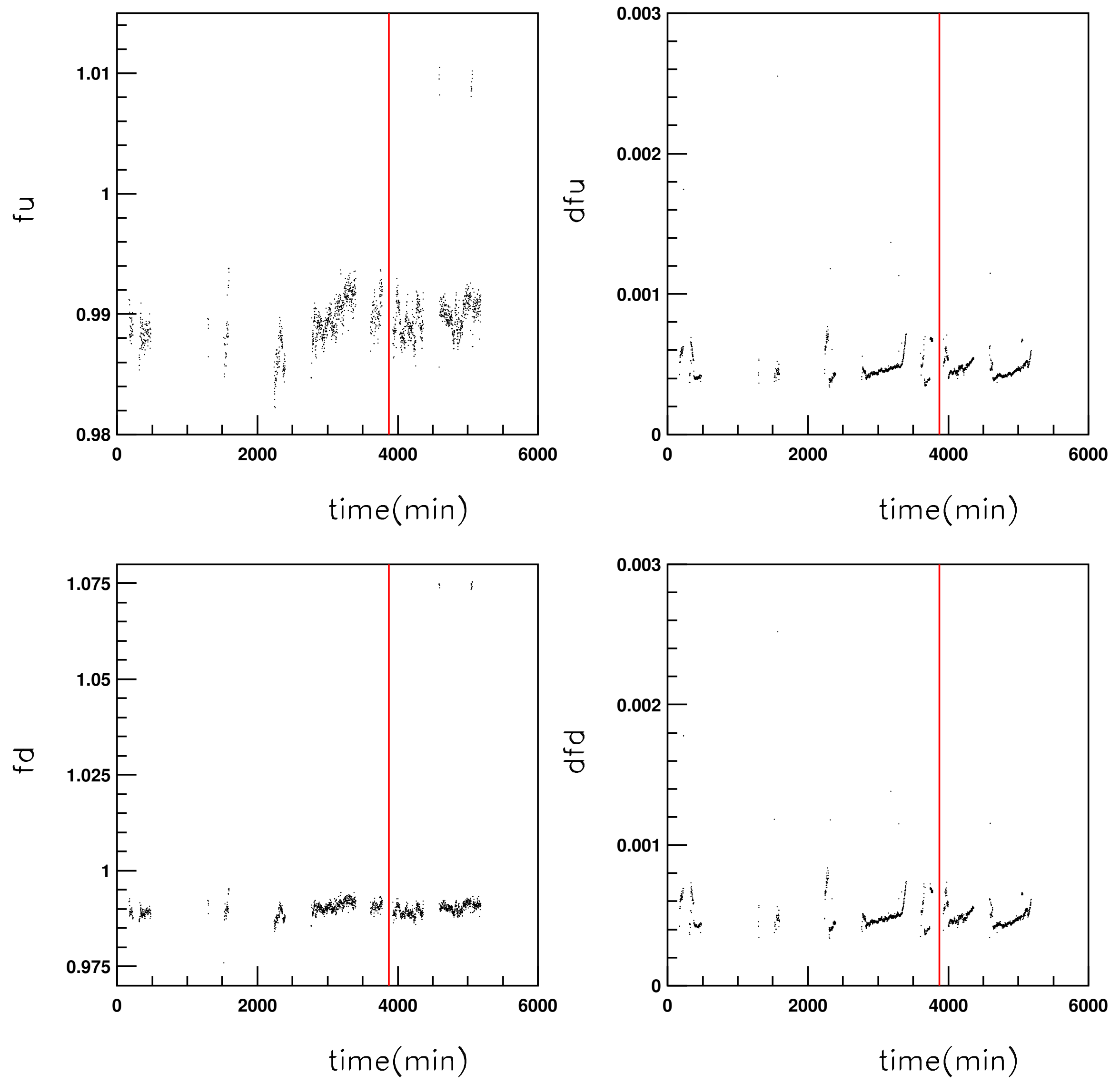

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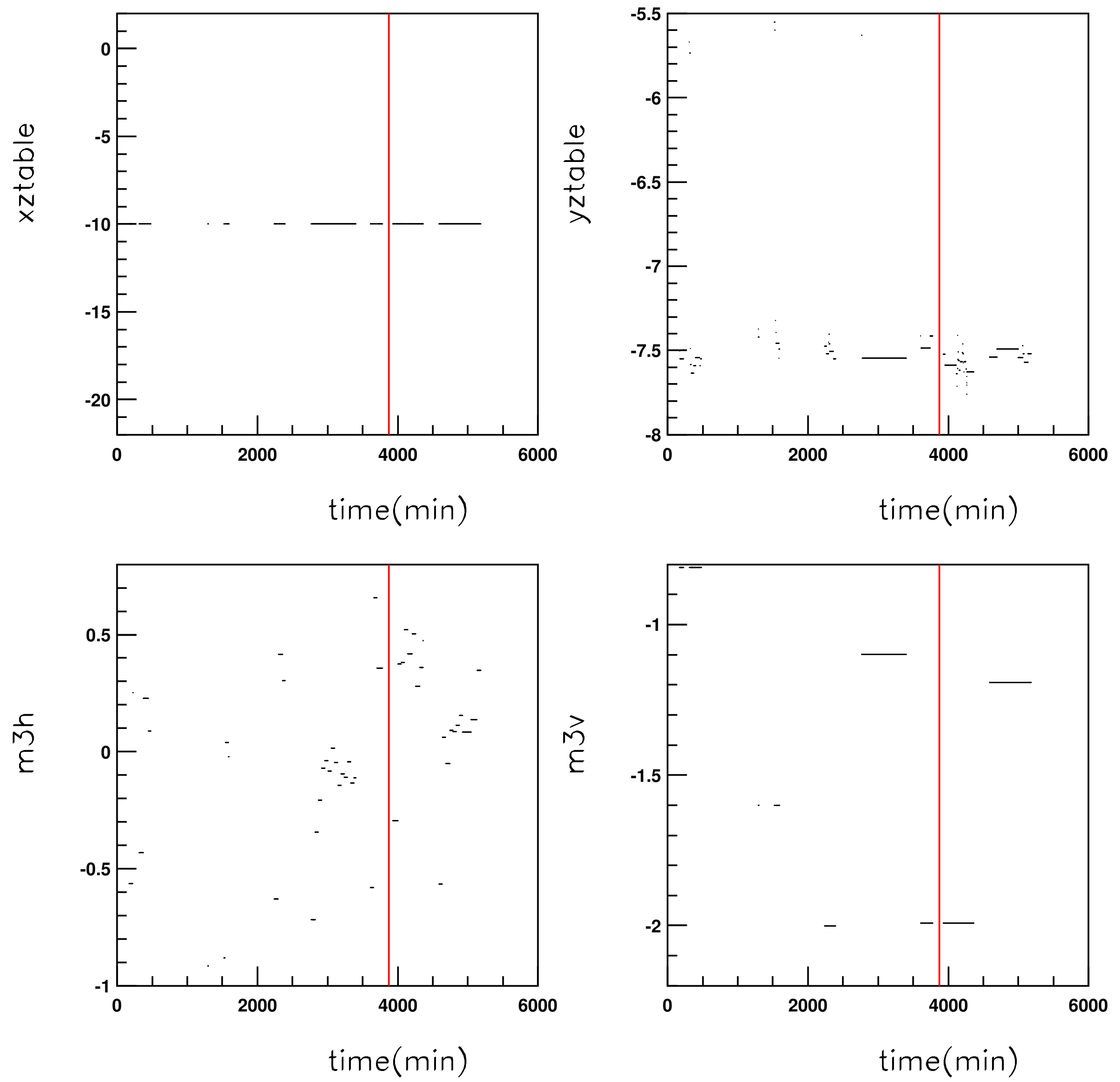

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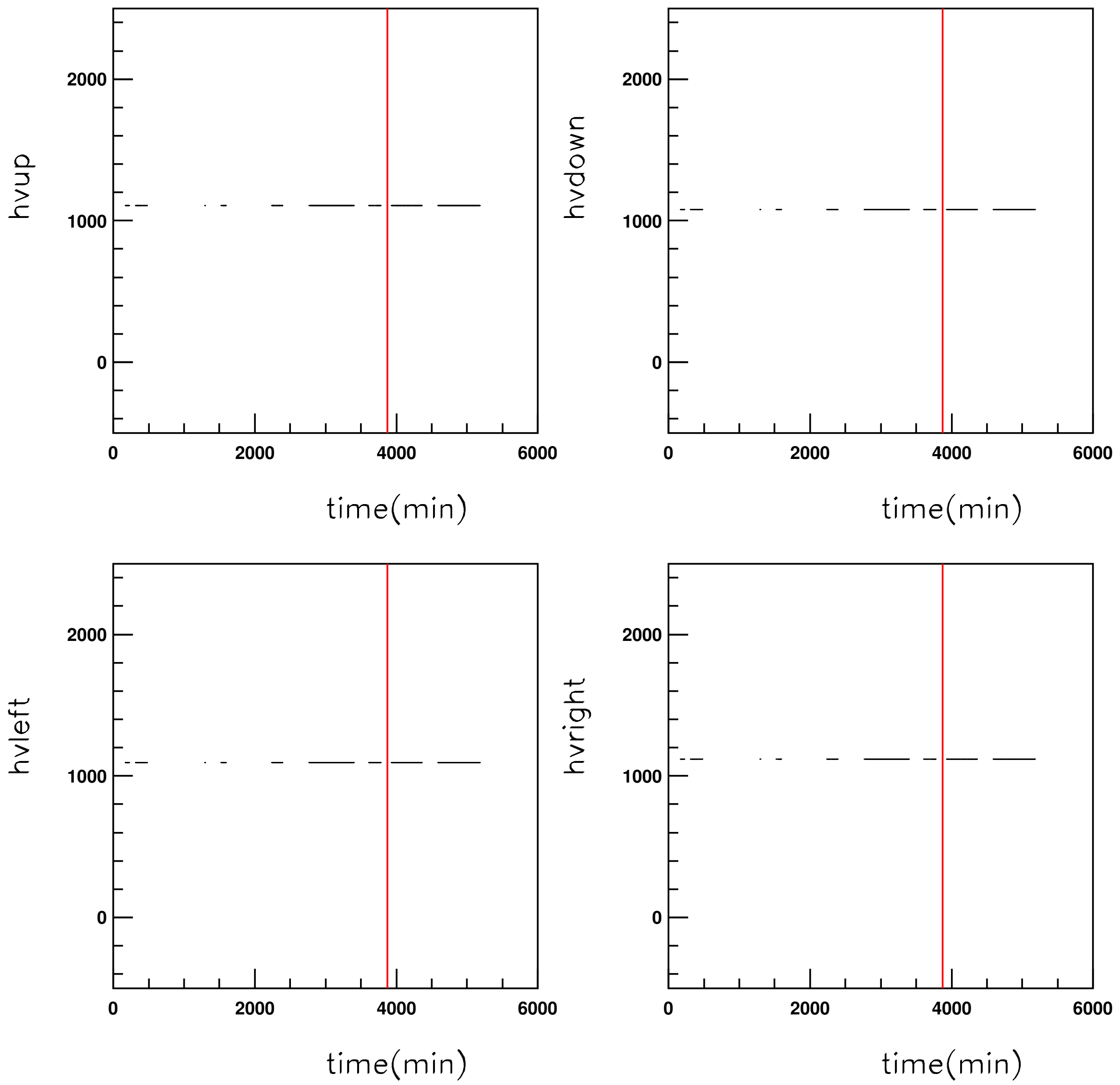

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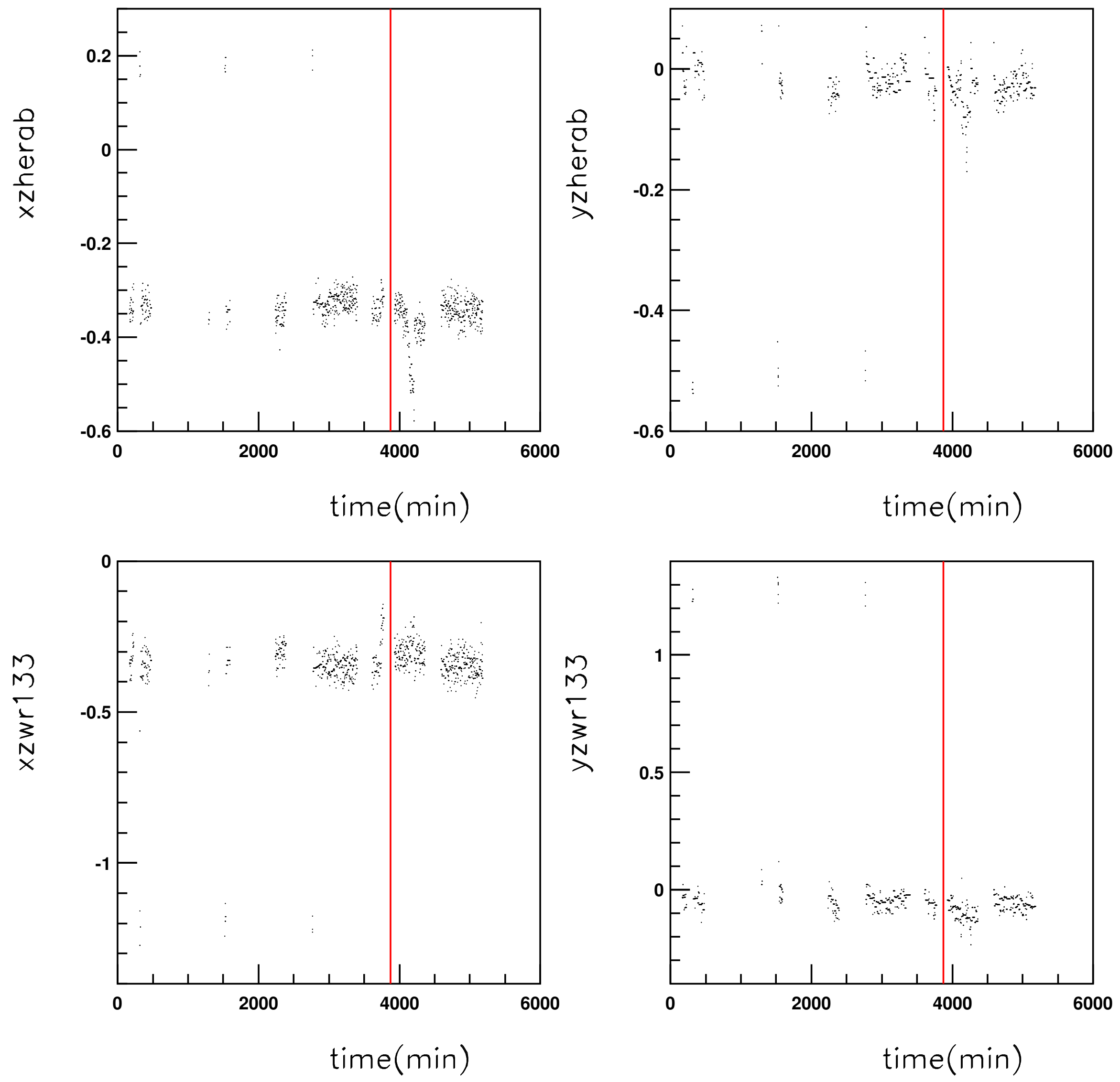

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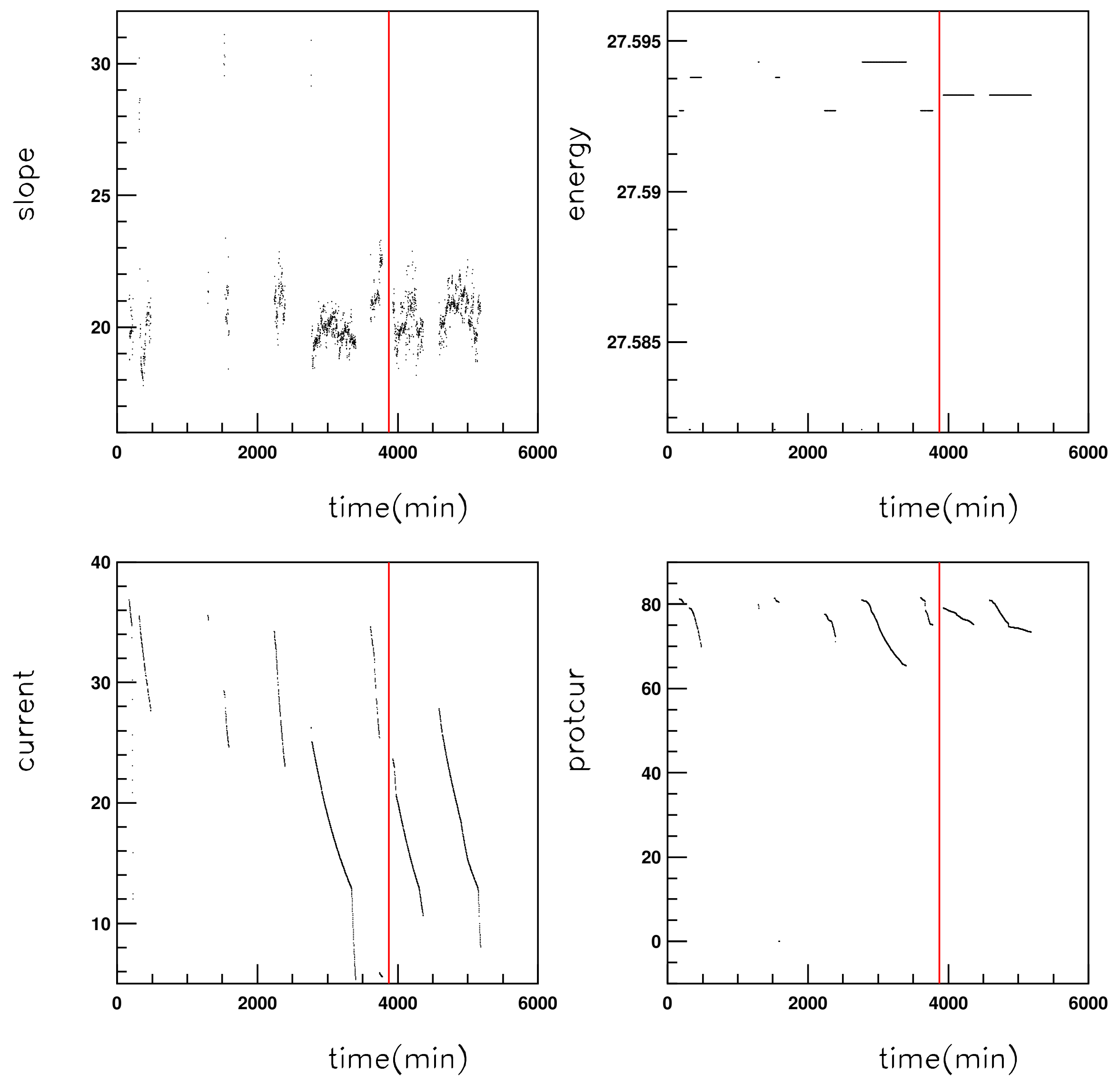
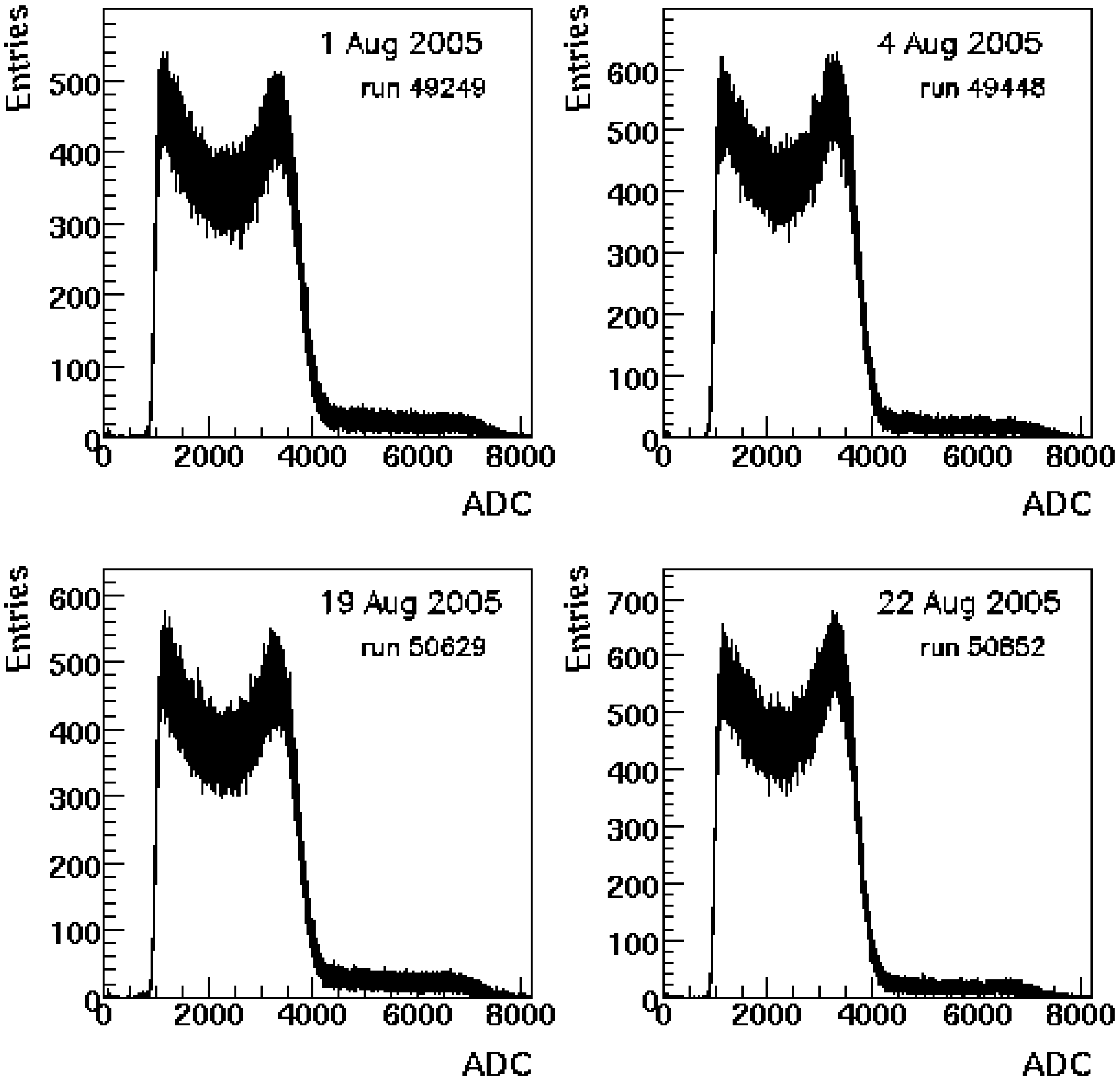


Upper row: Lepton beam slope at Compton IP in arb.units and lepton beam energy in GeV.

Lower row: Lepton and proton beam currents in mA.

TPOL 2min spectra before/after ratio jump



================ Analyzing Power ===================================

08-01-2002 17:43:35 1.0779

12-10-2002 16:54:05 -1.0779

12-10-2002 17:01:29 1.0779

12-02-2003 11:29:04 1.0372

07-02-2005 09:57:37 1

07-02-2005 18:56:13 1.0372

================= Focus Correction ==================================

focus-corr-f0

08-12-2004 01:58:30 0.44358

07-02-2005 09:57:37 0.4

07-02-2005 18:35:58 0.44358

focus-corr-lin

08-12-2004 01:58:30 0.6649

07-02-2005 09:57:37 0.7

07-02-2005 18:36:12 0.6649

focus-corr-quad

08-12-2004 01:58:30 0