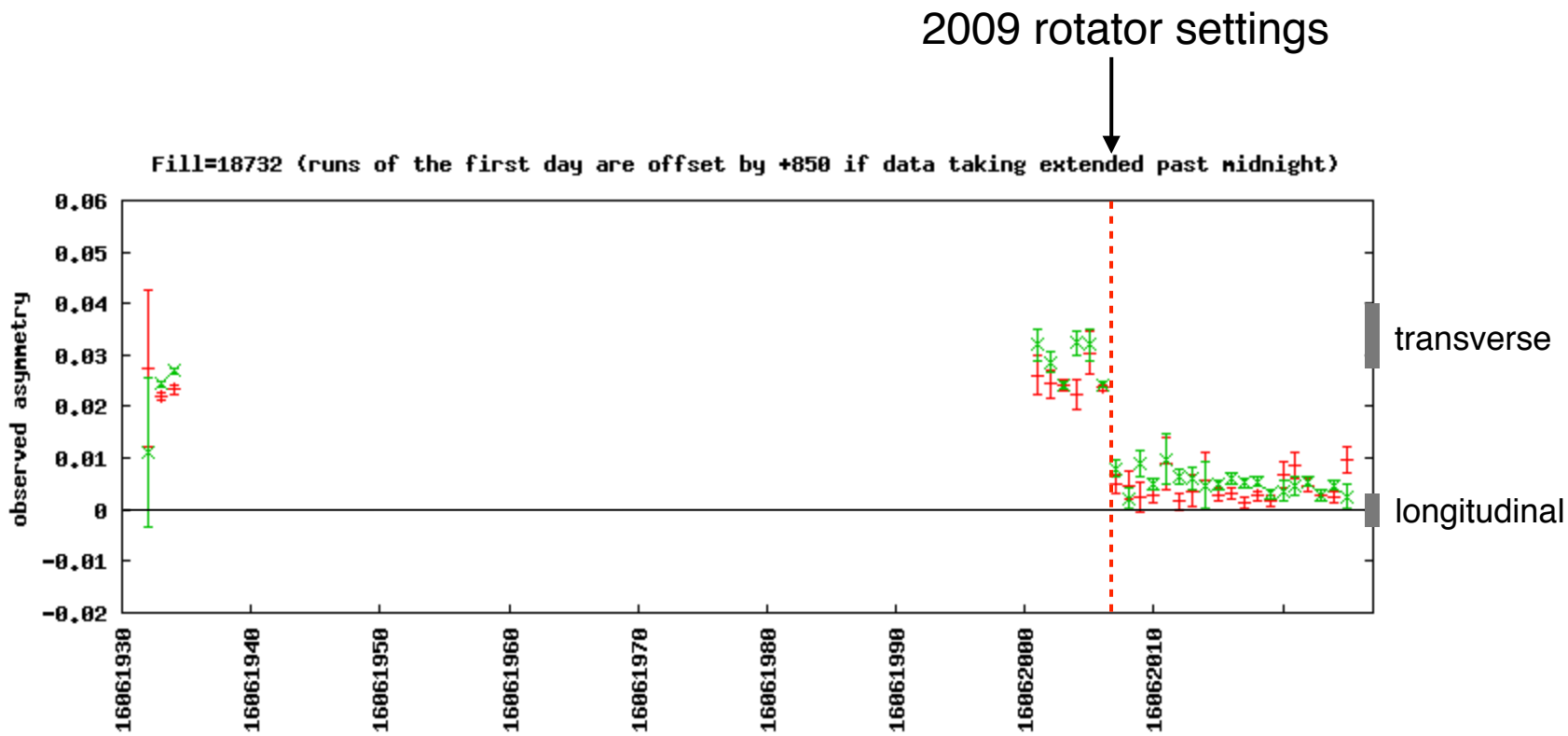
Local spin direction at STAR

Ernst Sichtermann, LBNL

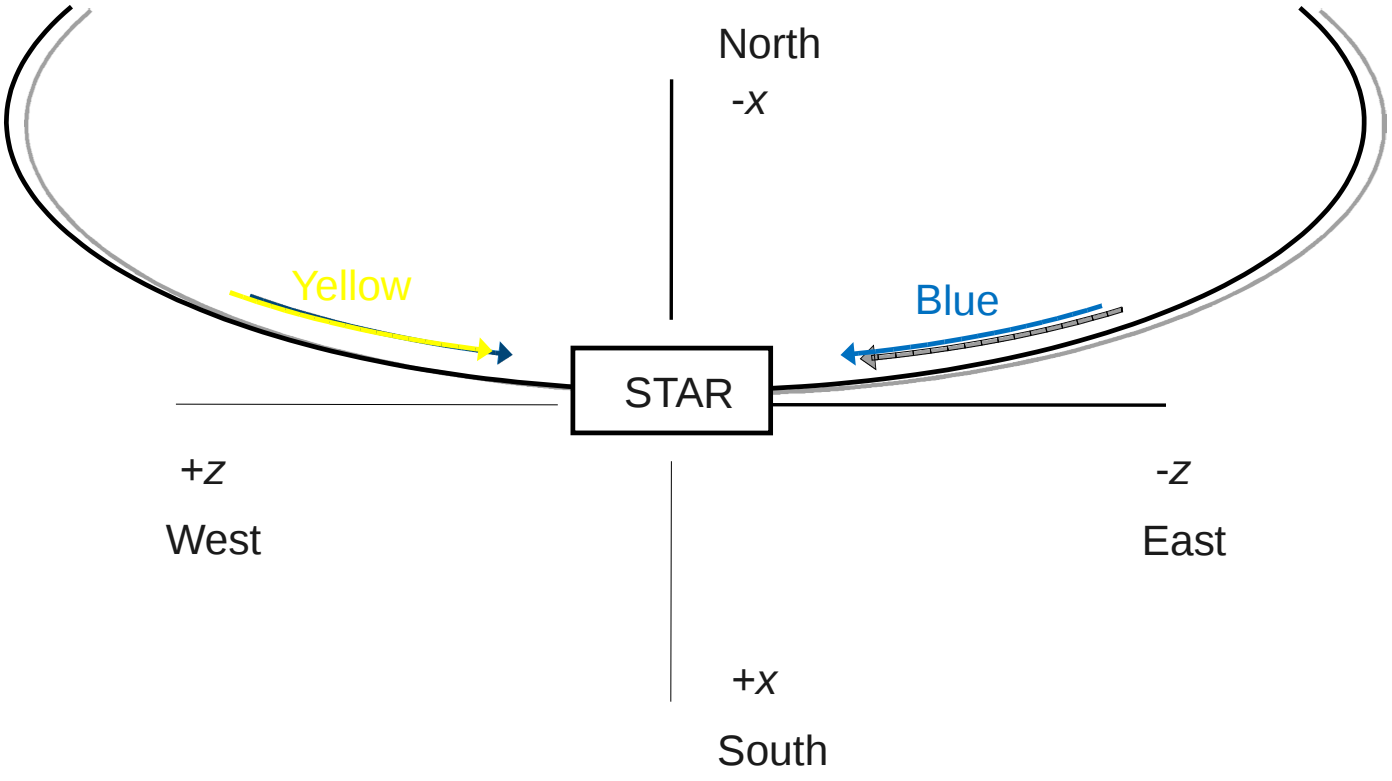
Phil Pile Meeting,
March 3, 2015

Main issue understood as of this morning,



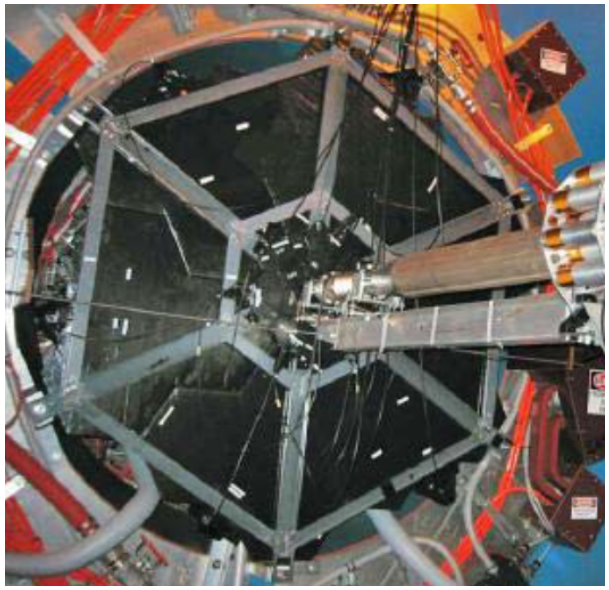
2015 starting point is 40-60A higher than final 2009 settings.

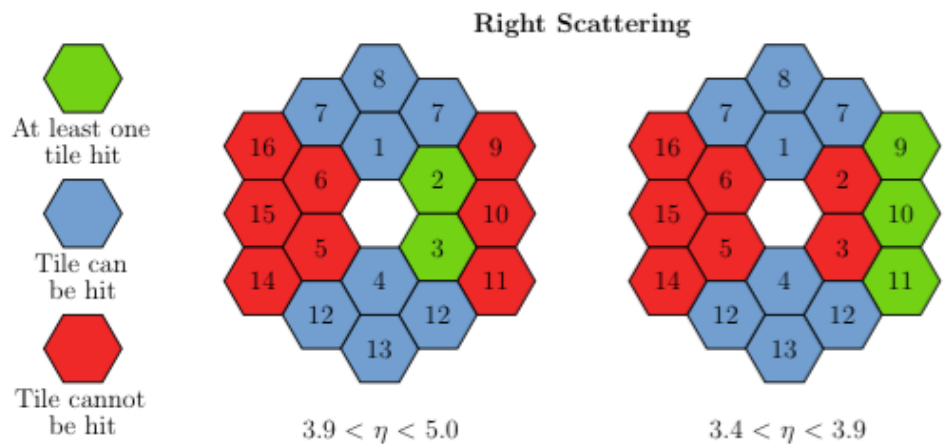
STAR Coordinate System



Polarimeters: ZDC, BBC 200 GeV
ZDC 500 GeV

BBC

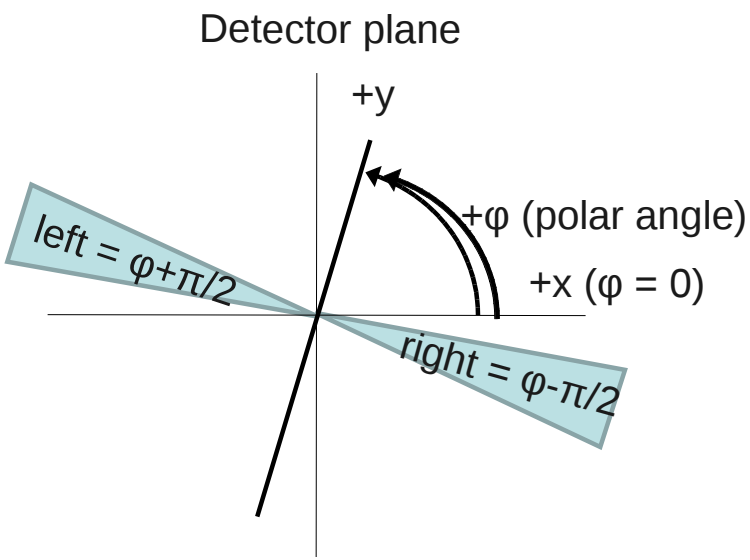



Right Scattering
At least one tile hit
Tile can be hit
Tile cannot be hit
8
7
7
16
1
9
6
2
15
10
5
3
14
4
11
12
12
13
$3.9 < \eta < 5.0$
$3.4 < \eta < 3.9$

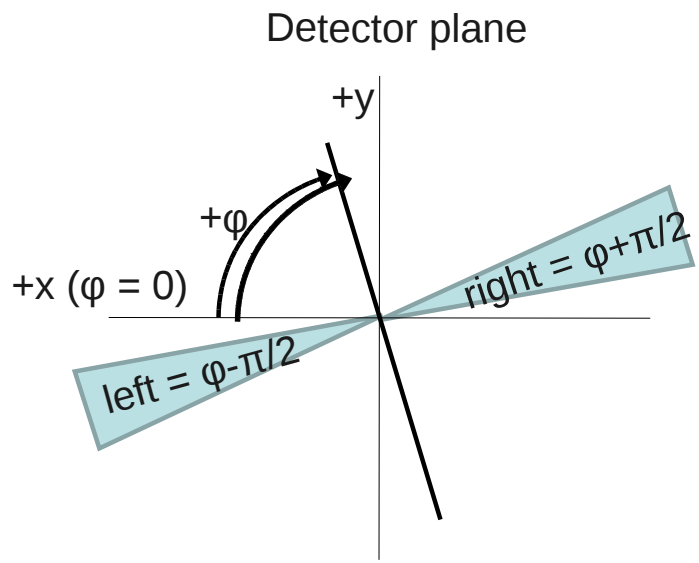
ZDC

LED flasher
16ch. PMT "M16"
Shower Maximum Detector (SMD)
WLS fibers
Scintillator strips
horizontal-strips
vertical-strips

Geometry definition



Looking along yellow beam



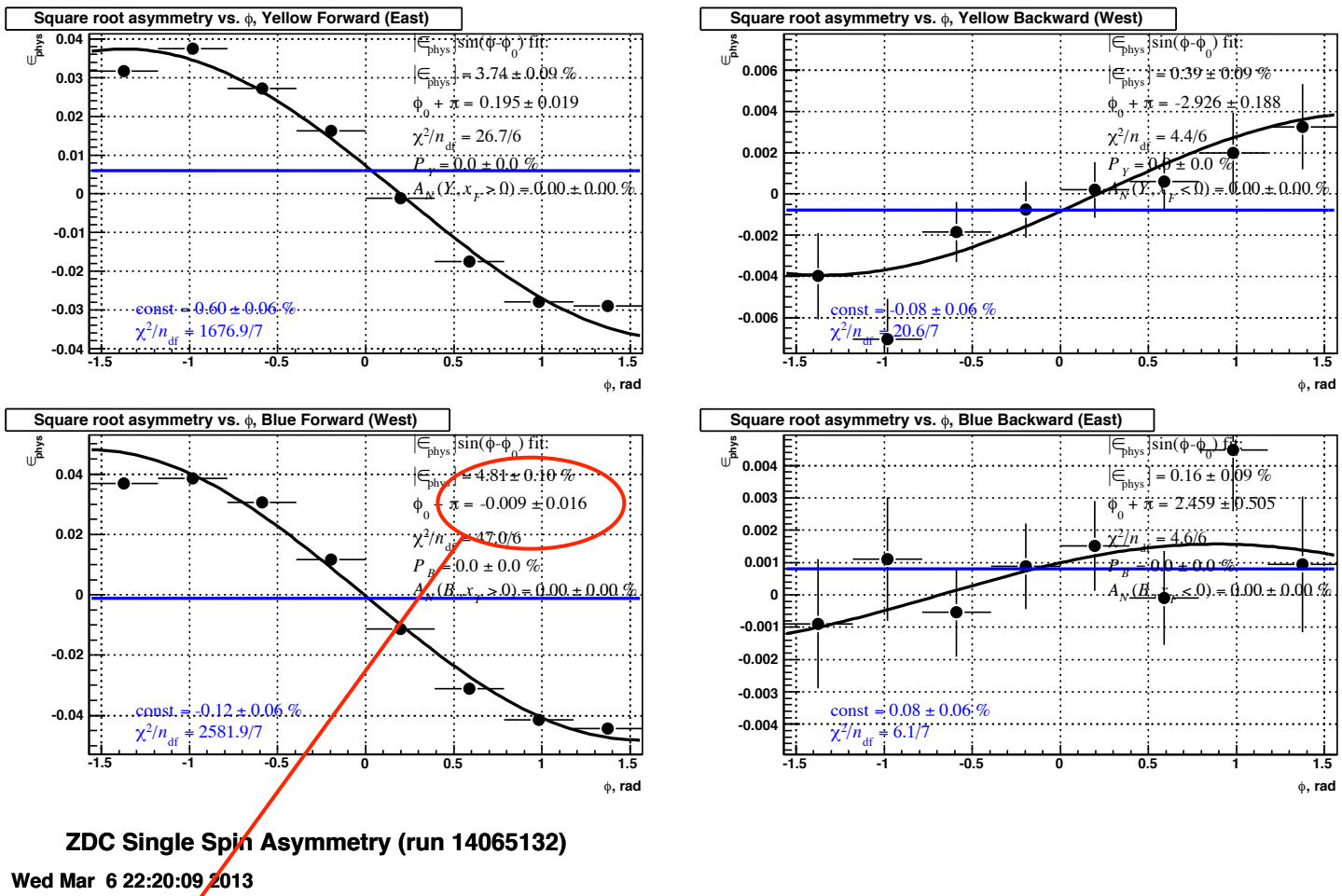
Looking along blue beam

ε_{phys} is a left-right asymmetry
with respect to φ=const plane,
looking along the incident beam

Example ZDC measurement from Run-13 500 GeV, transverse

amplitude and direction measurements

null measurements

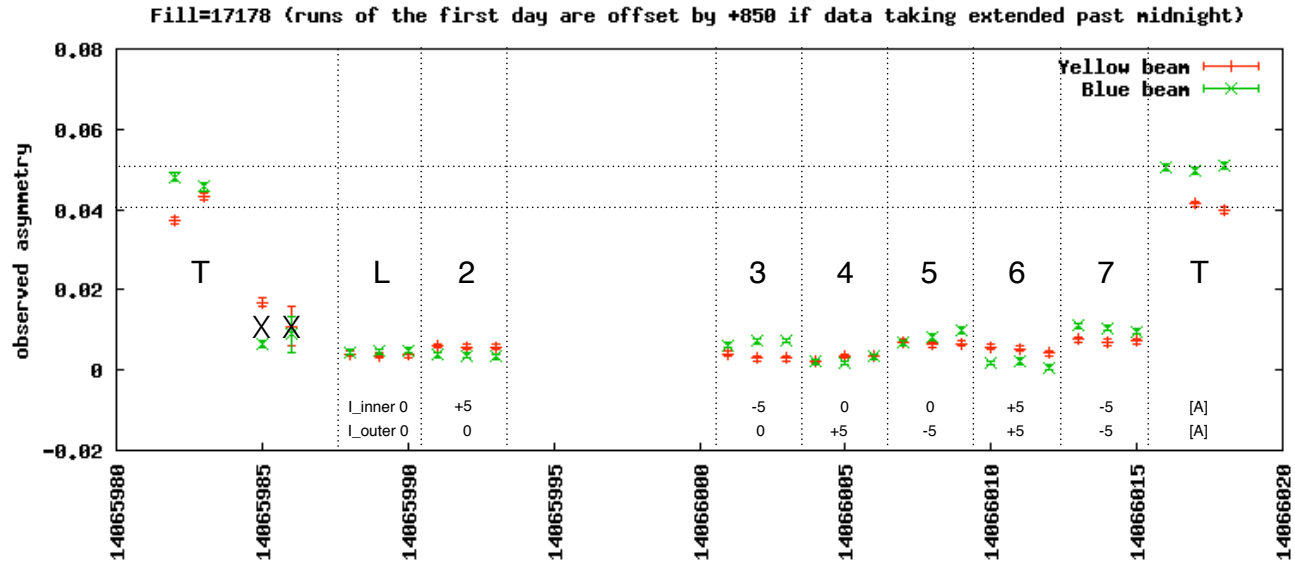


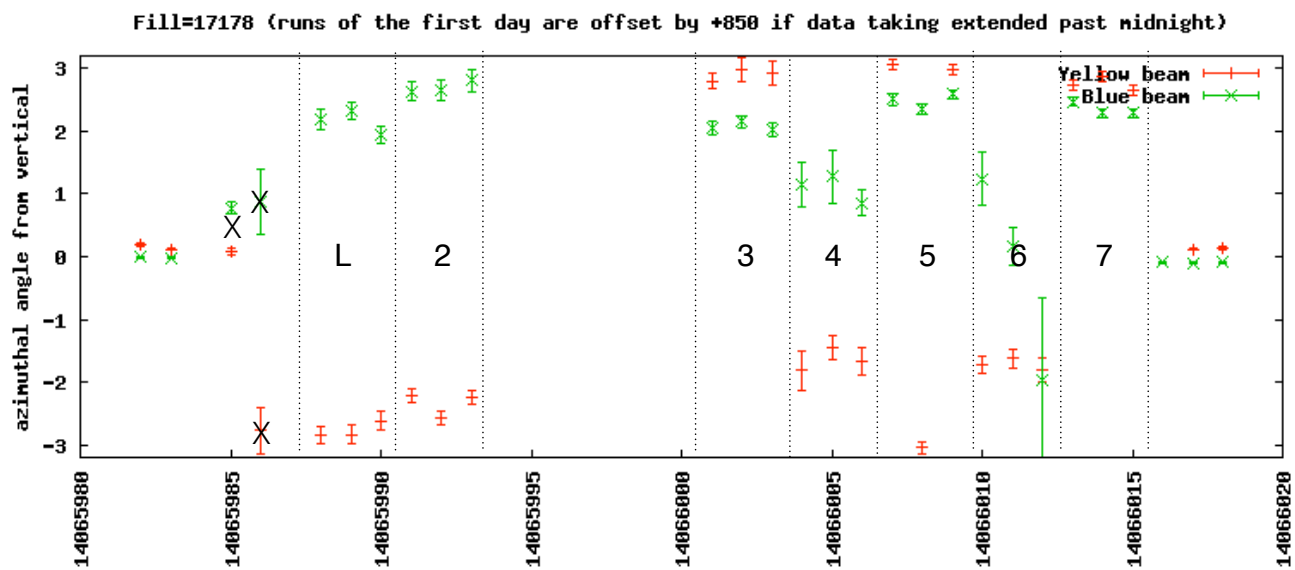
up: 0; down: (-)π; north: $\pi/2$; south: -$\pi/2$

Example rotator scan from Run-13 500 GeV

Online polarimetry (ZDC) for Fill: 17178

STAR rotator scan March 6, 7 2013

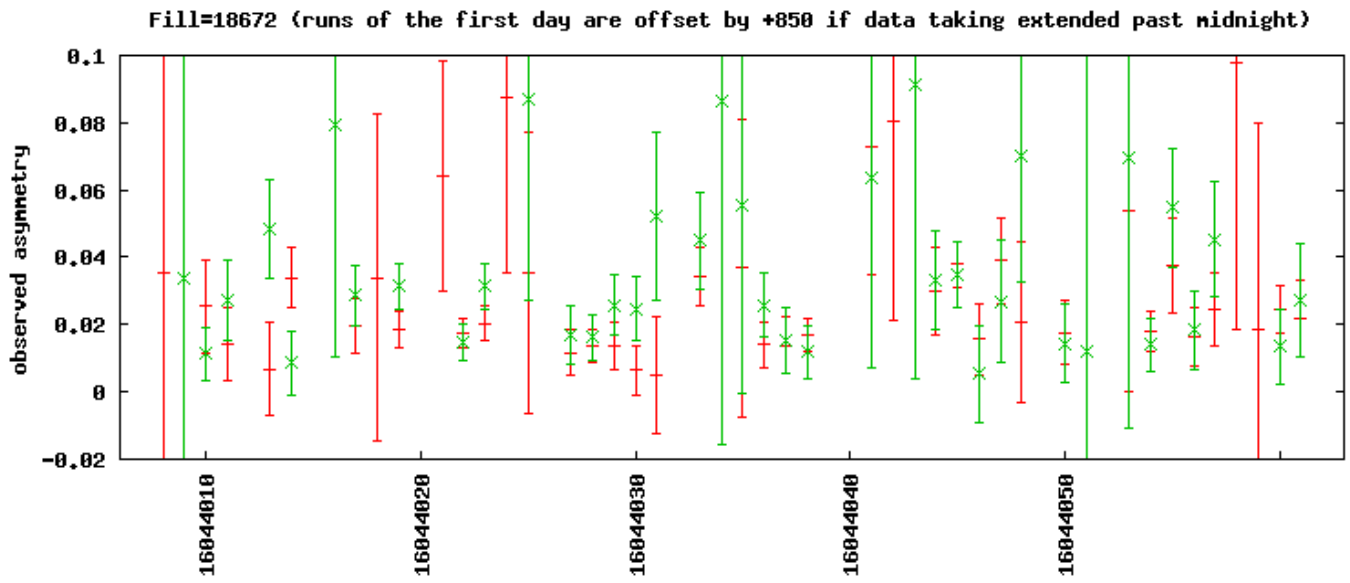




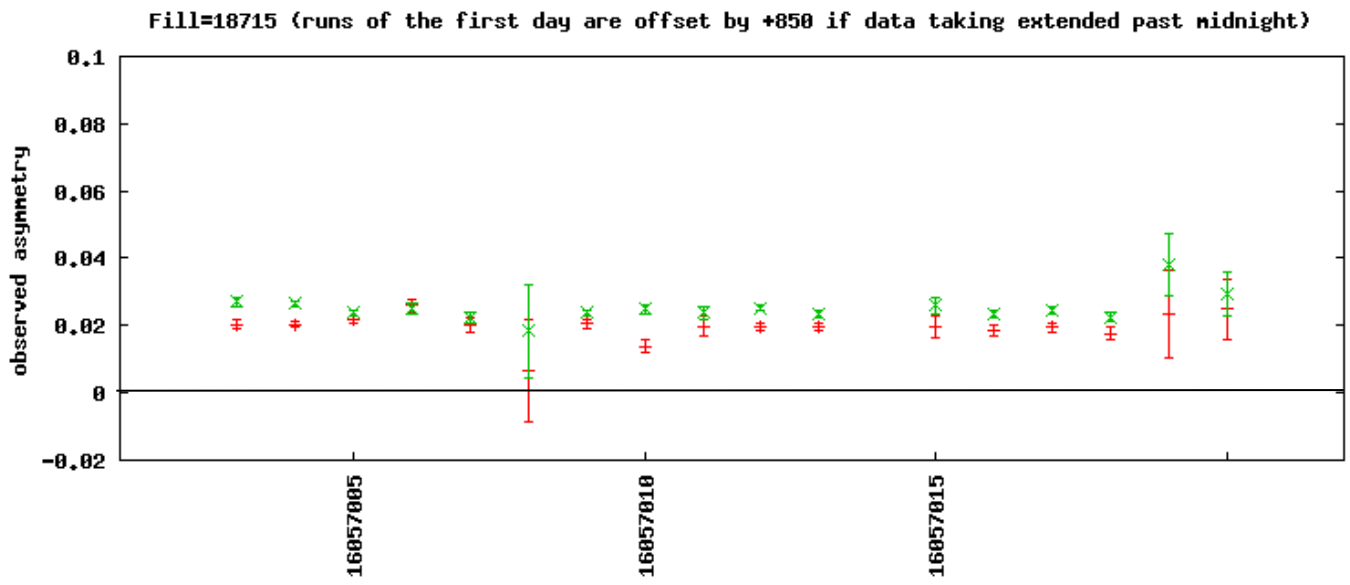
Len Eun, Ernst Sichtermann - LBNL

Run-15 proved harder

February 13:



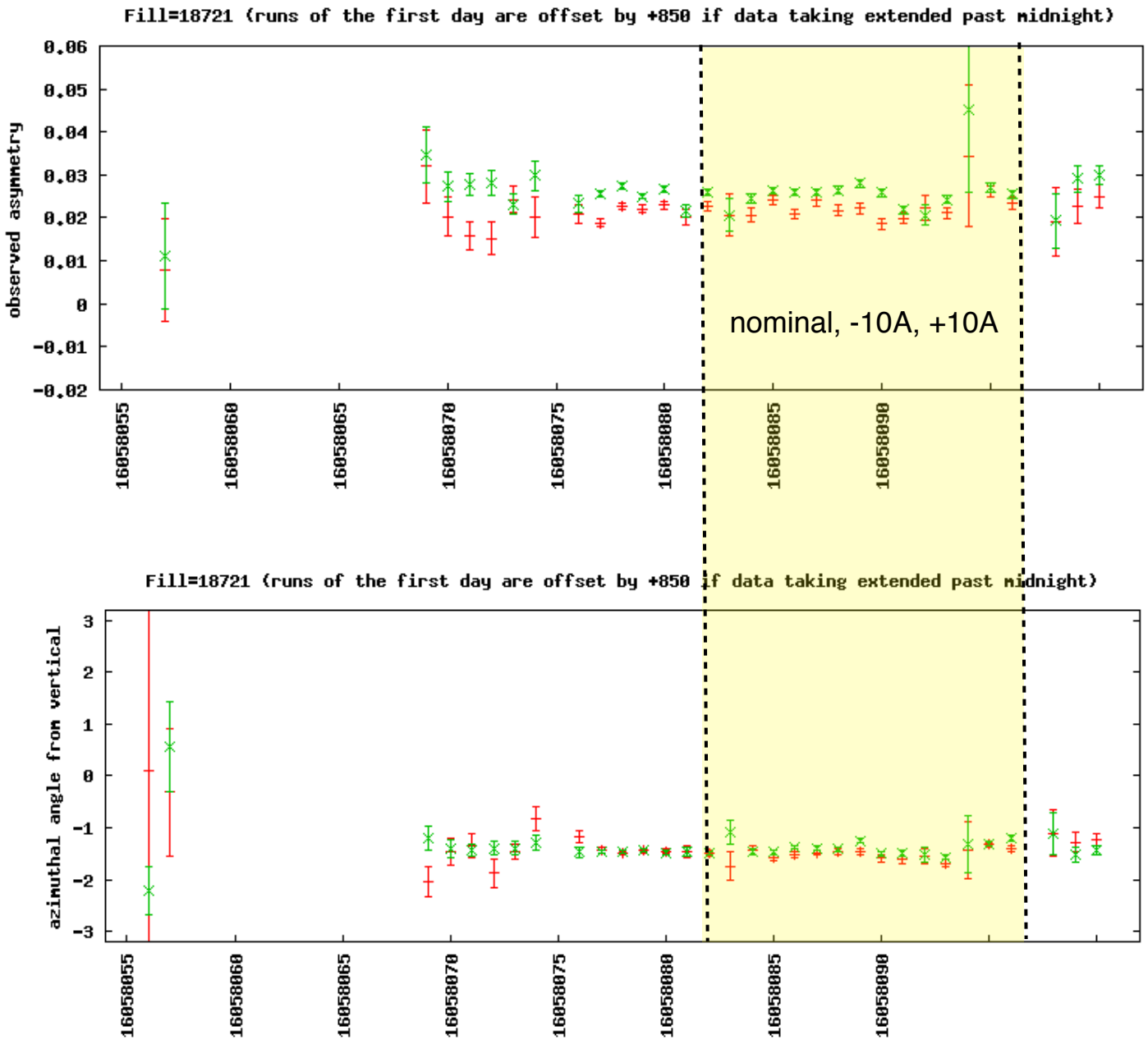
February 26:



residual

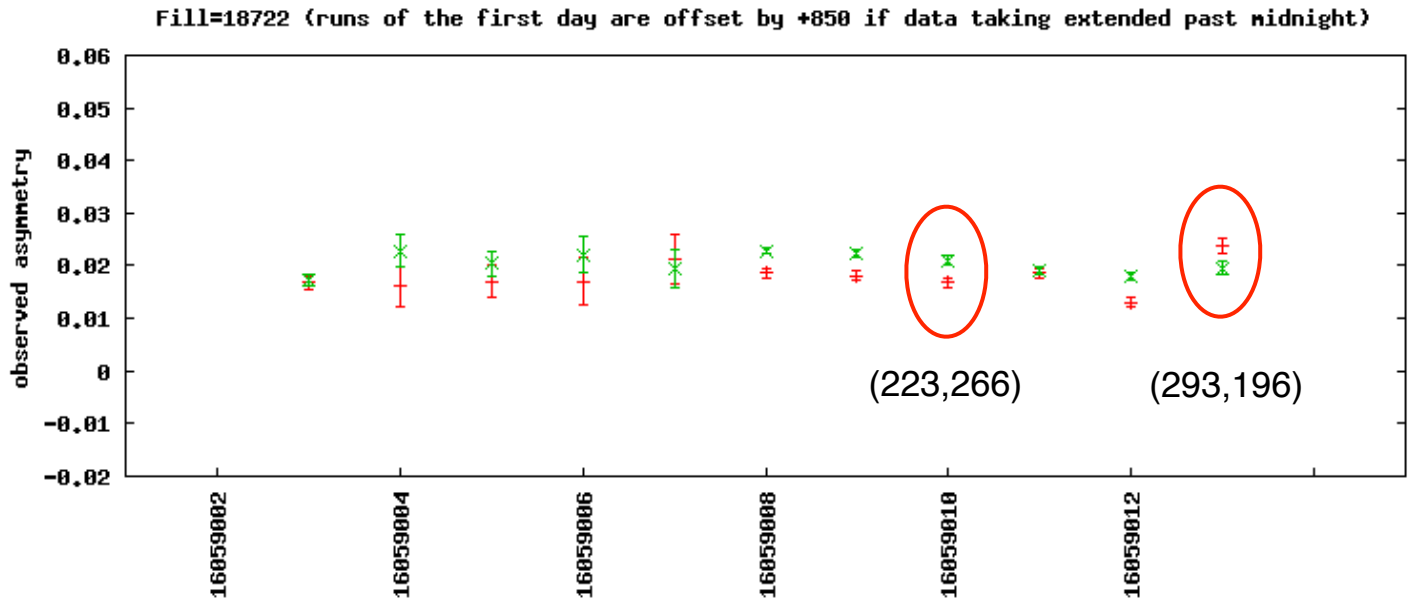
Run-15 rotator scan

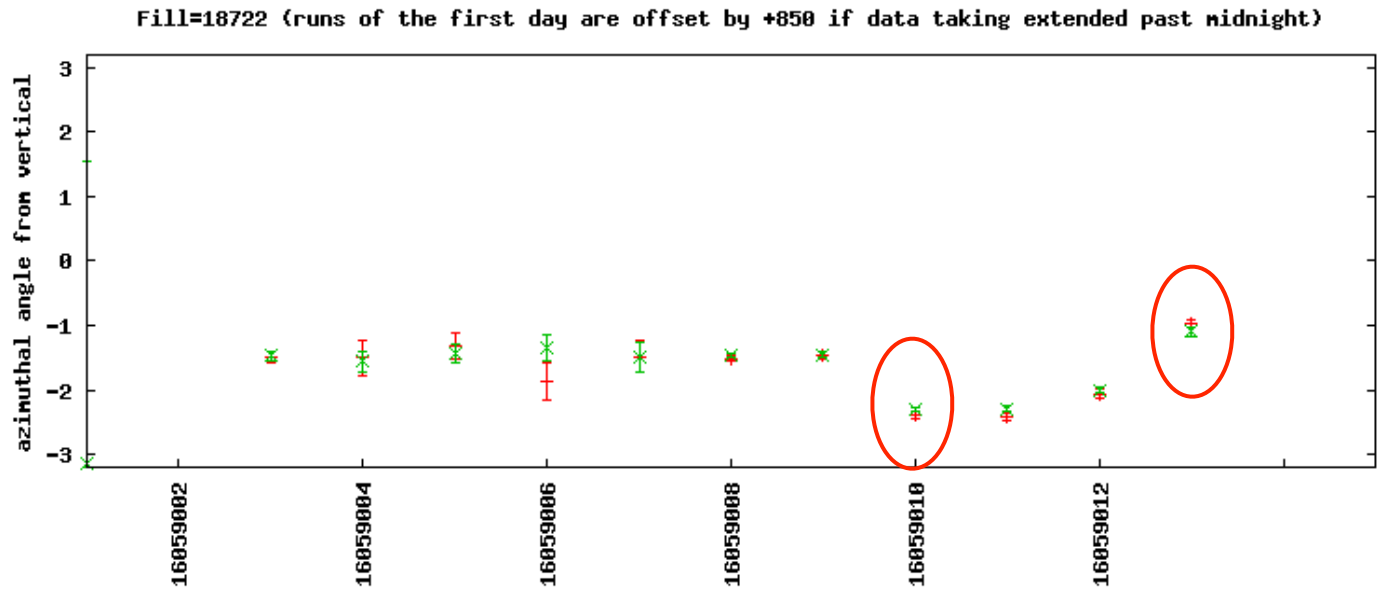
February 27:



“Solutions” post run-15 rotator scan

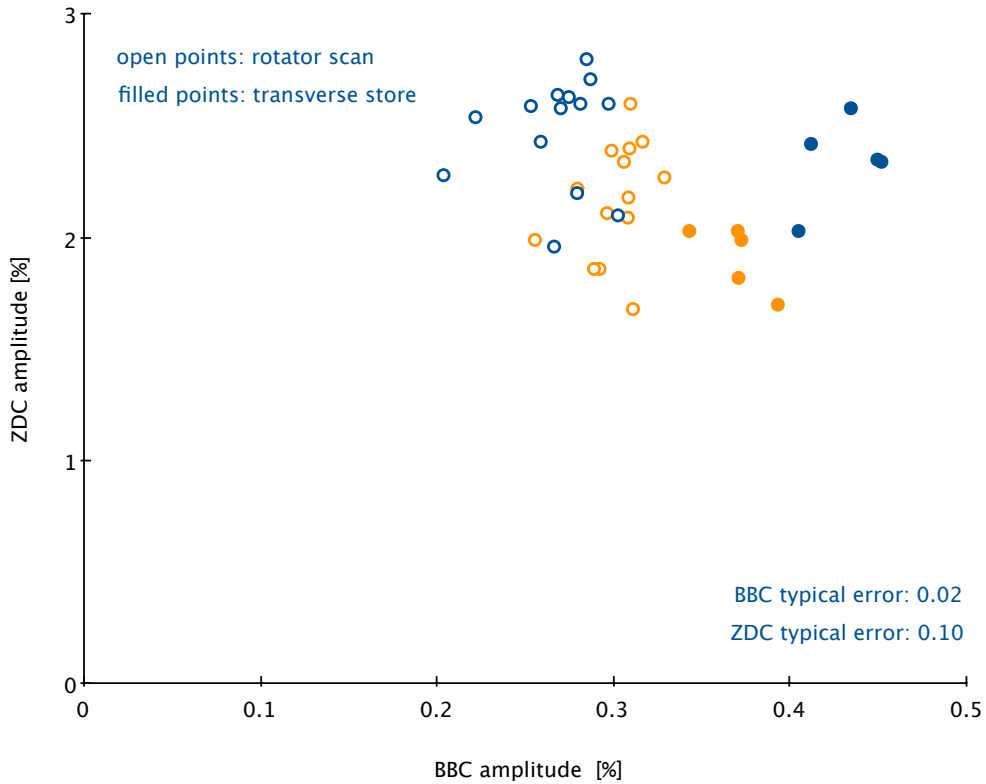
February 28:

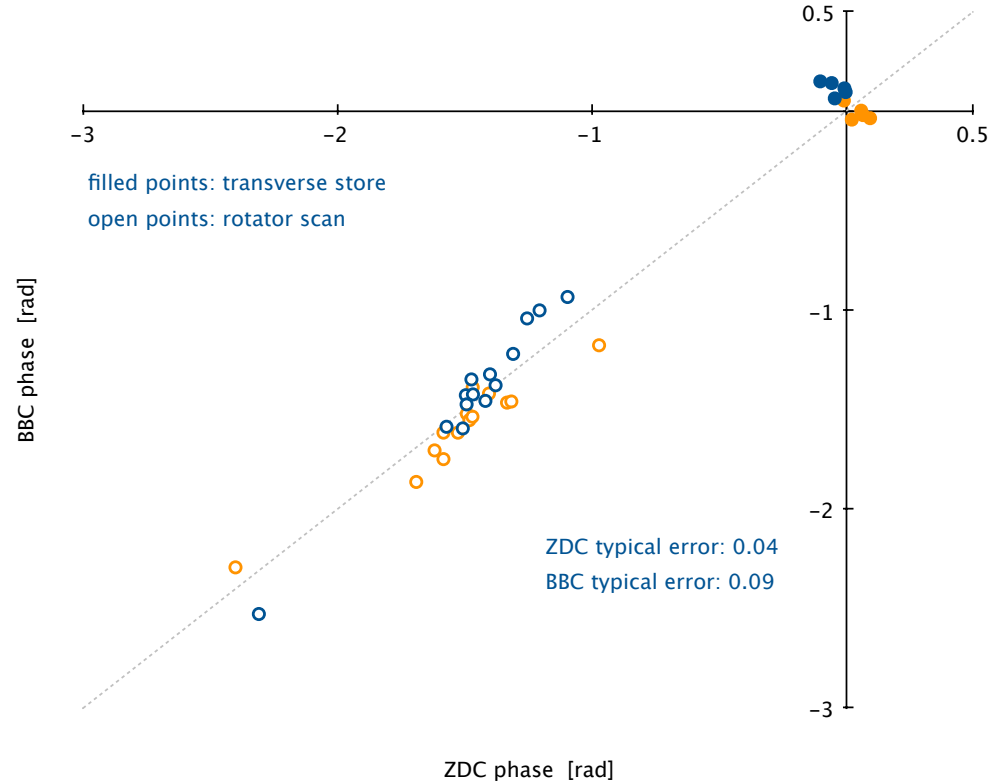




Questions on Data ⟷ Model ⟶ further checks

ZDC ⟷ BBC





Results are in agreement; angle better understood than amplitude

Conclusion: residual transverse component is *radial* and *large.*

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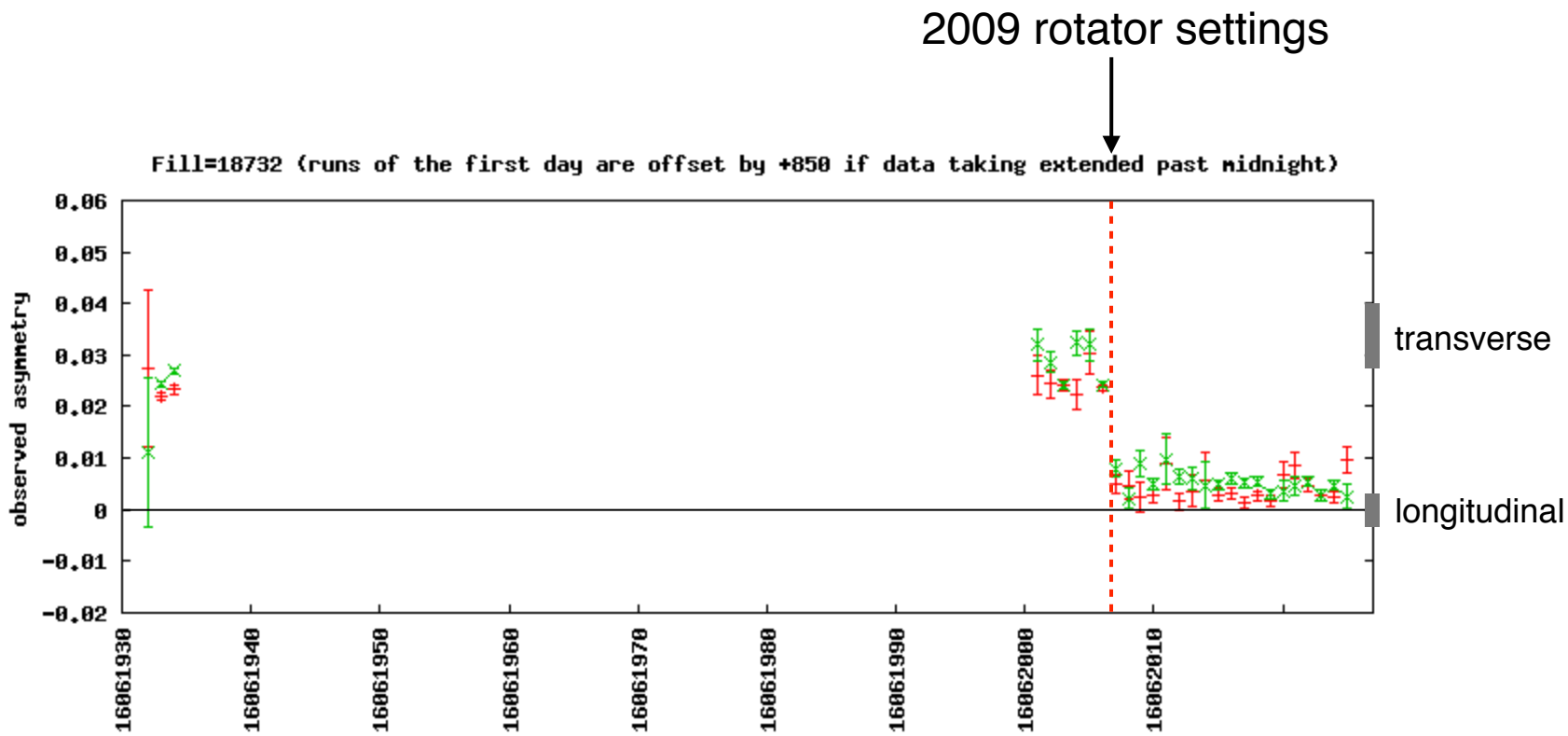

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