History of SVT beamline vs. offline

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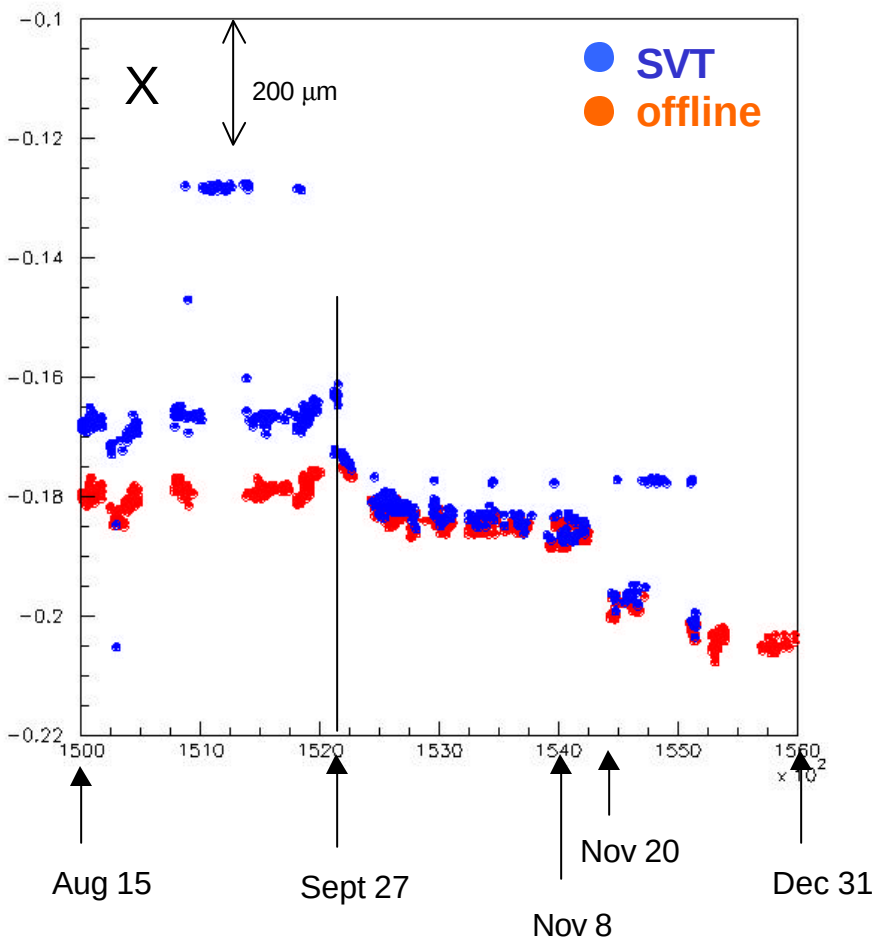
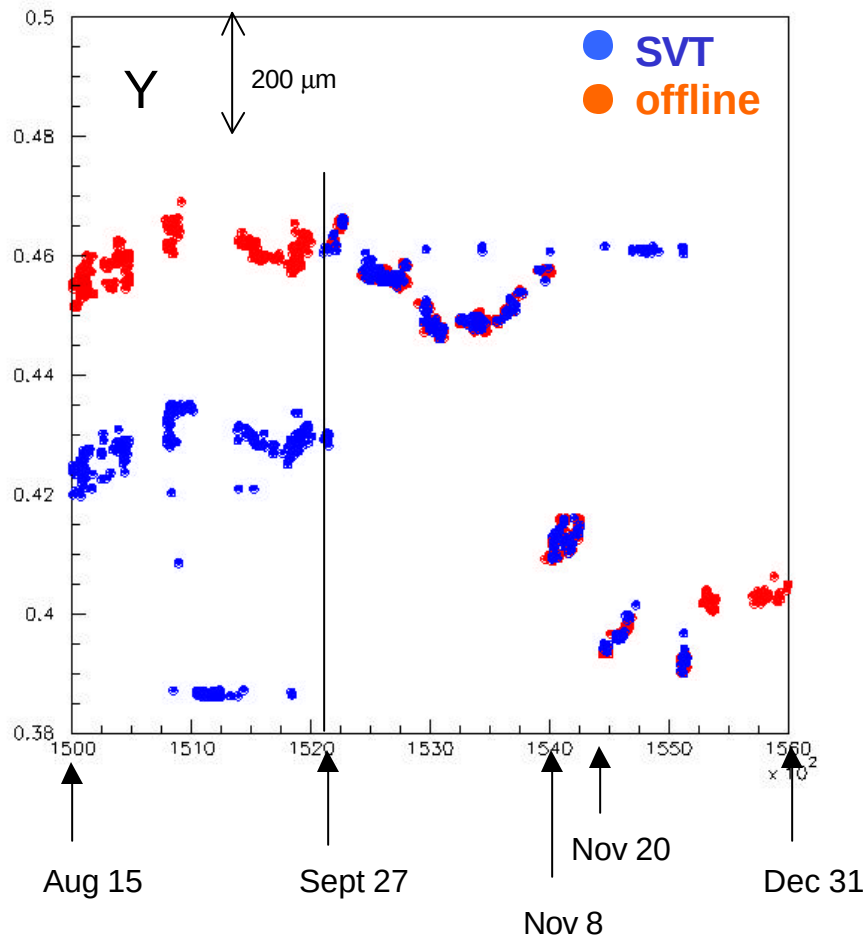
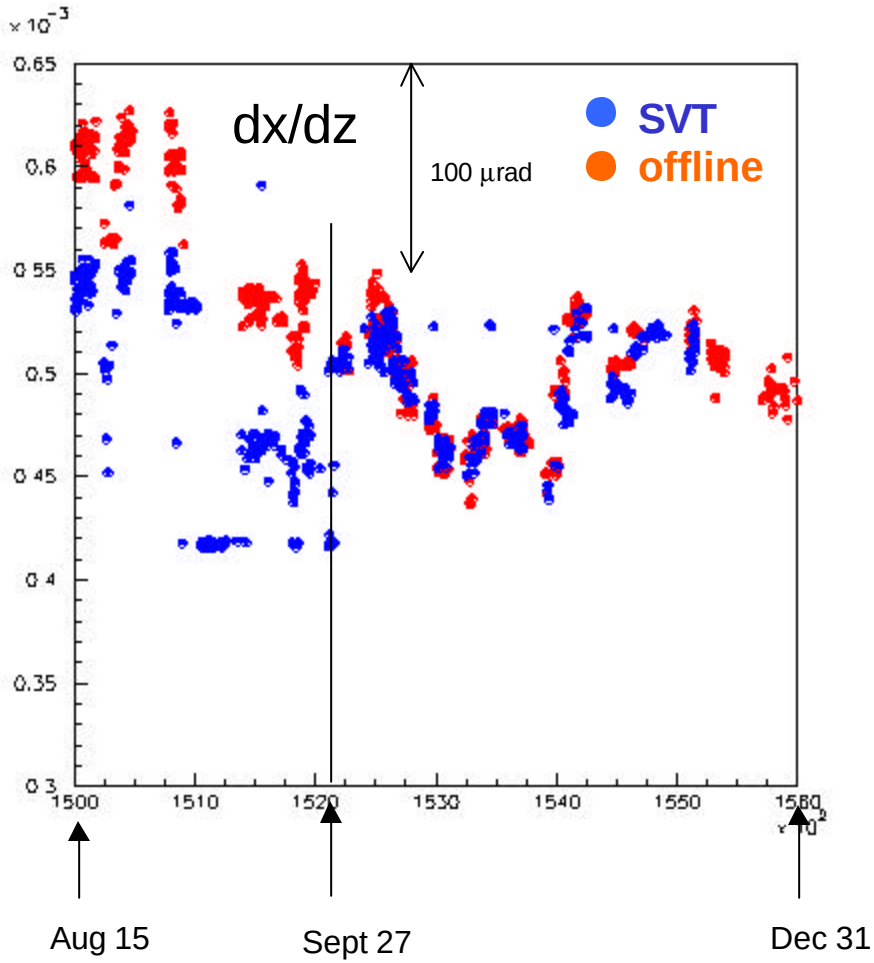
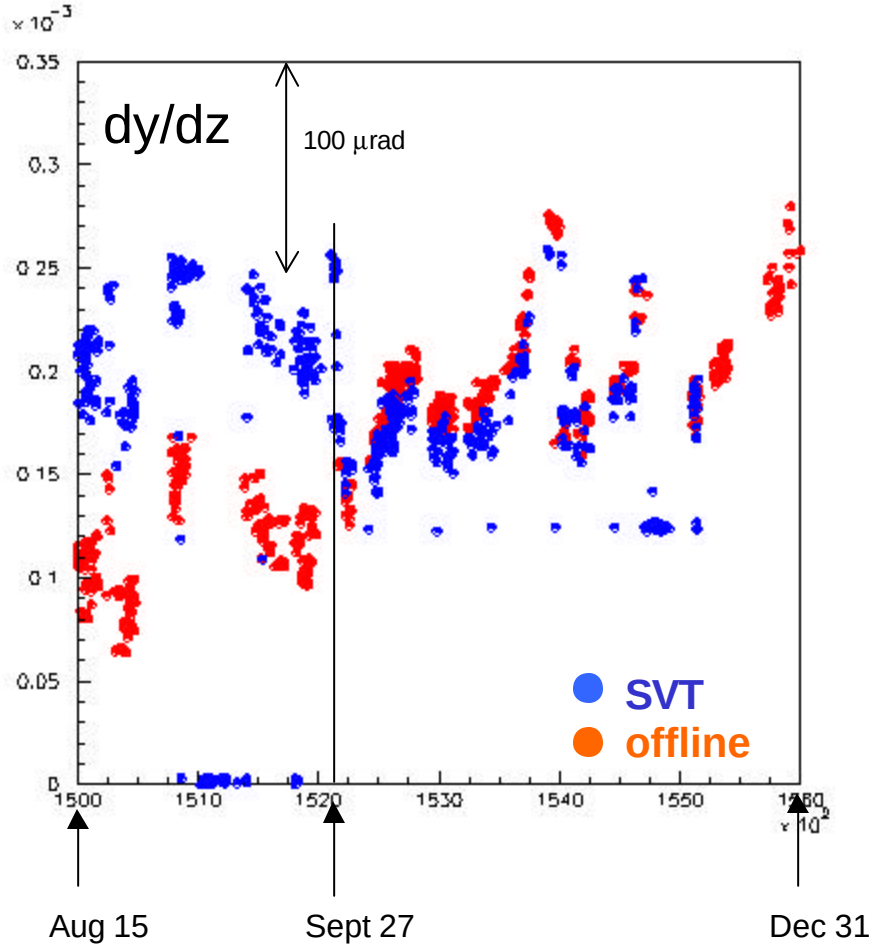
Beam position vs. run number



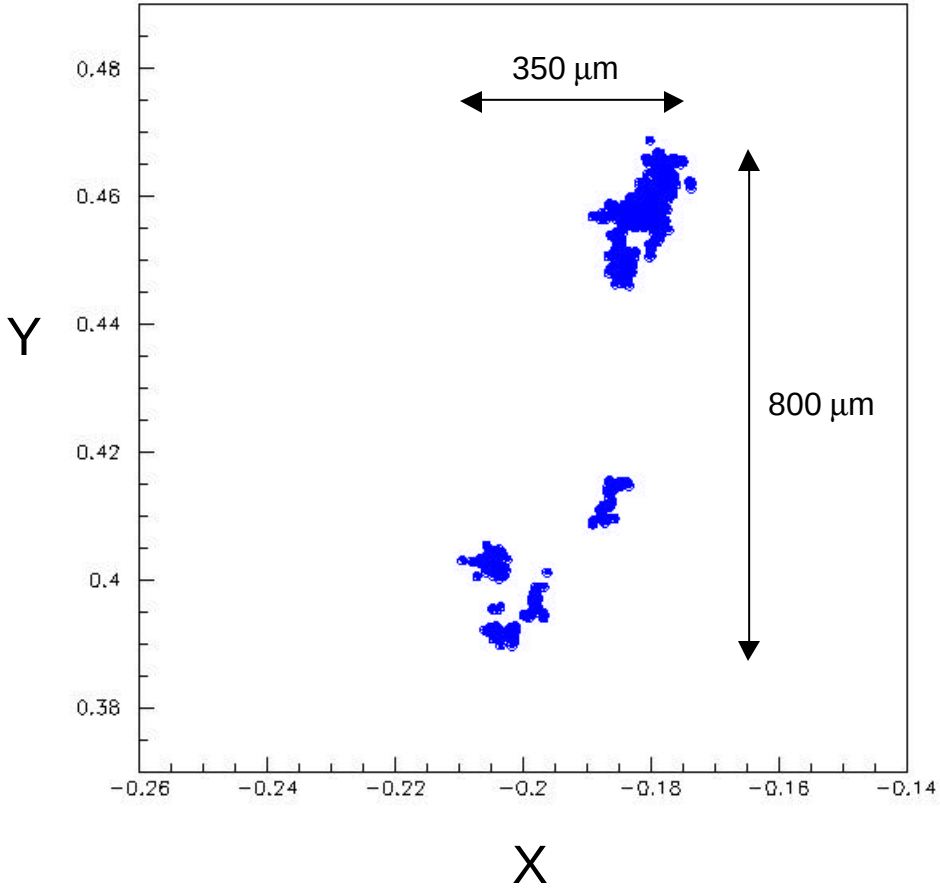


Beam angle vs. run number





Beam movements between Aug 15 and Dec 31 2002



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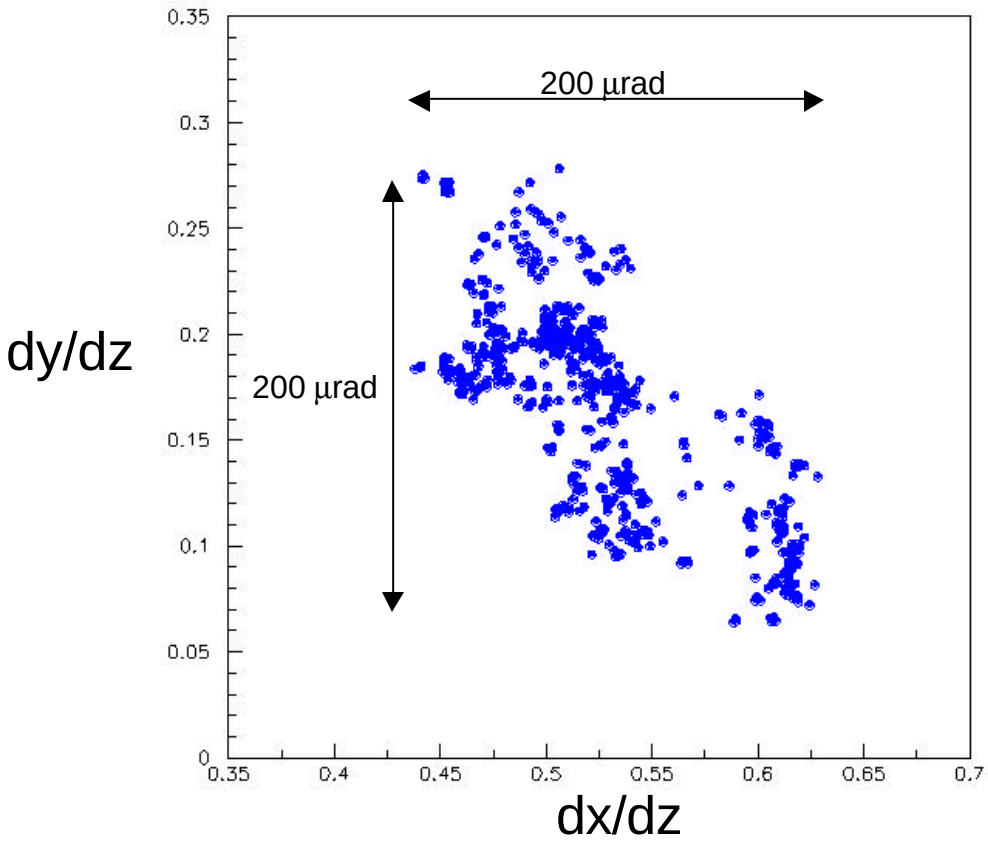
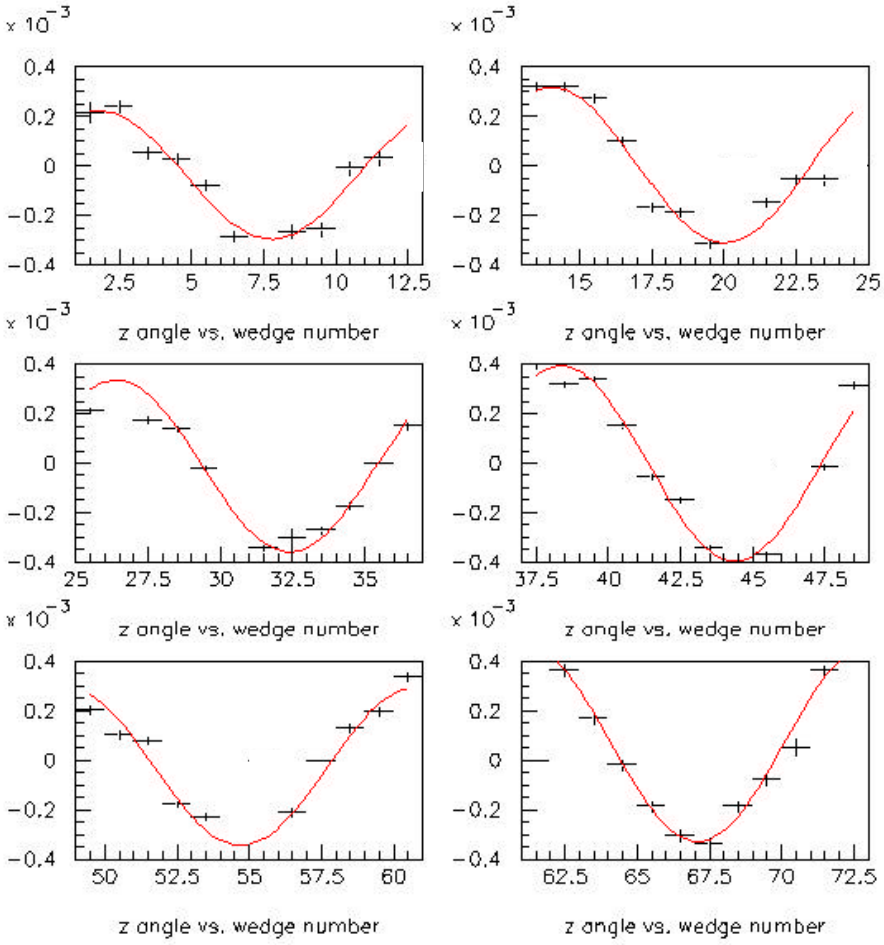


z-tilt vs. phi - run 152133



Tilt angle = ~ 400 urad

Effect of z-tilt correction on width of beam profile

SVT

- Difference of sigmas before and after correction.
- Correction is optimized wedge by wedge.
- Bulk of wedges is below 3 micron improvement.
- 4 wedges between 4 and 8 microns (?)
- Average is 1.2 micron

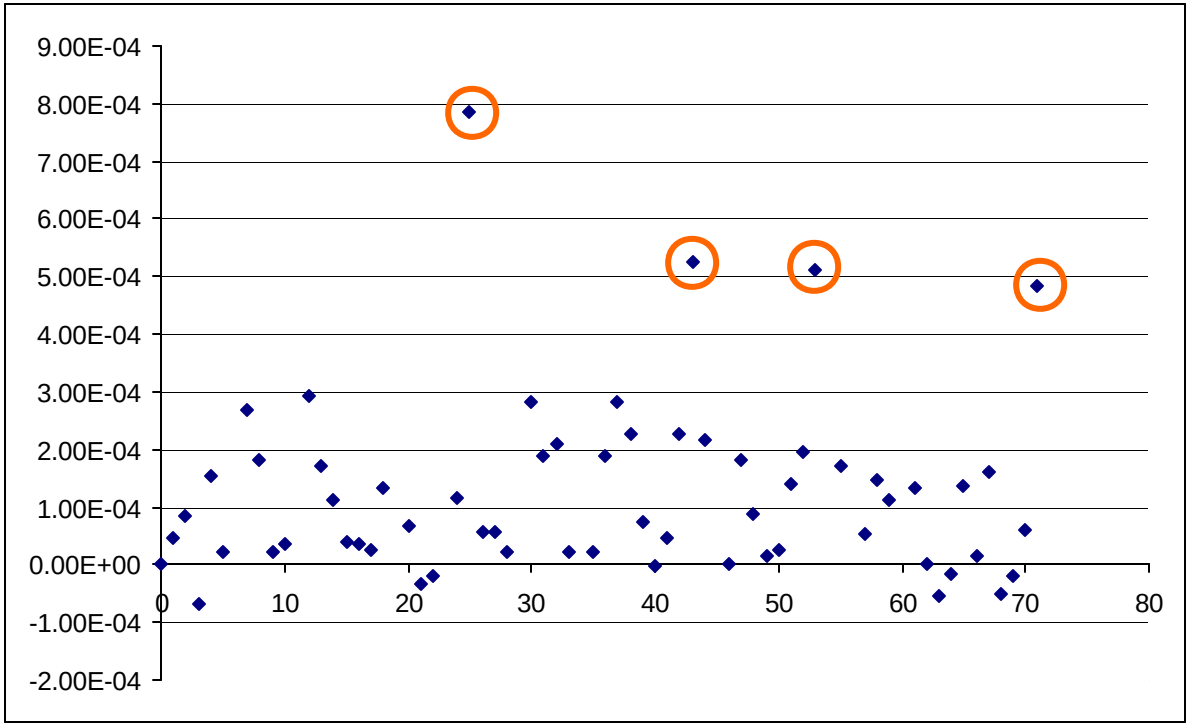
flat distribution

phi average

tilt angle

17cm/sqrt(12)/sqrt(2)*400um= 13.8 um

50 um ⊕ 13.8 um = 51.9 um

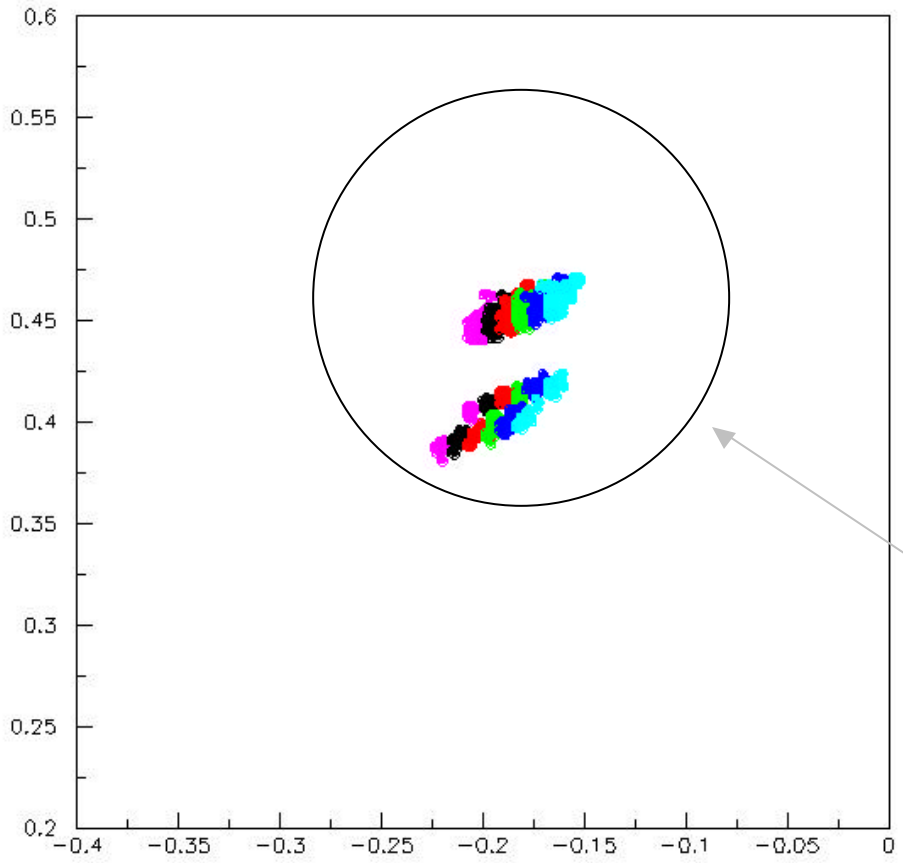


pathological wedges?

2	1	25	5.32E-03	4.53E-03
3	7	43	5.17E-03	4.65E-03
4	5	53	5.68E-03	5.17E-03
5	11	71	5.68E-03	5.20E-03

Beam position vs. SVT acceptance

Data between Sep 27 and Dec 8, 2002



- Circle is pattern acceptance
  (1 mm radius)
- 6 barrels are different colors
- Nov 8 jump is too much !
- Center each barrel?

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Centered at
x = - 0.1780
y = + 0.4600
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Recentering acceptance. How frequently?

- If we make a rule to re-center the acceptance if the beam moves more than a given amount away from the center, how frequently we'll have to do it ?
- Simulated on Aug15-Dec31 (~ 100 days)
  - With 100 um: 7 times
  - With 130 um: 4 times
  - With 200 um: 2 times

	Run	d(um)
1	150805	113
2	152658	102
3	154016	472
4	154443	187
5	155296	109
6	156081	109
7	156452	112

	Run	d(um)
1	150823	131
2	152938	159
3	154016	424
4	154443	187

	Run	d(um)
1	154016	450
2	155105	229

Bottom line

- Conclusions
  - We have looked at data between Aug 15 and Dec 31, 2003
  - SVT beam line tracks well with offline
  - We detect jumps in eccess of 600 um (not OK)
  - Beam tilt is stable within ± 100 urad (OK)
  - Absolute value of beam tilt ~ 400 urad
    - Negligible effect on beam profile core sigmas (1-2 um)
  - We have been taking data with center of beam obviuosly too close to the edge of pattern acceptance ! (for about one month)

- Open questions
  - How much beam tilt can we tolerate?
  - What's the effect of 'skew' pattern acceptance on physics?
  - How much can we tolerate?
  - How do we fix it ?
    - Update constants ?
    - Steer beam?