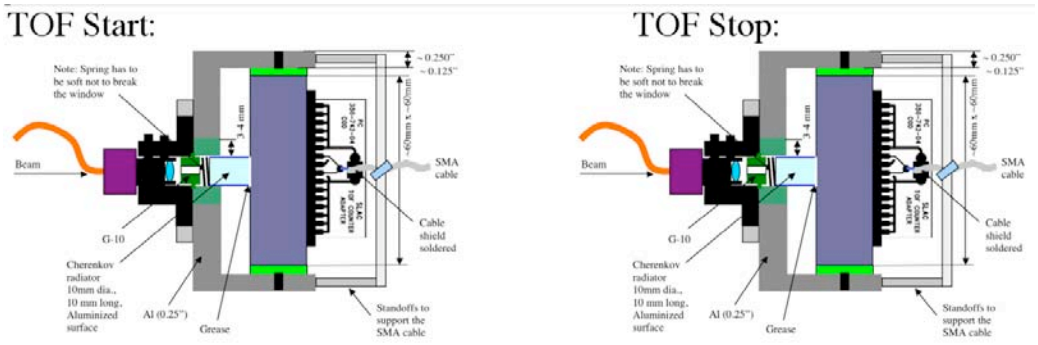
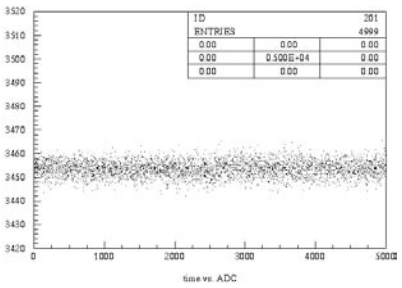
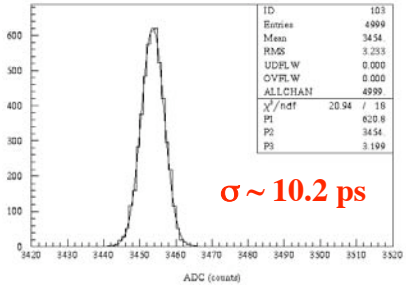
PiLas tests in ESA using a fiber splitter: 8.13.2007

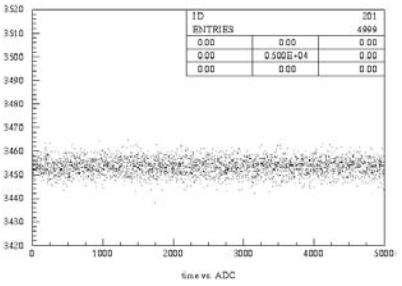


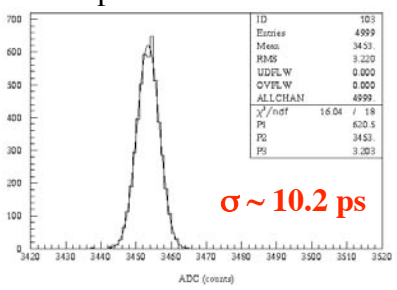
Run 288, 1-st MCP at 2.27 kV, 2-nd MCP at 1.88 kV
TAC start: TOF Start, TAC stop: TOF Stop, use a fiber splitter to feed both detectors
Comparable number of photoelectrons as I had in the trailer (Npe ~50)





Run 289, the same as run 288, but add a ground strap between TAC & ADC crates



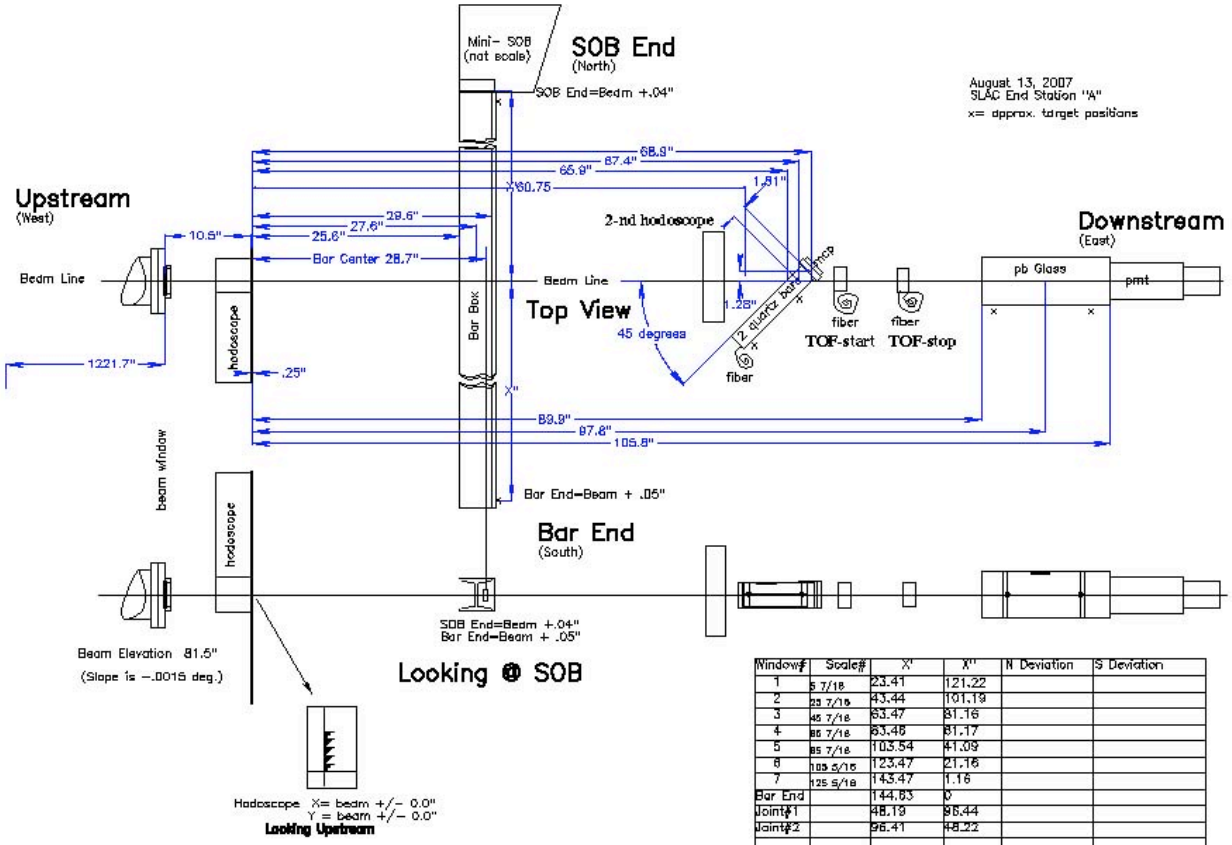


$$\sigma_{\text{single detector}} \sim (1/\sqrt{2})\ \sigma_{\text{double detector}}$$
$$\sim 7.2 \text{ ps}$$

Alignment prior to test.

8.10.2007

(T-469/492 test)



Window#	Scale#	X'	X''	N Deviation	S Deviation
1	5 7/16	23.41	121.22		
2	25 7/16	43.44	101.19		
3	45 7/16	63.47	81.16		
4	65 7/16	83.48	61.17		
5	85 7/16	103.54	41.09		
6	105 5/16	123.47	21.16		
7	125 5/16	143.47	1.16		
Bar End		144.63	0		
Joint#1		48.19	96.44		
Joint#2		96.41	48.22		

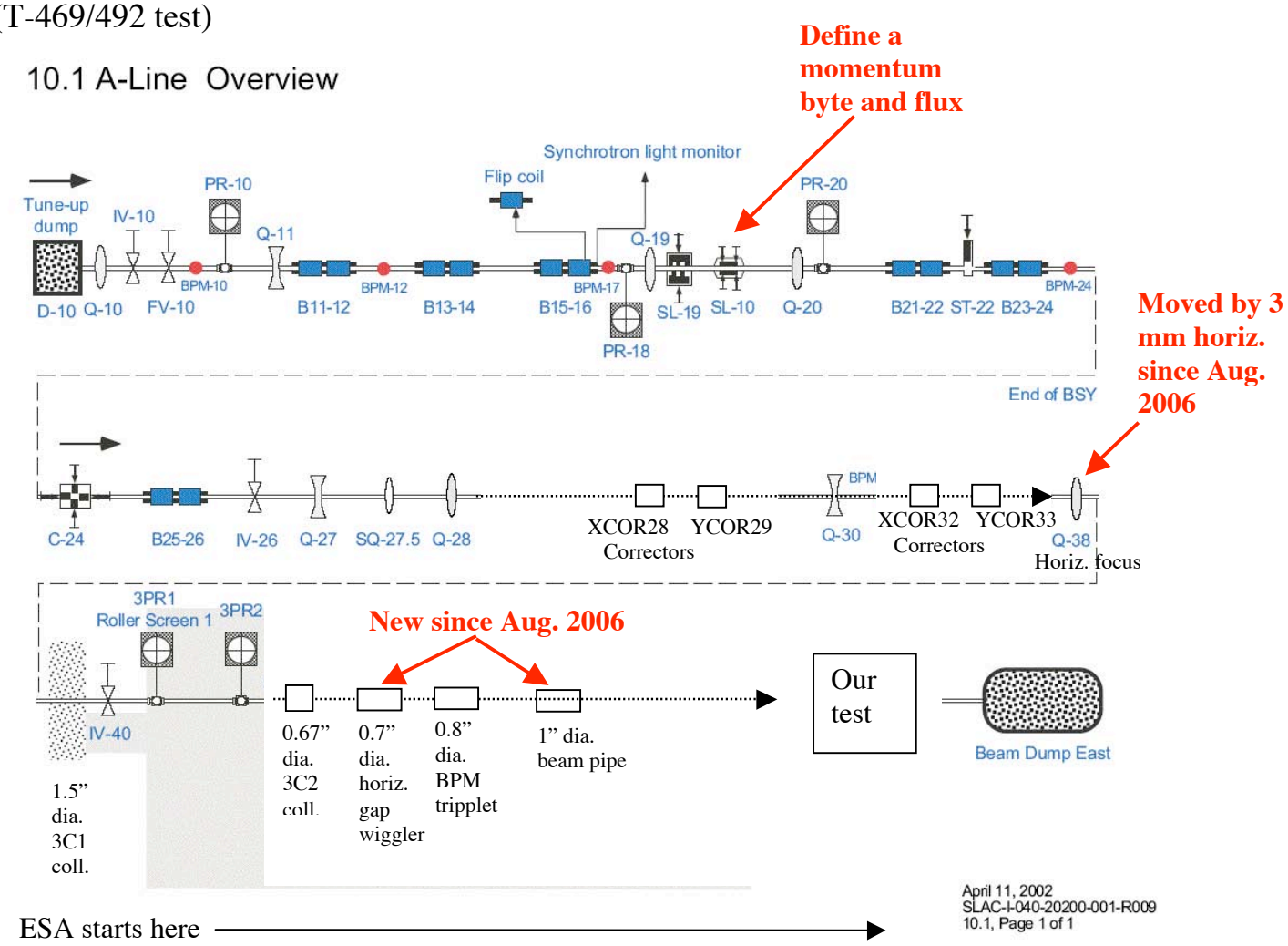
- With a help of surveyors, align the following counters in x & y:
  hodoscope #2, TOF_start and TOF_stop, and check alignment of the hodocope #1.

Results:

- Hodoscope 1: elevation +0.110", horizontal: +0.127" (+ means that counter is towards North).
- Hodoscope 2: elevation -0.035", horizontal: +0.020".
- TOF-Start: elevation +0.016", horizontal: +0.009".
- TOF-Stop: elevation -0.016", horizontal: +0.000".

Beam line modifications sine August 2006 (last run)

(T-469/492 test)



- A lot of new rather tight restrictions added by the most recent ILC test (Mike Woods et al.).

- Plus, a horizontal focus quad Q-38 has been moved by 3mm since we run last time.

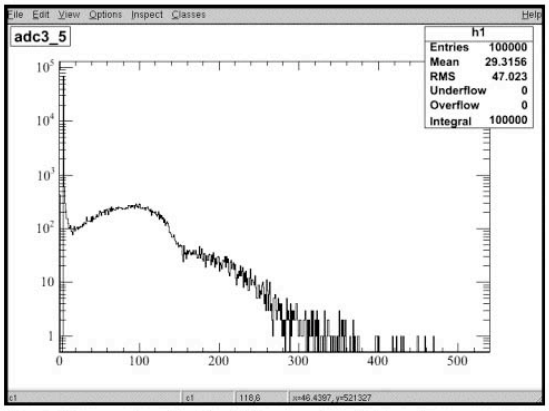
Beam tuning of electron beam at far end of ESA

8.13.2007

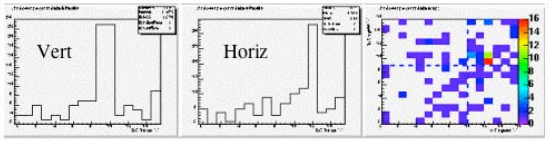
(T-469/492 test)

Start with a bad spectrum in lead glass

Electrons in lead glass:



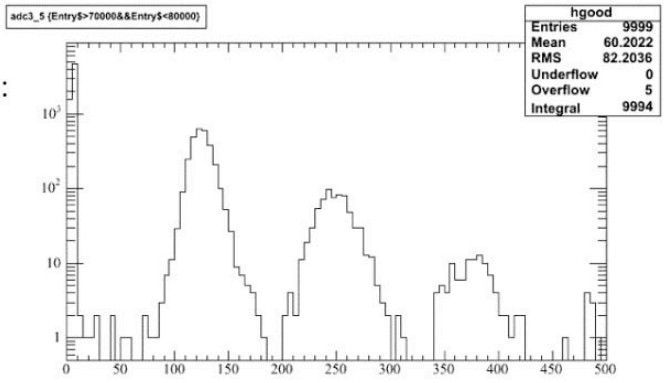
1-st hodoscope:



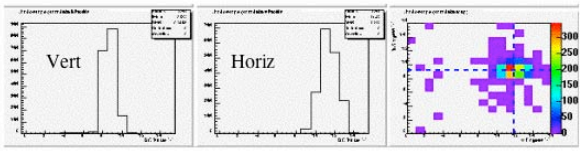
- Start with a bad spectrum in lead glass - impossible to separate singles from doubles
- A long tail observed in the 1-st hodoscope

After finishing tuning of x & y correctors

Lead glass:

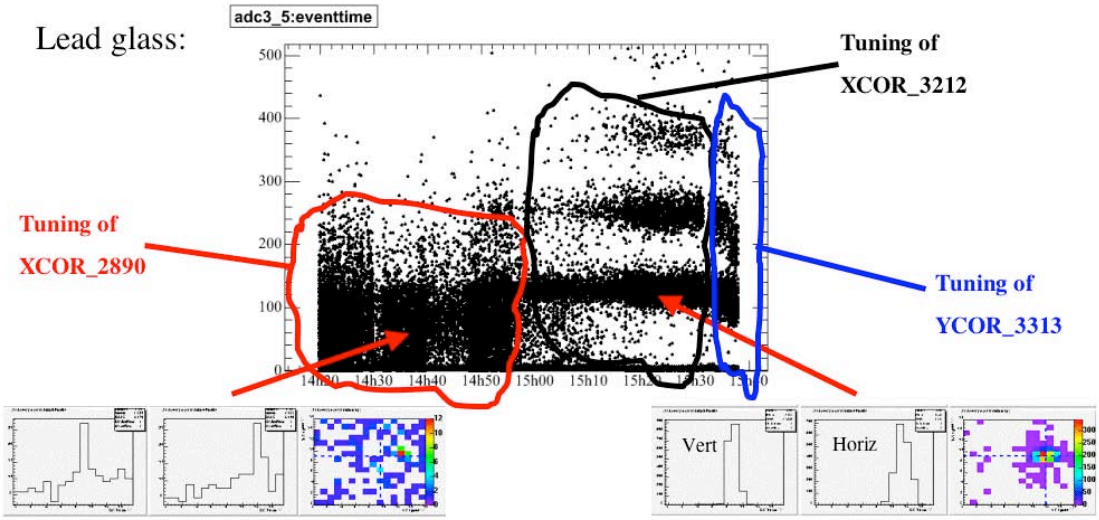


1-st hodoscope:



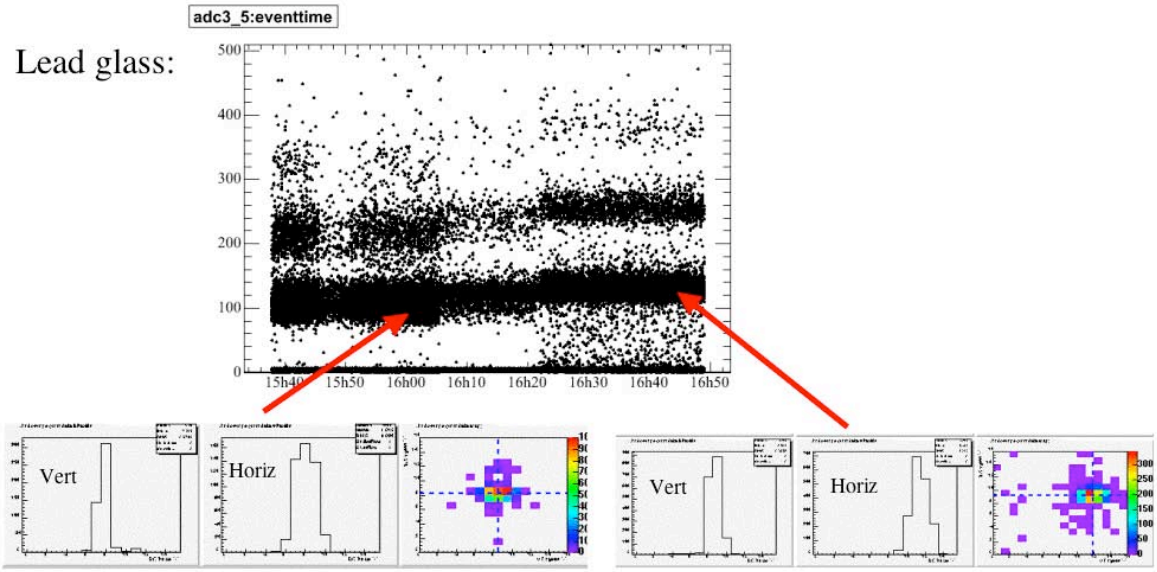
- A clear improvement - easy to separate singles from doubles or tripples
- No more tail in the 1-st hodoscope
- However, beam is still not centered in the hodoscope.

Process of tuning of the x & y correctors



- Tuning of upstream corrector XCOR_2890 not very effective.
- Tunning of downstream corrector XCOR_3212 much more effective

Centered beam position in the hodoscope does give the best lead glass spectrum



- We coulkd center the beam on our hodoscope, but the lead glass spectrum is not the best at that point. Decided to leave it off center.
- For a best spectrum in lead glass, the beam is not centered in the hodoscope

Conclusion

- **Can coexist with LCLS beam energy, at least in principle**.
- **Have a good particle yield with a 10 GeV/c secondary beam.**
  Adjust the flux by SL10 slits (defines a momentum byte).
- **SL10 slits: 0.2%**, C24 slits: 4mm (more open than in August 2006).
- Achieve a good lead glass spectrum by tuning of XCOR_3212 and YCOR_3313. However, since then it detoriorated a bit. Not clear why.
- An optimum tune from a point of view of the lead glass does not center the beam in the hodoscopes.
- Cannot rely on alignment marks on the ESA floor (the beam line is too complicated upstream).