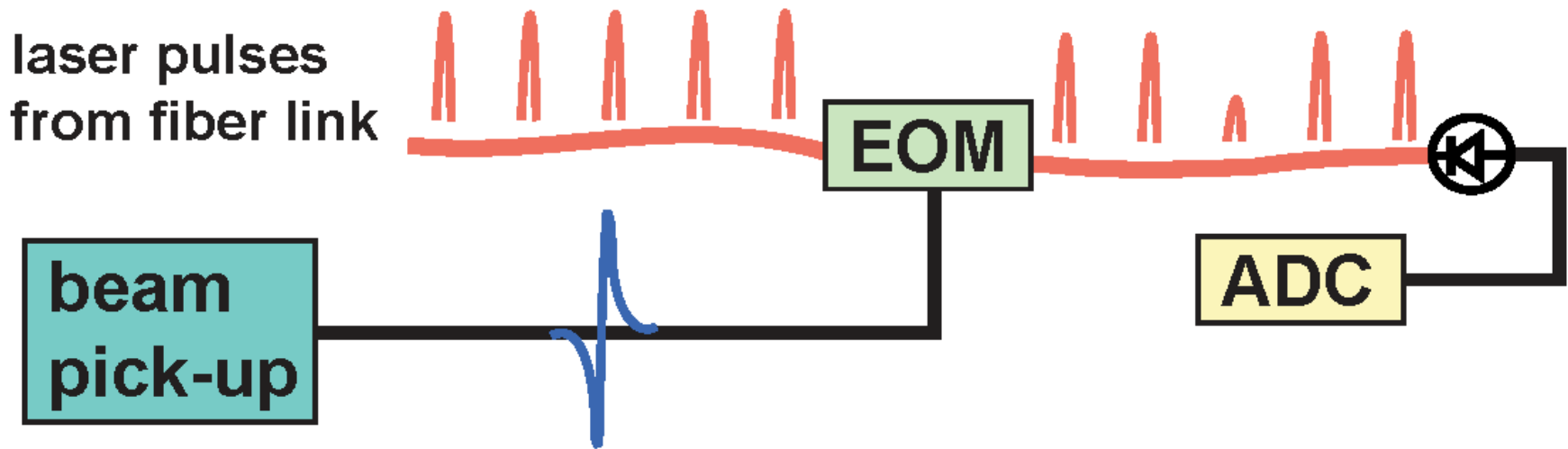


Installation of high precision bunch arrival time monitors in the FLASH linac

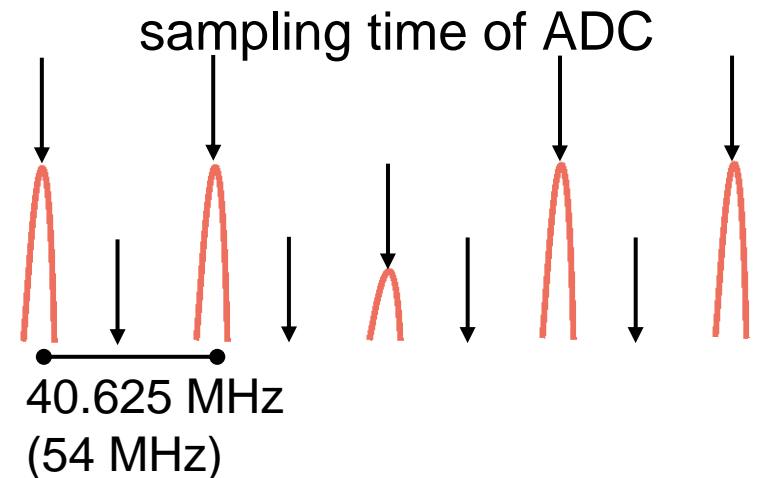
F. Löhl

March 13, 2007

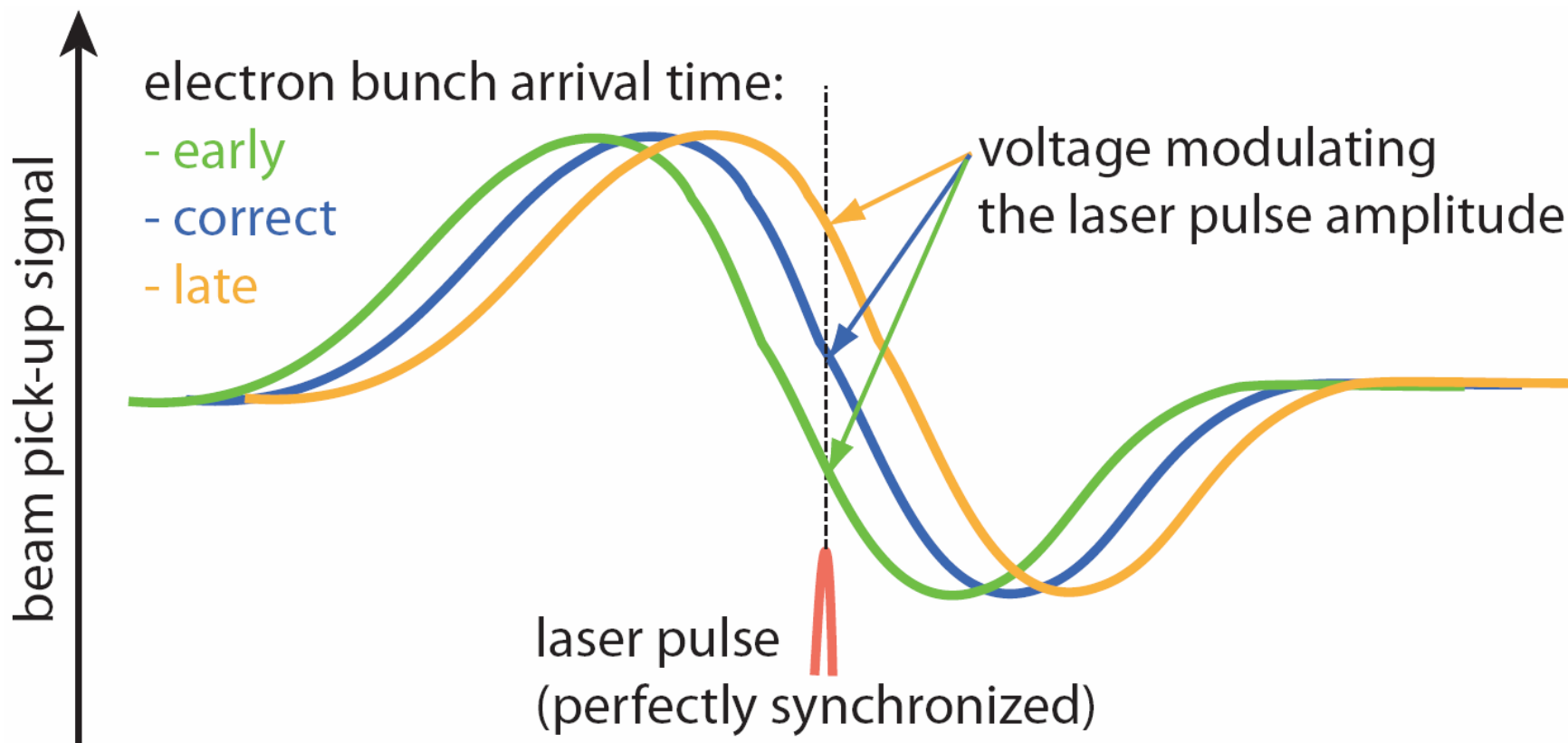
Principle of the arrival time detection



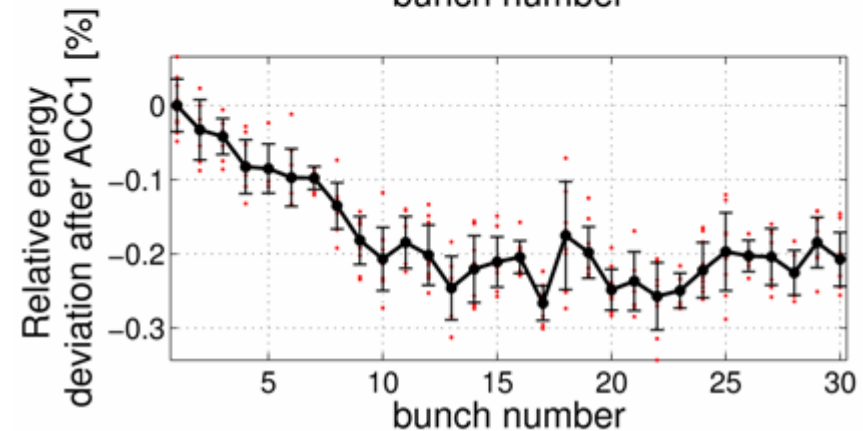
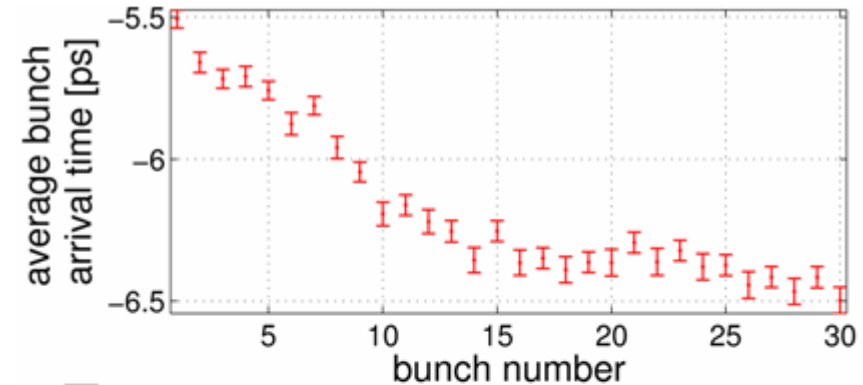
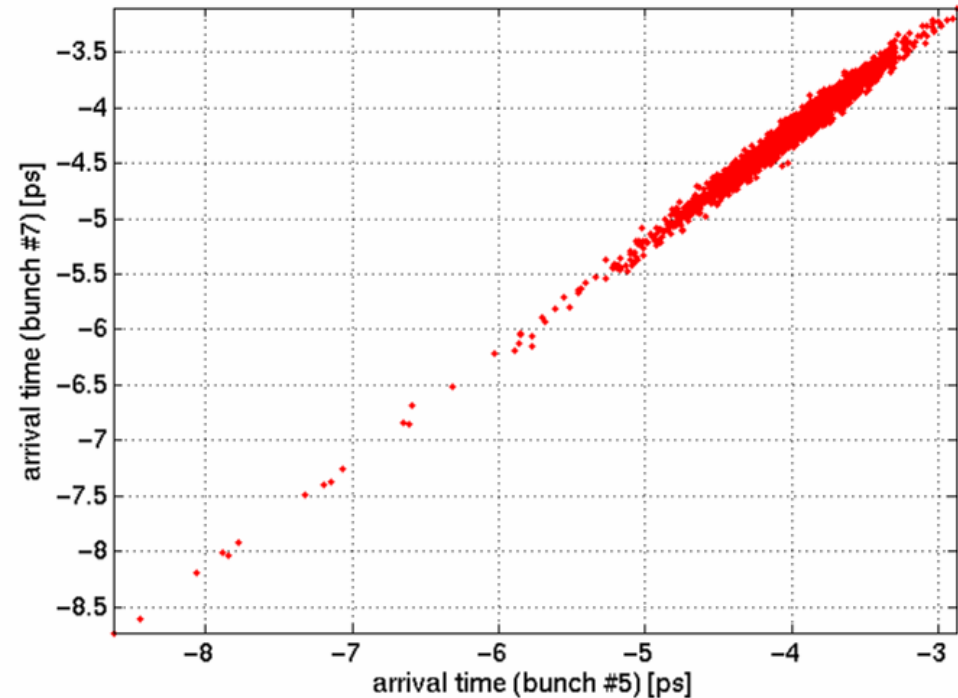
The timing information of the electron bunch is transferred into an amplitude modulation. This modulation is measured with a photo detector and sampled by a fast ADC.



Principle of the arrival time detection



Recent results



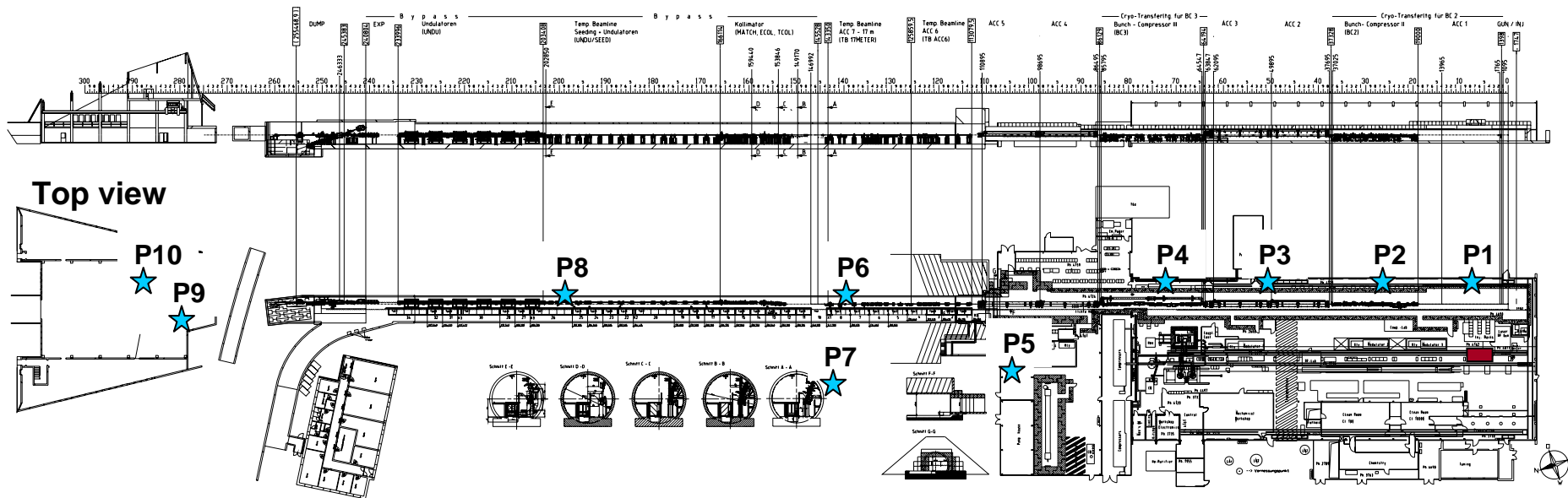
Jitter between two adjacent bunches: **~ 40-50 fs**
 → Timing resolution with respect to reference laser: **< 30 fs**

Arrival time measurement for all bunches in the bunch train possible!

→ Plan to implement this into feedback system of LLRF group

Installation work during shutdown:

- Splicing work for optical fiber links
- exchange of BAM pick-ups
- Installation of electro optical frontends



P1-10
★ fiber patch panel

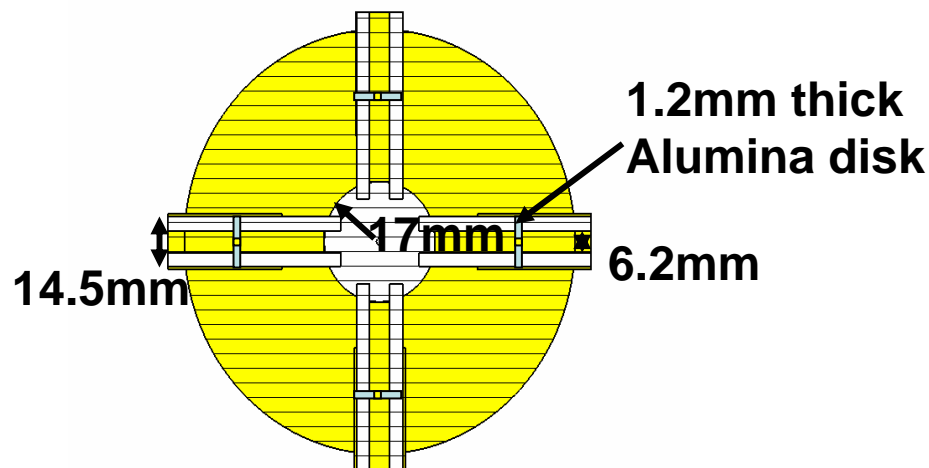
■ Synchronization hut (start point of all links)

Comparison of new and old pick-up

old design:

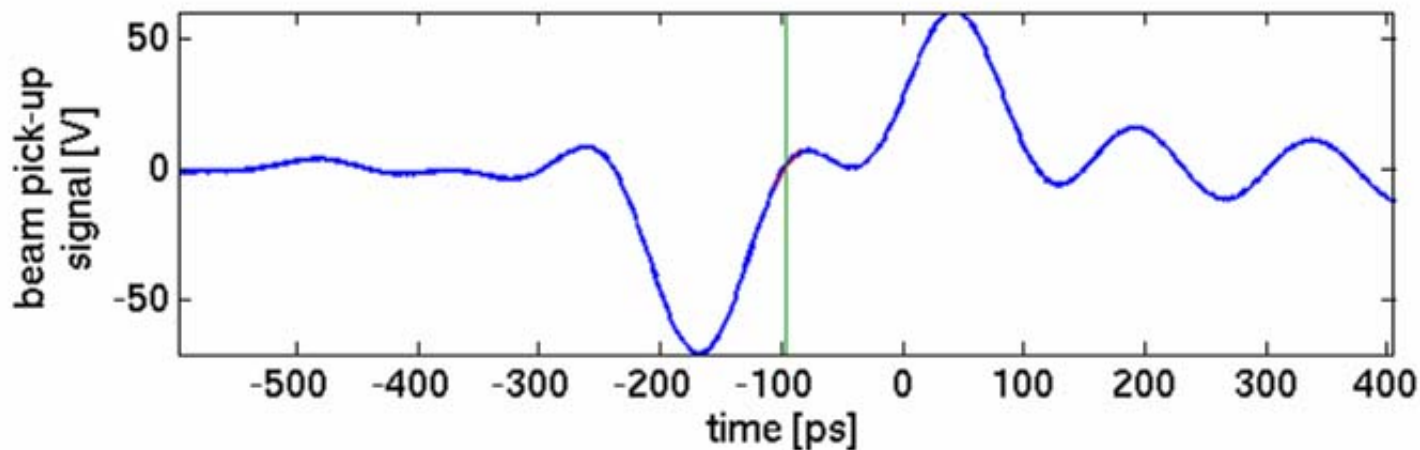


new design:
(by K. Hacker)

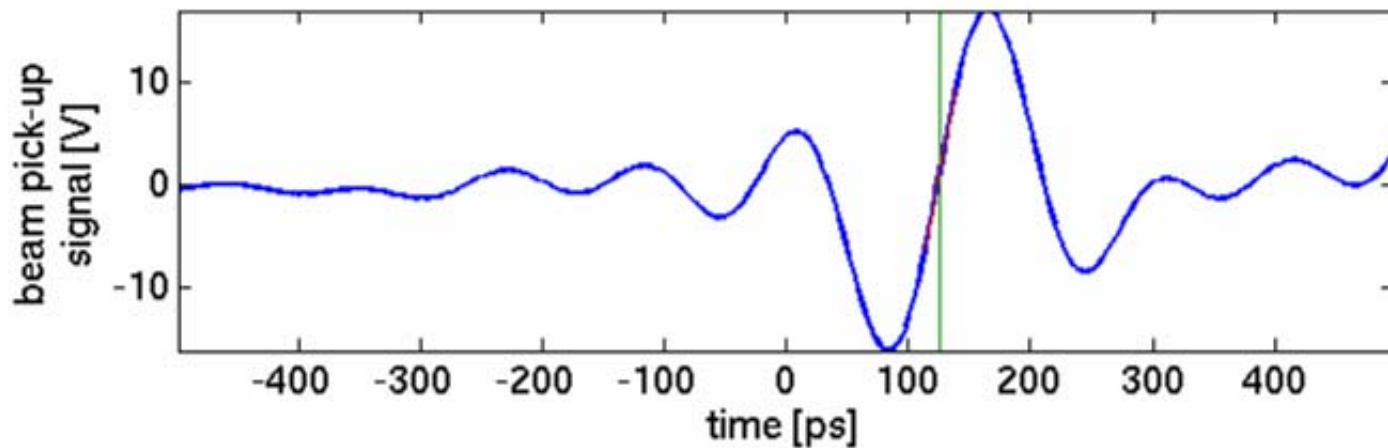


Comparison of pick-up signals

old pick-up
(“bump” is strongly orbit dependent)

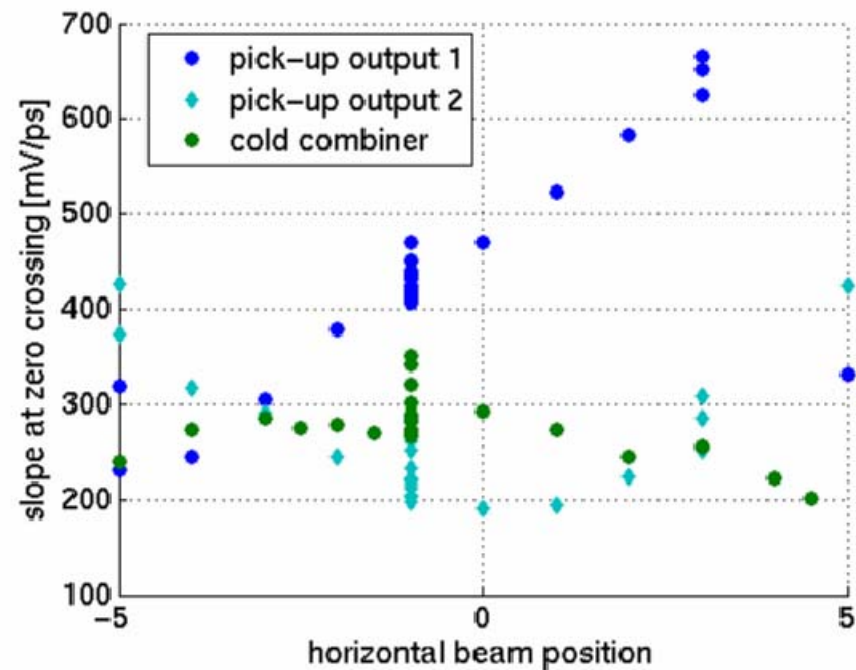


new pick-up

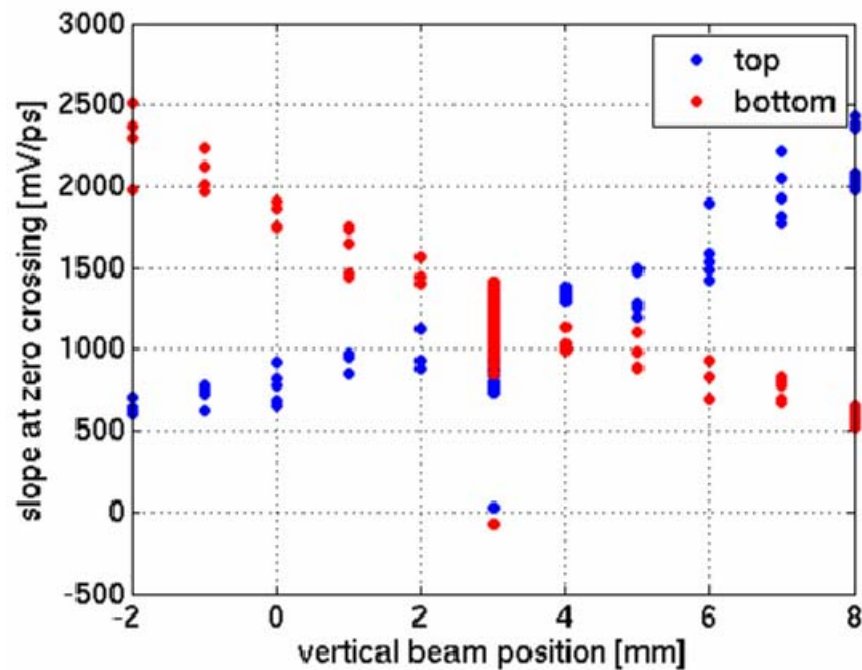


Slope of pick-up signals

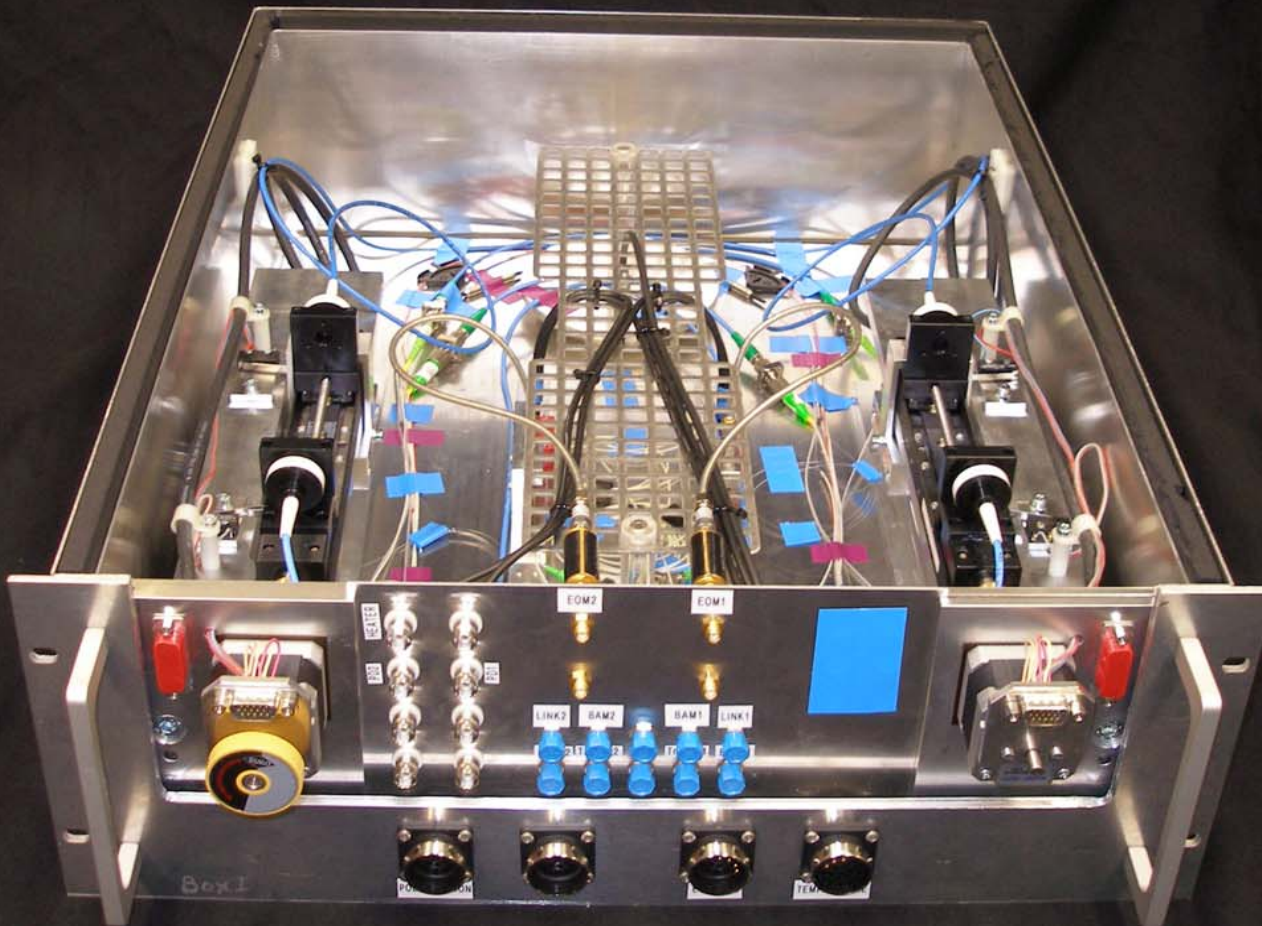
old pick-up



new pick-up



Installation of electro-optical frontends



Positions of BAMs in the FLASH linac

