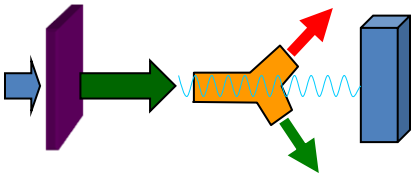


Brief Report of Hybrid Target Beam at KEKB

T.Takahashi

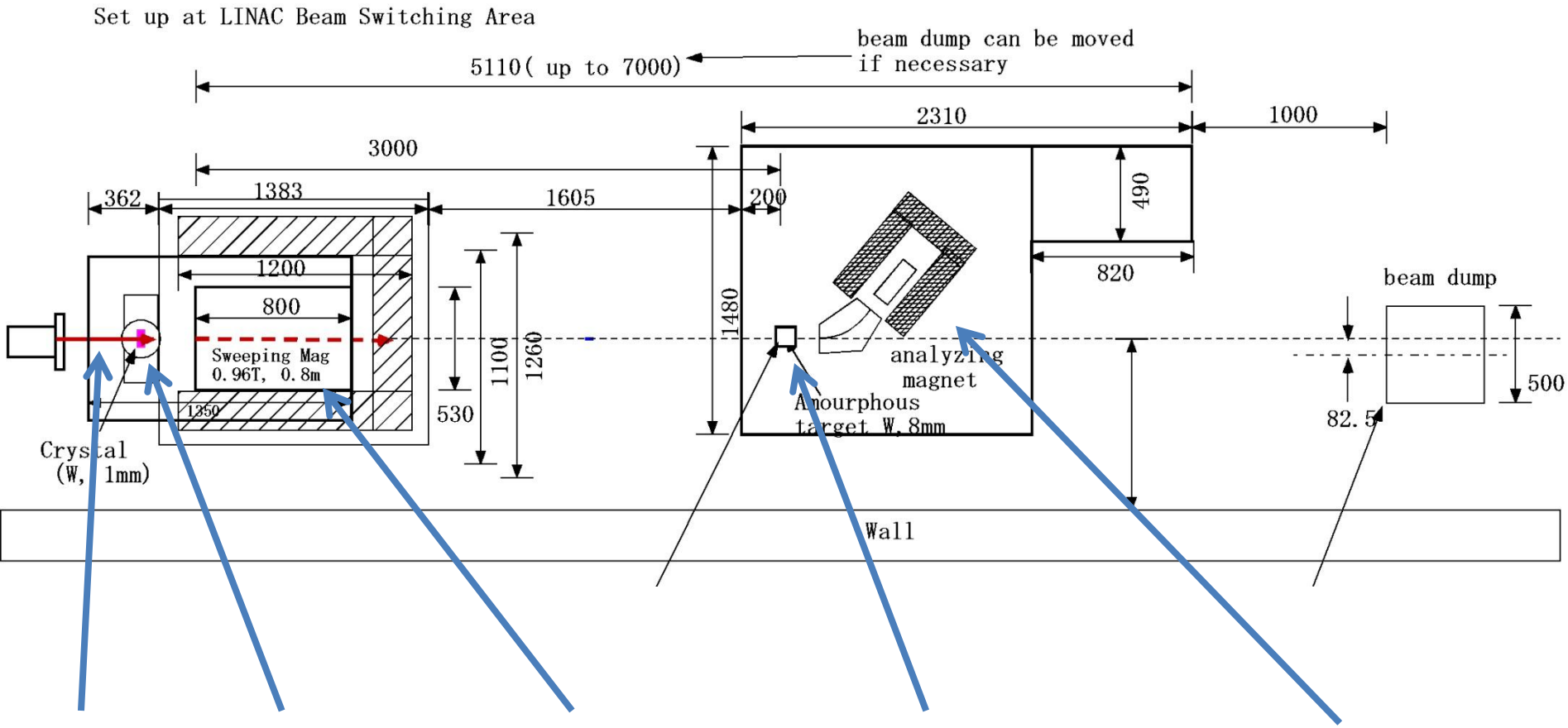
Hiroshima University

6 September 2009

Introduction

- First Beam test at KEKB LINAC
  - 21 --- 23 September 2009
- After the experiment, we were in ALCPG meeting at Albuquerque and just back on the day before yesterday.
- Brief report today
  - more detail in CLIC Workshop on 15 September.

Setup



8GeV e-

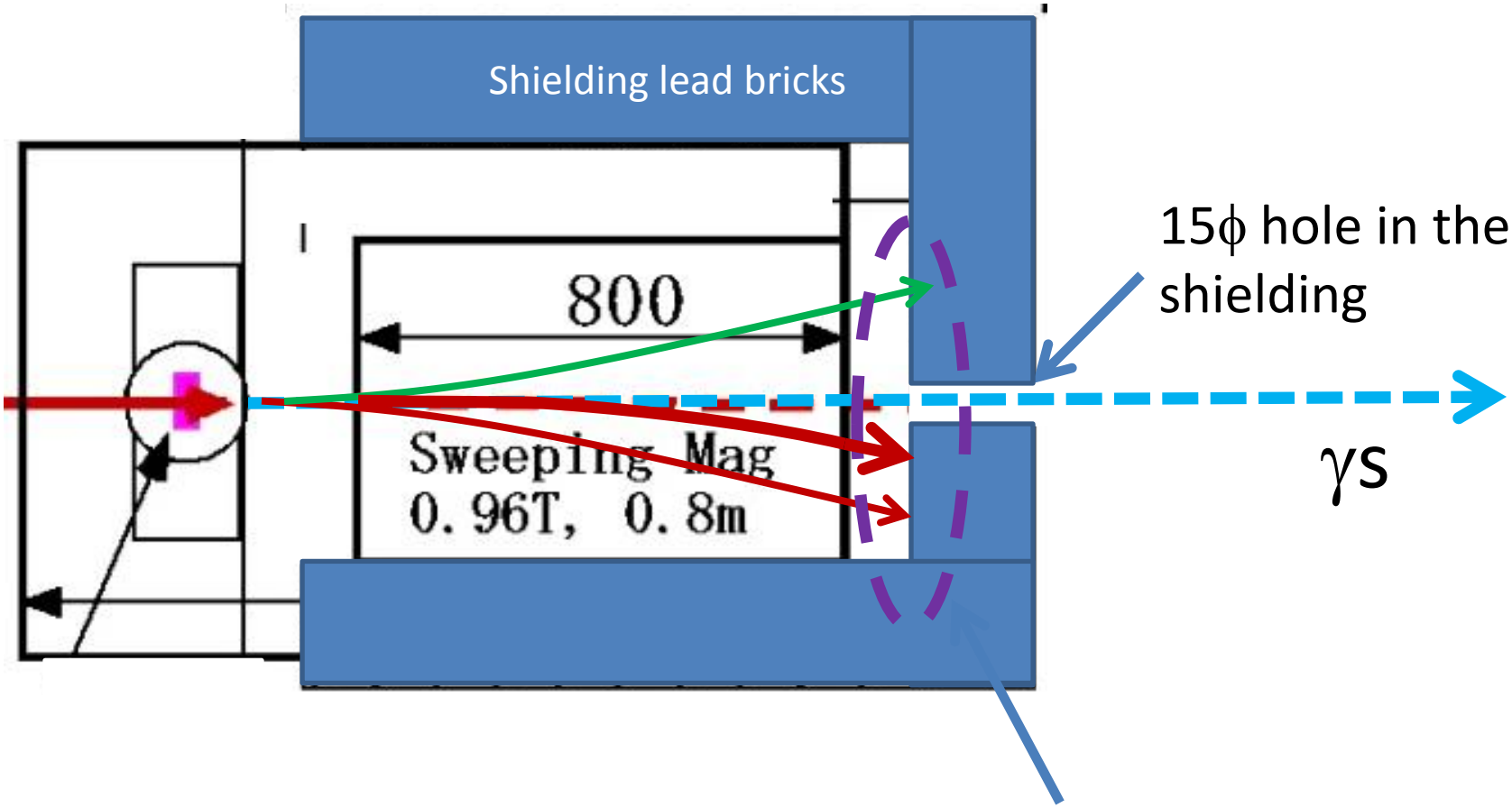
1mm
W crystal

Sweeping Magnet
0.96T 0.75m

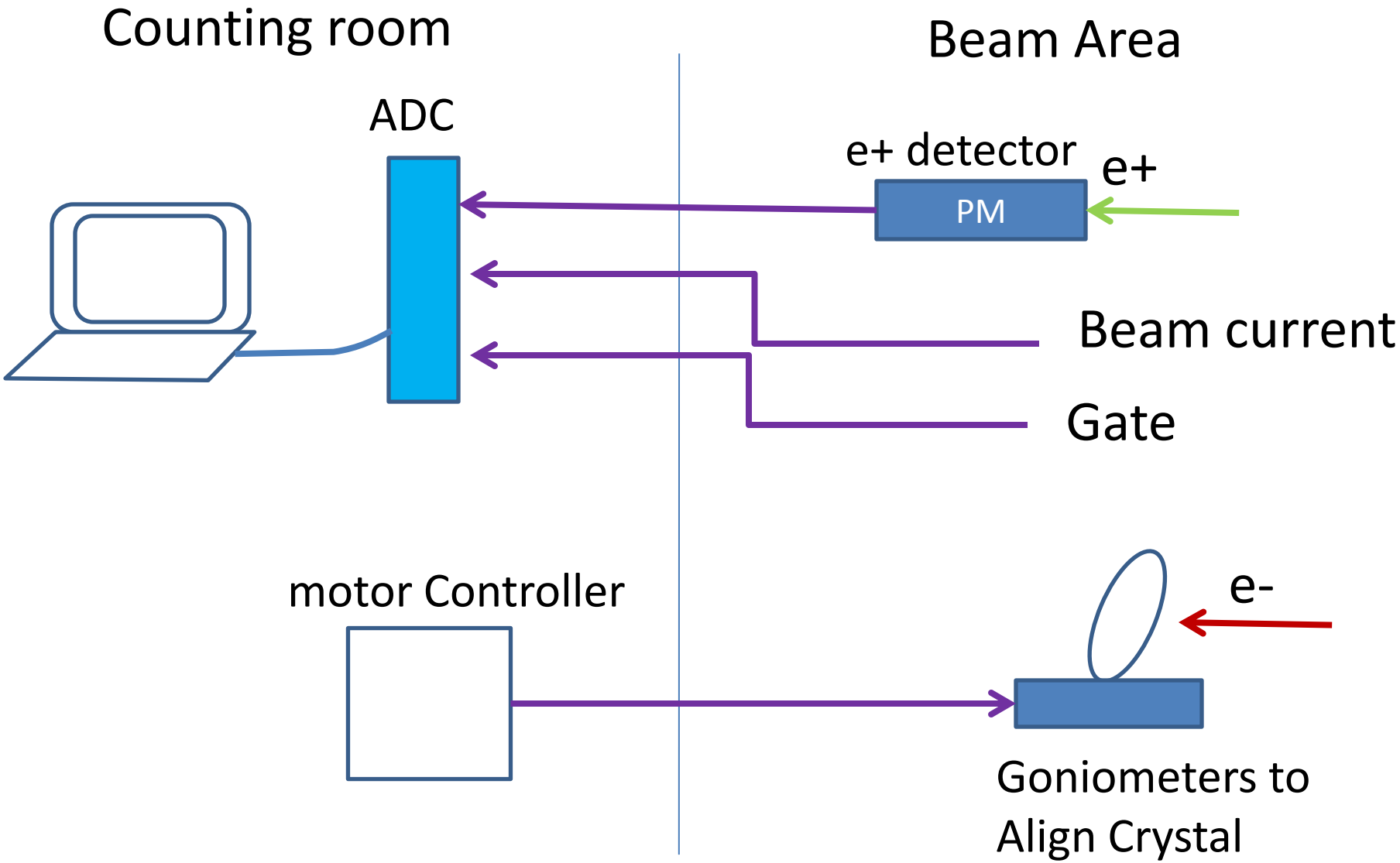
amorphous W
0.4 mm
8 mm

Analyzing magnet
5 ~ 20MeV

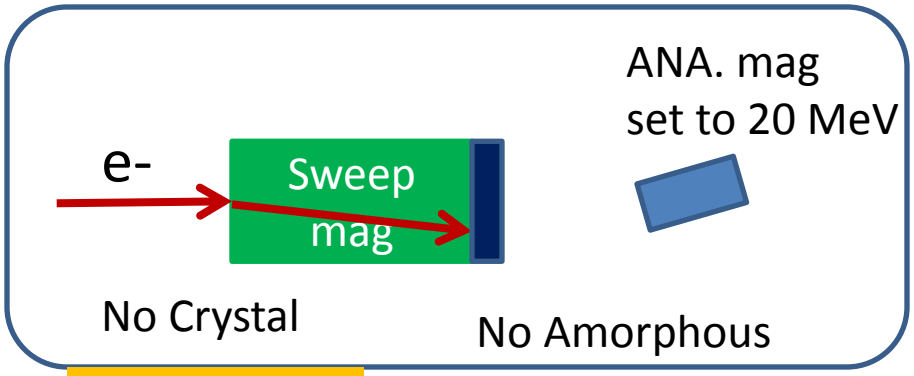
Around the magnet



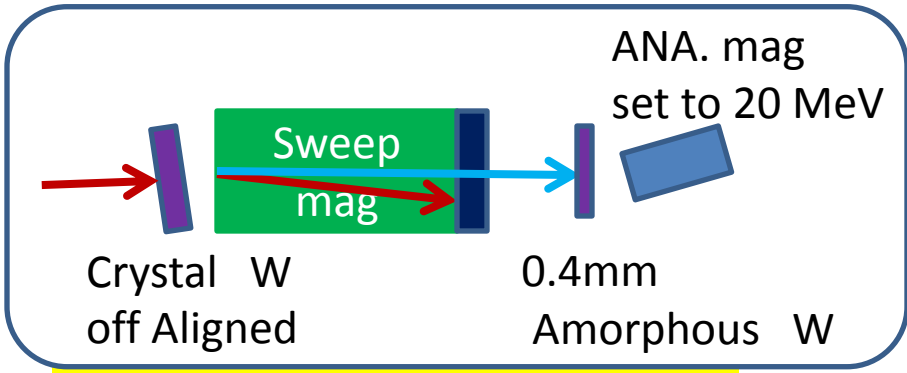
Data Acquisition



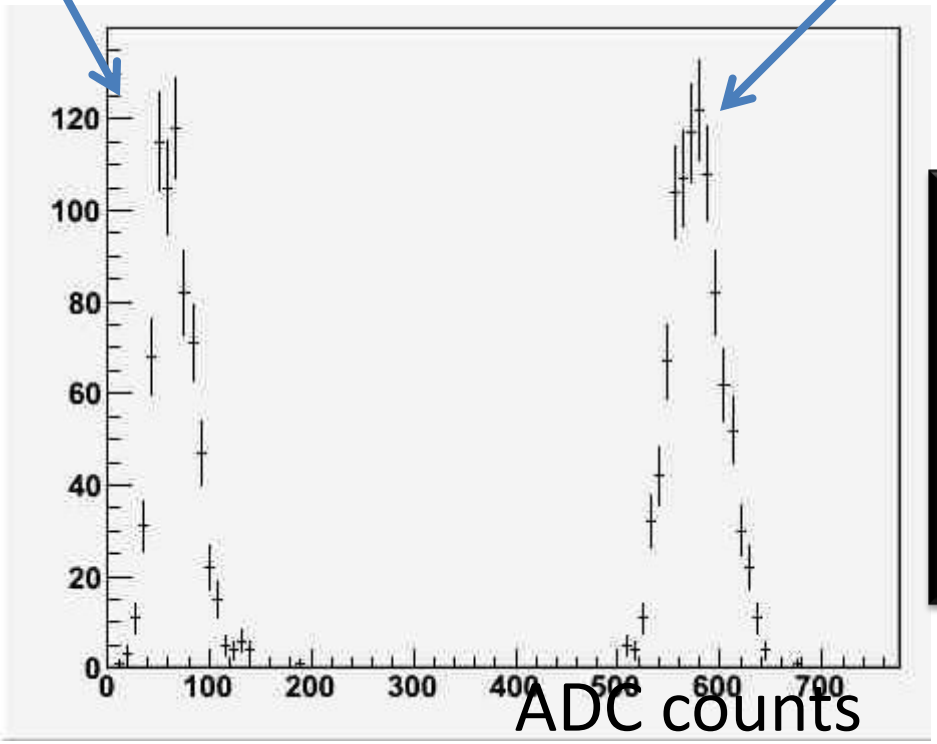
Background conditions



background

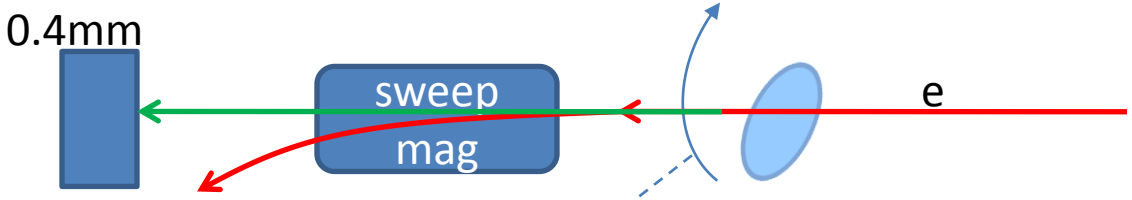


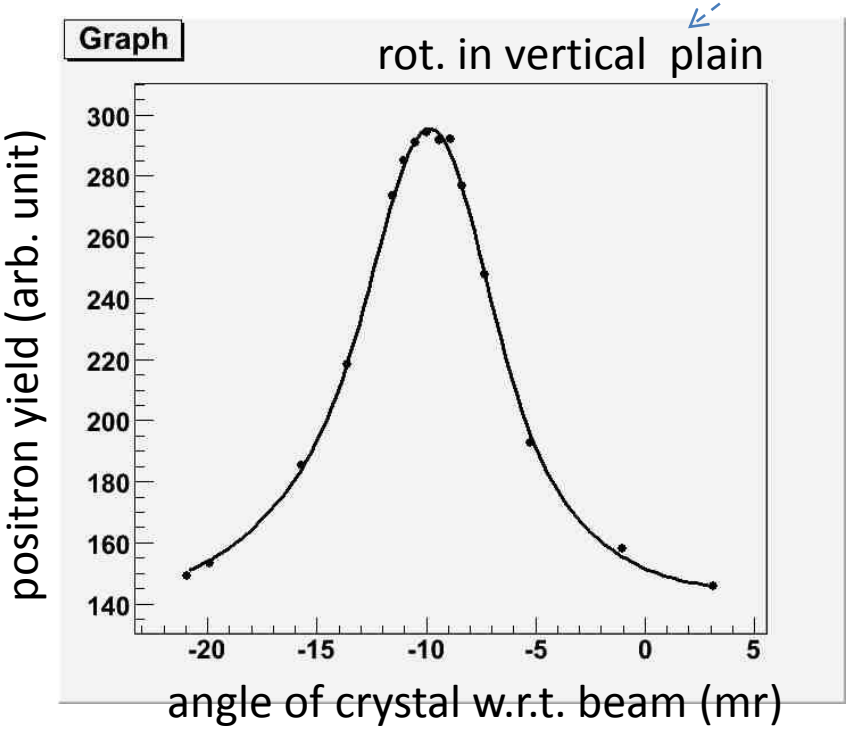
e+ of the least yield condition



Signal is well separated from background even with thin converter

Rocking curve





$$f(\theta) = Ae^{-\frac{(\theta-\langle\theta\rangle)^2}{2\sigma_1^2}} + Be^{-\frac{(\theta-\langle\theta\rangle)^2}{2\sigma_2^2}} + Const$$

$$\sigma_1 = 2.27 \pm 0.06$$

$$\sigma_2 = 4.86 \pm 0.2$$

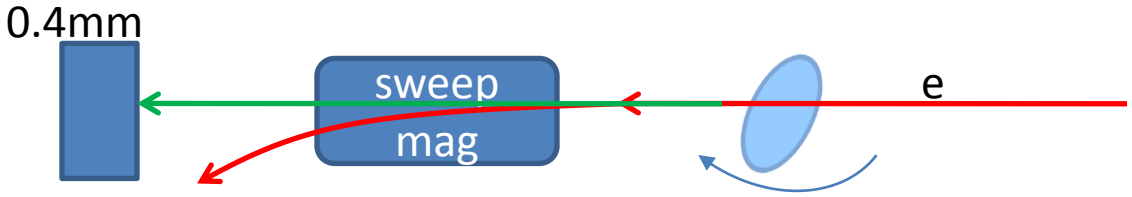
$$const = 144.4 \pm 1.1$$

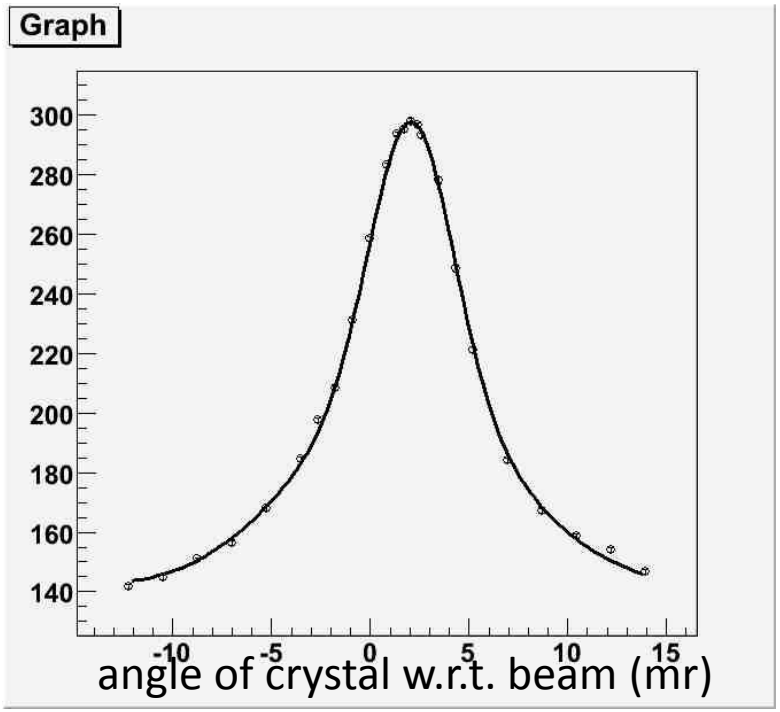
Well fitted by two Gaussians

Channeling + CB?

Narrower component is still x 4 wider than the critical angle

Rocking curve





$$f(\theta) = Ae^{-\frac{(\theta-\langle\theta\rangle)^2}{2\sigma_1^2}} + Be^{-\frac{(\theta-\langle\theta\rangle)^2}{2\sigma_2^2}} + Const$$

$$\sigma_1 = 2.07 \pm 0.04$$

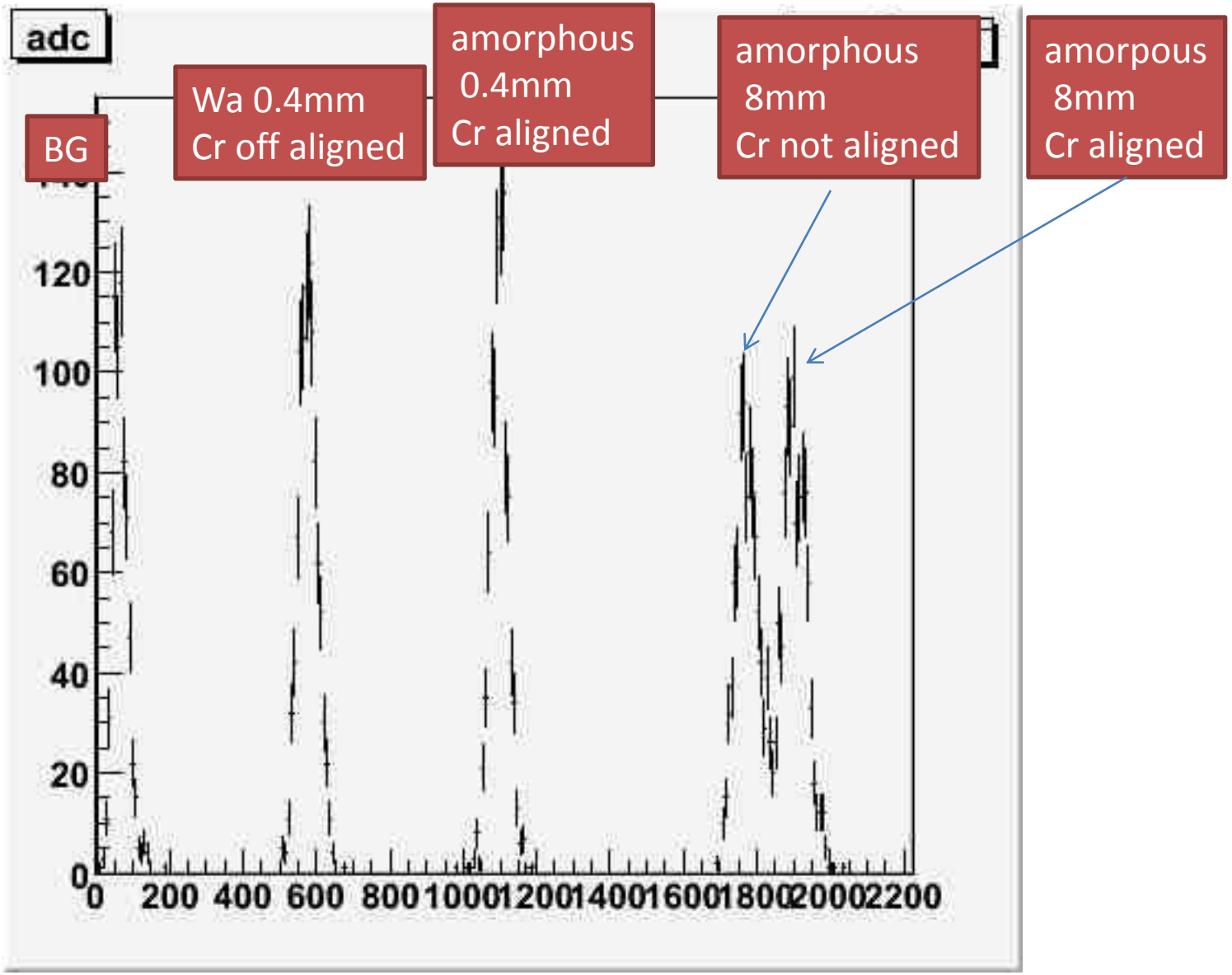
$$\sigma_2 = 5.3 \pm 0.2$$

$$const = 141 \pm 1$$

Data was taken under various conditons

Crystal	amorphous	Sweep mag	Ana mag
NO	NO	on	20MeV
aligned	0.4mm	on	20MeV
not alinged	0.4mm	on	20MeV
not alinged	NO	on	20MeV
aligned	8mm	on	20MeV
not alinged	8mm	on	20MeV
not alinged	NO	on	20MeV
aligned	NO	on	20MeV
off	NO	on	20MeV
aligned	8mm	off	20MeV
not alinged	8mm	off	20MeV
aligned	NO	off	20MeV
not alinged	NO	off	20MeV
off	8mm	off	20MeV
NO	NO	off	20MeV
on	8mm	on	15MeV
〃	8mm	on	15MeV
〃	8mm	on	15MeV

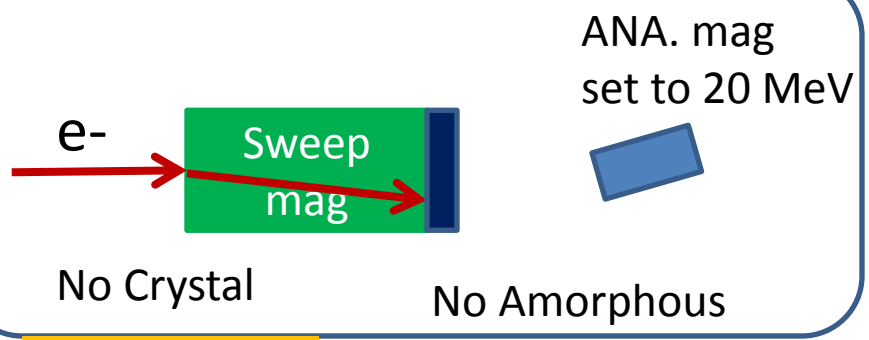
data looks likes..



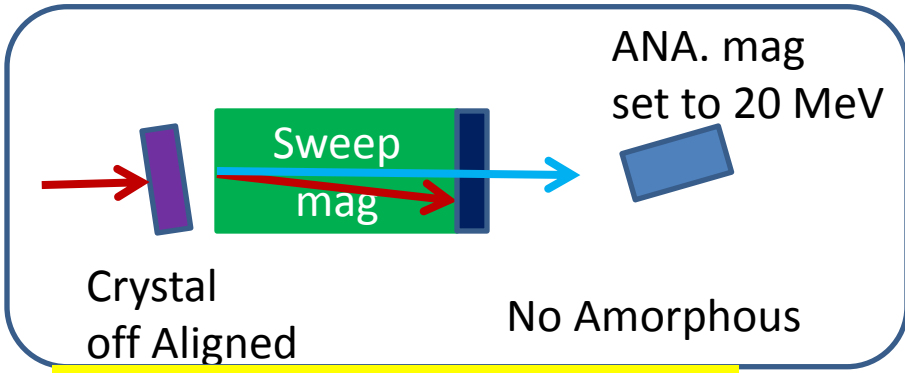
Summray

- Set up works !
  - Very small backgound
  - DAQ seems good enough
- already have
  - many to be analyzed
  - worth to compare with simulation
  - some quantitive results in CLIC workshop
- Hope temperature data in next run

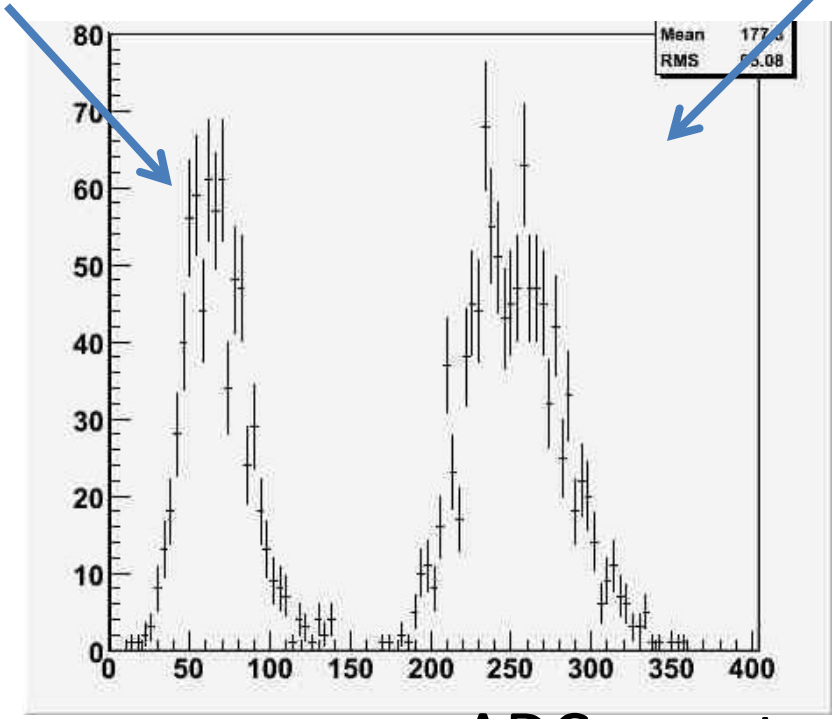
Background conditions



background



e+ of the least yield condition



Signal is well separated from background even with NO converter