

# *Neutrals in Phase3*

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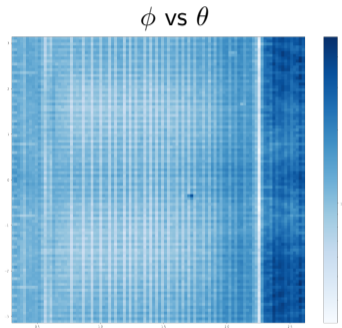
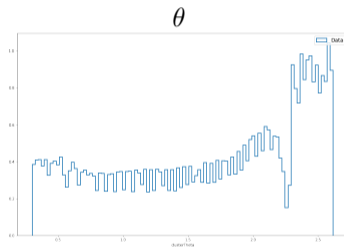
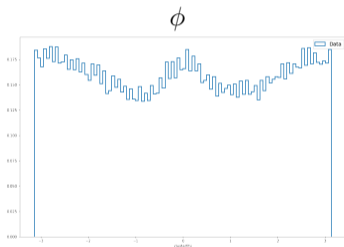
INFN Padova

Physics Performance Meeting,  
SpeakApp, 4 April 2019

Unofficial prompt processing **BIIDP-1370**

- release: **release-03-01-00**
- GT: **568 data\_reprocessing\_prompt\_bucket2c**
  - ▶ Magnetic field: v8 (QCS ON)
- **path** /ghi/fs01/belle2/bdata/Data/release-03-01-00/DB00000568/prompt/e0007/4S/r<RUN>/all/dst/sub00/
  - ▶ only **DST** available
  - ▶ processed up to run 1585 included: all lumi run collected so far (but 1586,1587)
- **NOTE: these are unofficial samples with non optimal calibration constants and should only be used for studies that do not rely on good reconstruction.**
- The primary purpose is for background, trigger, and similar studies.
- Official samples will be produced only after calibration is finished ( 2 weeks from data taking).
  - 🔧 bucket 3: exp 7 run 354 to exp 7 run 848 (Cosmic runs) **BIIDP-1357**.
    - ✓ tracking constants are ready
    - 🔧 local calibration is underway
  - 🔧 bucket 4: exp 7 run 909 to exp 7 run xxxx (Physics runs + cosmic) **BIIDP-1366**.

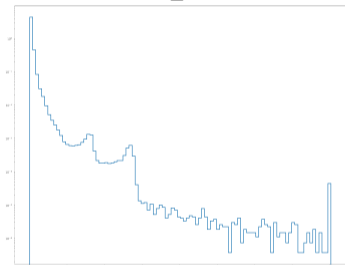
All photons in CDC acceptance



$\phi$  structure, present also in central  $\theta$  region. A spike around  $(\theta, \phi = 1.7, -0.3)$

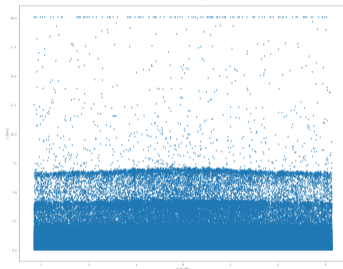
All photons in CDC acceptance

E



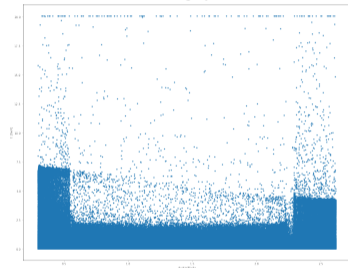
tail to 20 GeV, peak at 4 GeV,  
cutoff at  $\sim 7$  GeV

E vs  $\phi$



peak and cutoff show a  
moderate  $\phi$  dependence

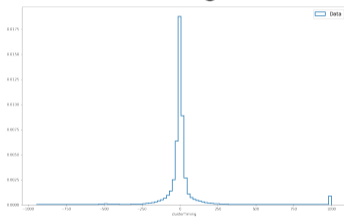
E vs  $\theta$



$E > 2.5$  GeV only in  
forward/backward, dependence  
of cutoff from  $\theta$

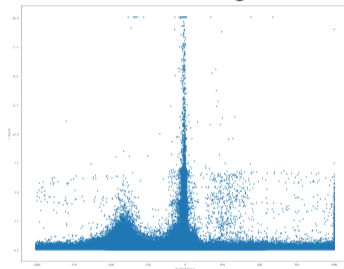
All photons, selection in CDC acceptance

### Timing



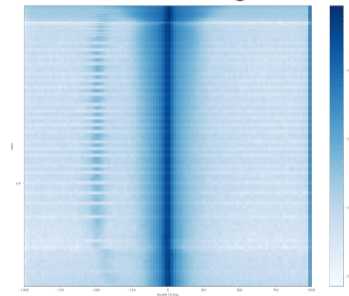
I suppose that the T0 calibration is not optimal yet (unofficial processing!)

### E vs Timing



Bump of  $T = -400$  and maybe also at  $+250$

### $\theta$ vs Timing

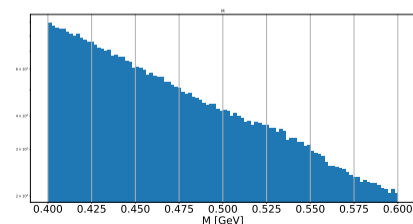
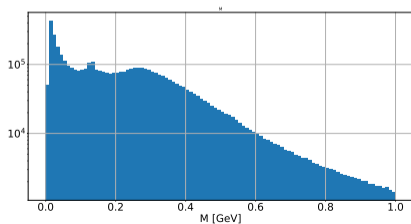
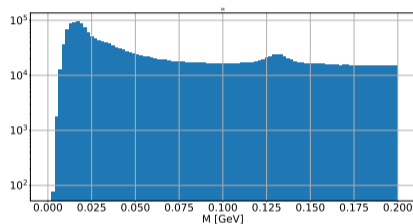
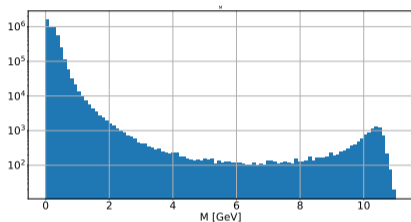


Bump of  $T = -400$  mostly in barrel, maybe a banana shape?

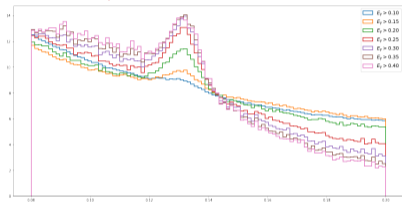
All gammas, with  $nHits > 1.5$  and  $E_9 E_{21} > 0.95$  in CDC region, no kin fit.

$0 < M < 11(1)$  GeV top(bottom)

$\pi^0$  and  $\eta$  regions

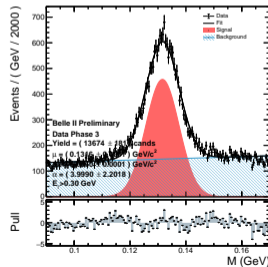
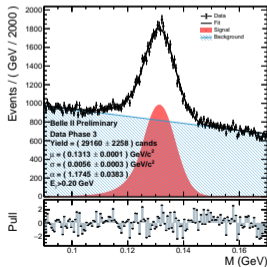
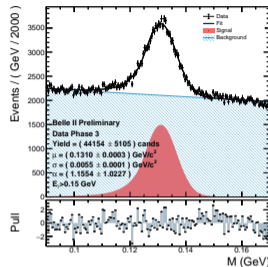
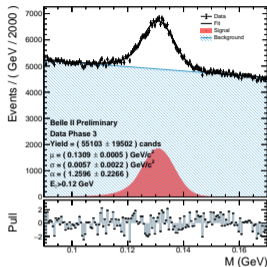


All gammas, with  $nHits > 1.5$  and  $E_9 E_{21} > 0.95$  in CDC region, no kin fit and  $E_\gamma > cut$  (plot normalized)

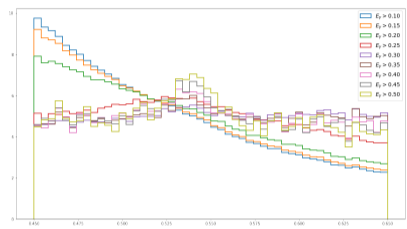


For  $E_\gamma > 0.12$  GeV

	$\mu$	$\sigma$
	[ MeV ]	
Phase3	130.9	5.7
Phase2	131.82	5.13
Phase2MC	133.12	5.18



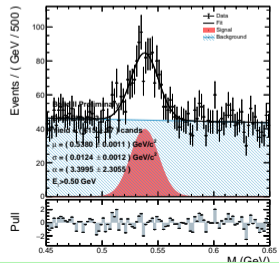
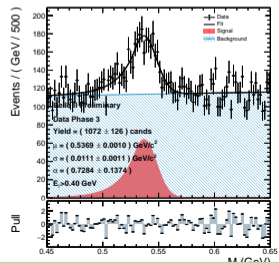
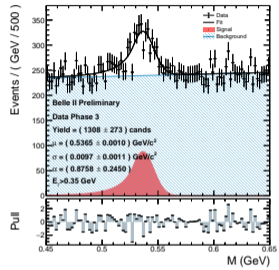
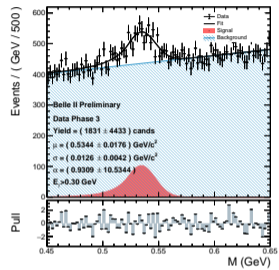
All gammas, with  $nHits > 1.5$  and  $E_9 E_{21} > 0.95$ , in CDC region, no kin fit and  $E_\gamma > cut$



(plot normalized)

$E_\gamma > 0.4$  GeV

	$\mu$	$\sigma$
	[ MeV ]	
Phase3	537	10.4
Phase2	541.2	11.8
Phase2 MC	543.3	11.0





Additional or backup slides

