Status of the FPCCD software

Physics and Software meeting

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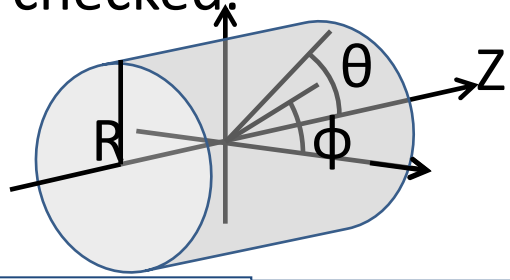
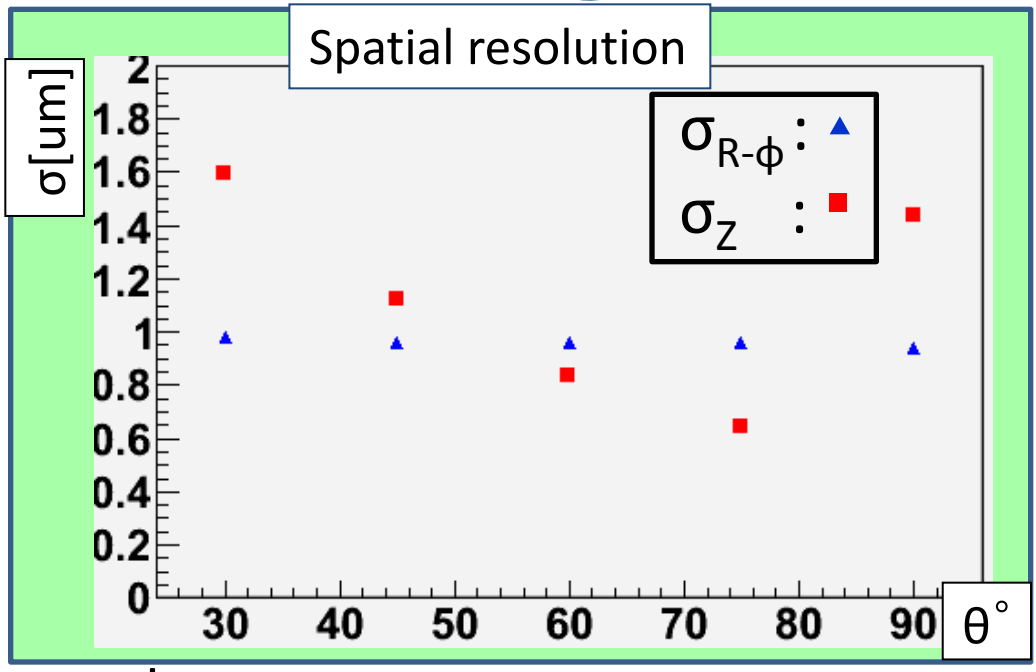
Spatial resolution

■ The θ dependency of the spatial resolution was checked.
- μ-（Momentum 100GeV)
- σ_{noise} : 50 electrons /pixel.
- Threshold : 200 electrons /pixel.



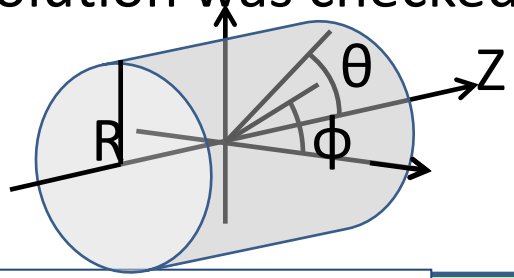
θ	σ_Z	$\sigma_{R-\phi}$
90°	1.5 um	0.94 um
75°	0.64 um	0.96 um
60°	0.83 um	0.96 um
45°	1.2 um	0.96 um
30°	1.6 um	0.98 um
LOI value	2.8 um	2.8 um



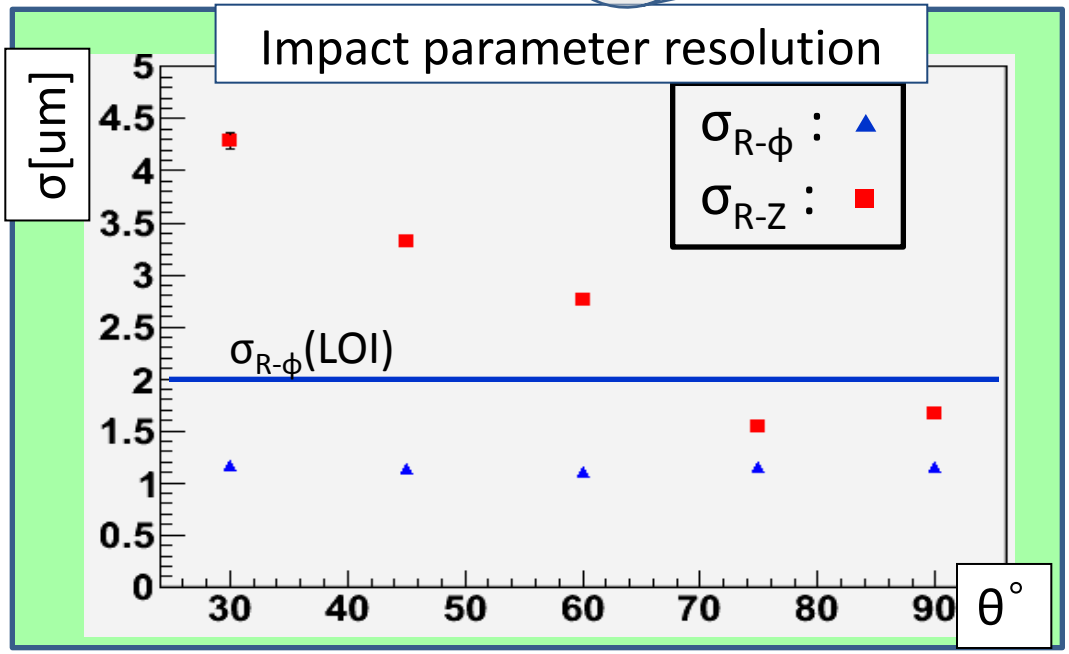
- The Z resolution is worse at forward.
- The R-ϕ resolution does not depends on θ.
- The Z resolution of the vertical track is bad.

Impact parameter resolution

- The θ dependency of the impact parameter resolution was checked.
  - μ-（Momentum 100GeV)
  - σ_{noise} : 50 electrons /pixel
  - Threshold : 200 electrons /pixel.



θ	$\sigma_{R\text{-}Z}$	$\sigma_{R\text{-}\phi}$
90°	1.7 um	1.2 um
75°	1.5 um	1.2 um
60°	2.9 um	1.1 um
45°	3.4 um	1.1 um
30°	4.3 um	1.2 um
LOI value	—	2.0 um

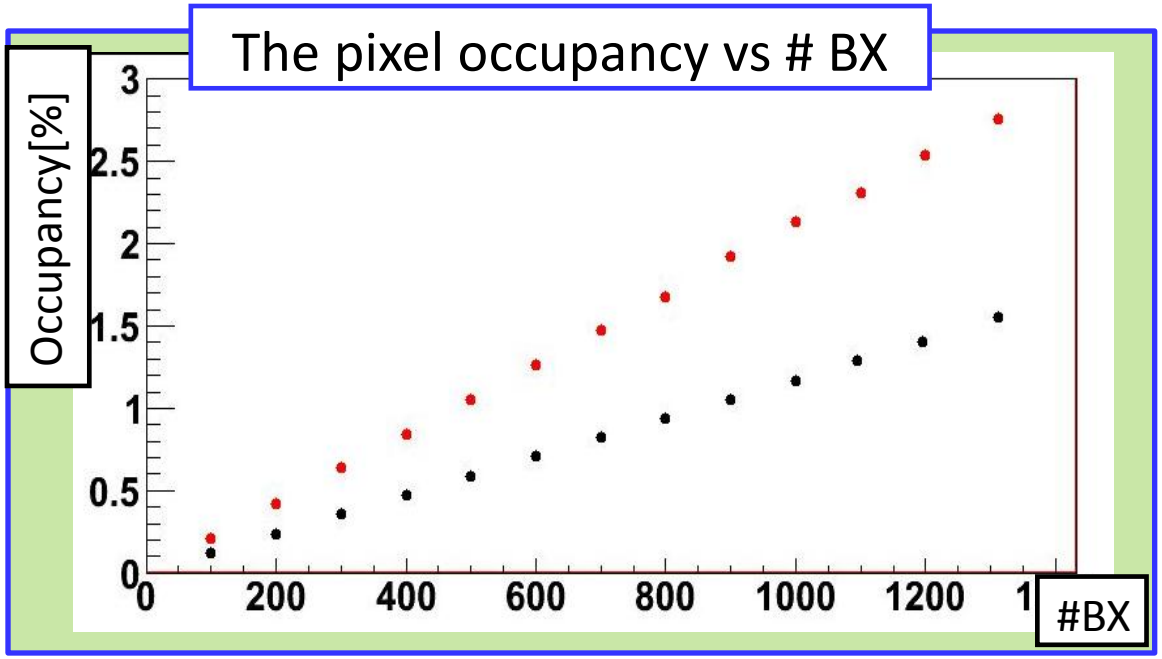


- The impact parameter resolution is roughly proportional to the spatial resolution.
- Spatial resolution and IP resolution are better than LOI value.

Pair background occupancy

- The pixel occupancy of the FPCCD VTX innermost, second layer was checked.

Background conditions
— Generator : Guinea Pig
— Beam parameter : SB2009w/TF
— CM energy : 500 GeV
— Range cut : 100 um



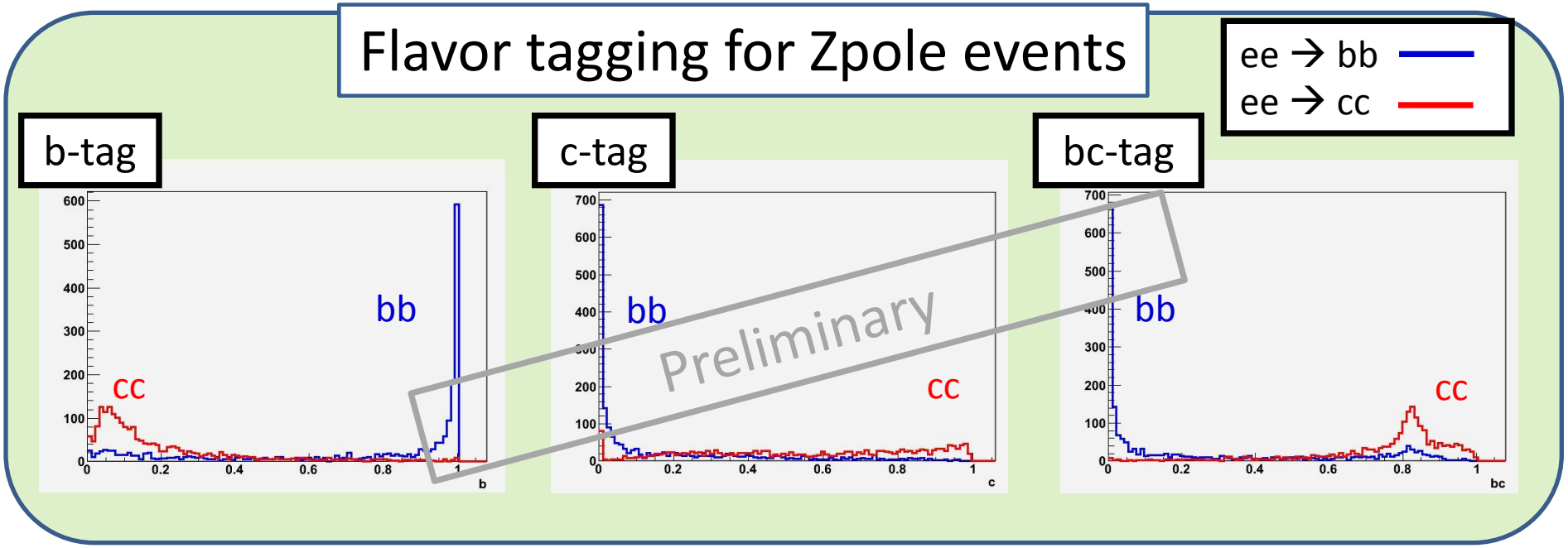
Pixel occupancy for 1train(1312 BX)

- Innermost layer : 2.76%
- Second layer : 1.55%

Very low occupancy, compared with conventional CCD.
(25um pixel >> 10%)

Flavor tagging

- Estimation of the flavor tagging performance was started.
  - $e^+e^- \rightarrow b\bar{b}$, $e^+e^- \rightarrow c\bar{c}$ event
  - CM energy : 91 GeV
  - 1000 events



- Efficiency and purity is being checked.

Plan

- Check the IP resolution and momentum resolution with various momentum (1 ~ 200 GeV) μ- to compare with LOI.

- Check the flavor tagging performance.