

Update simulation results

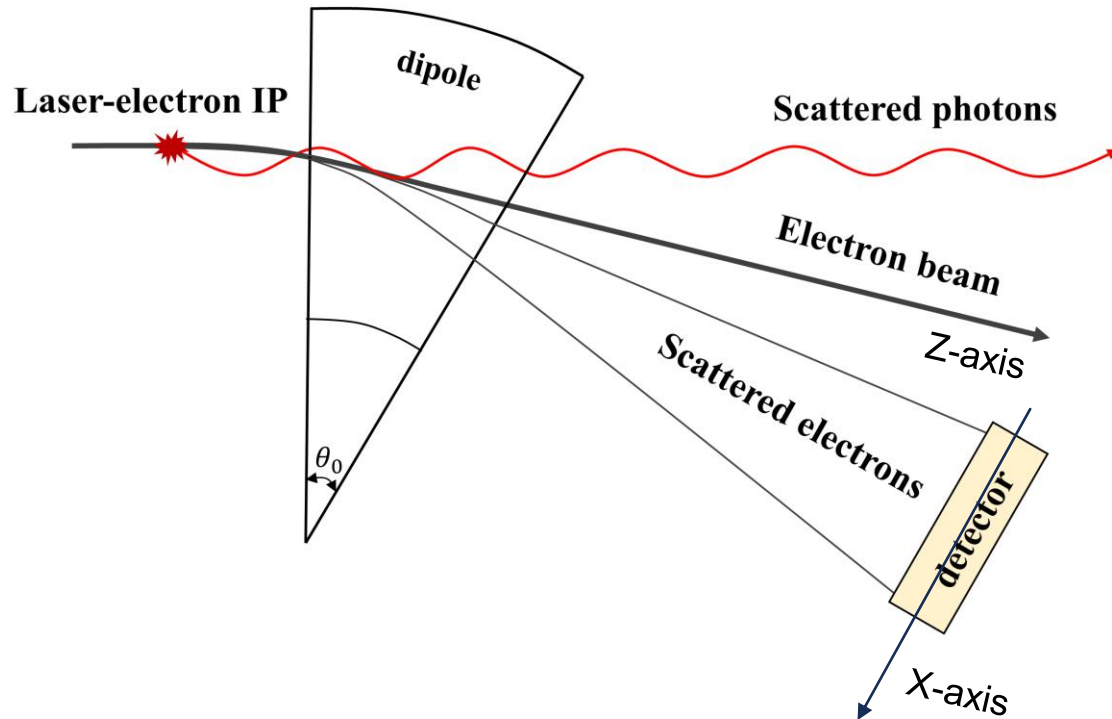
陈姗红

2022.05.17

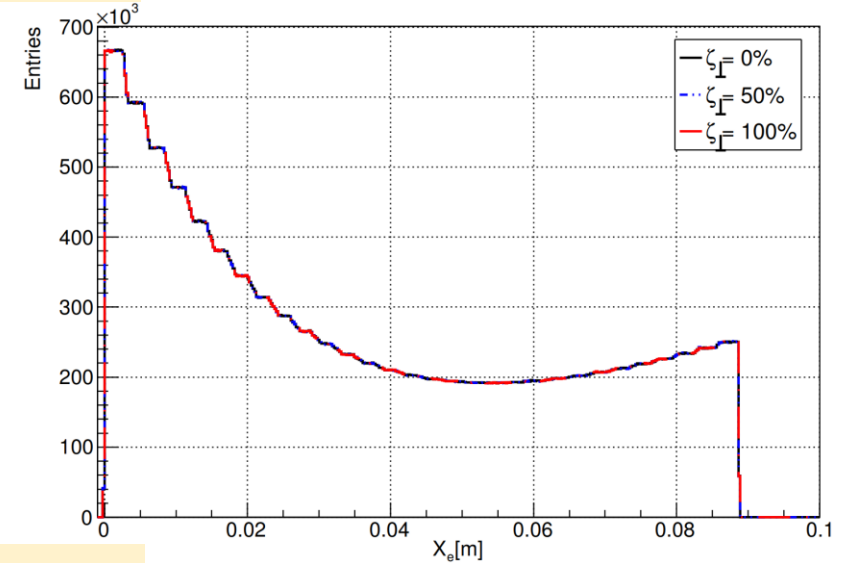
Review...

Compton Polarimeter for CEPC (Z pole)

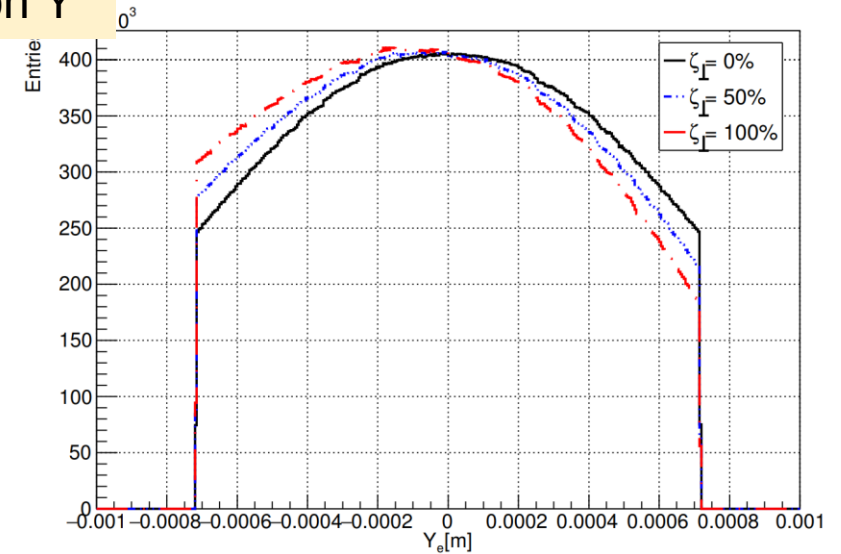
- Layout



Projection X

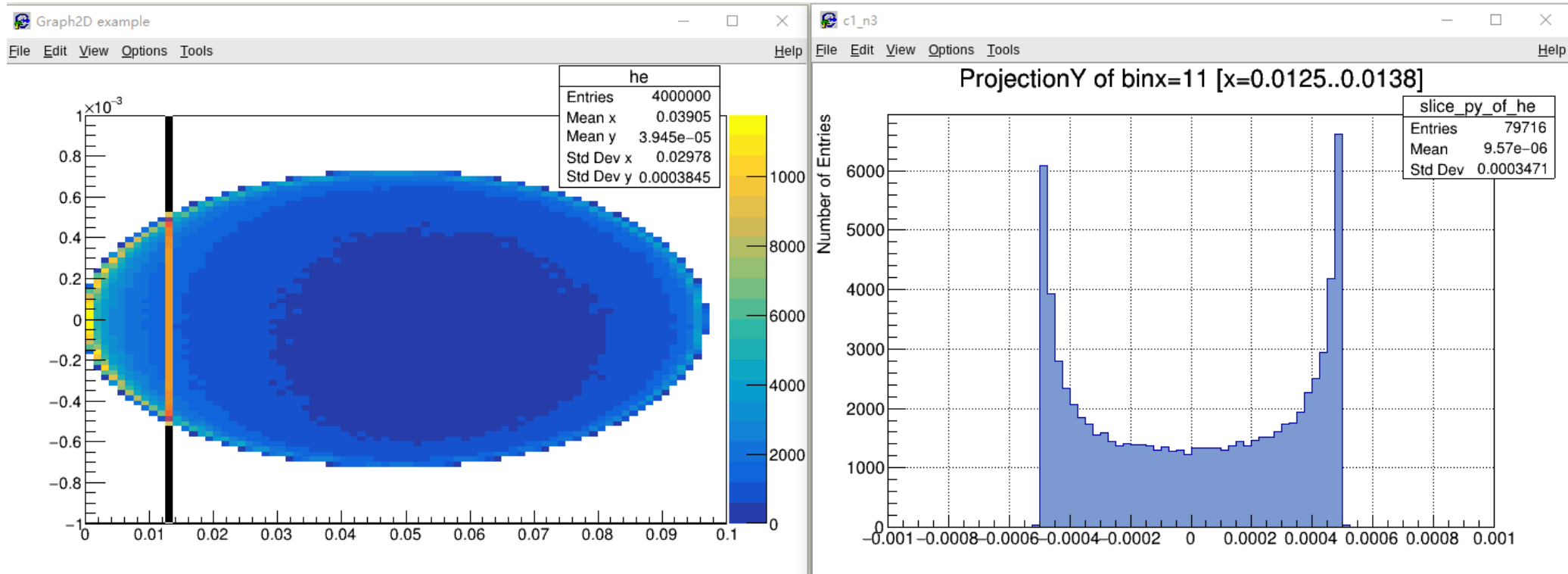


Projection Y



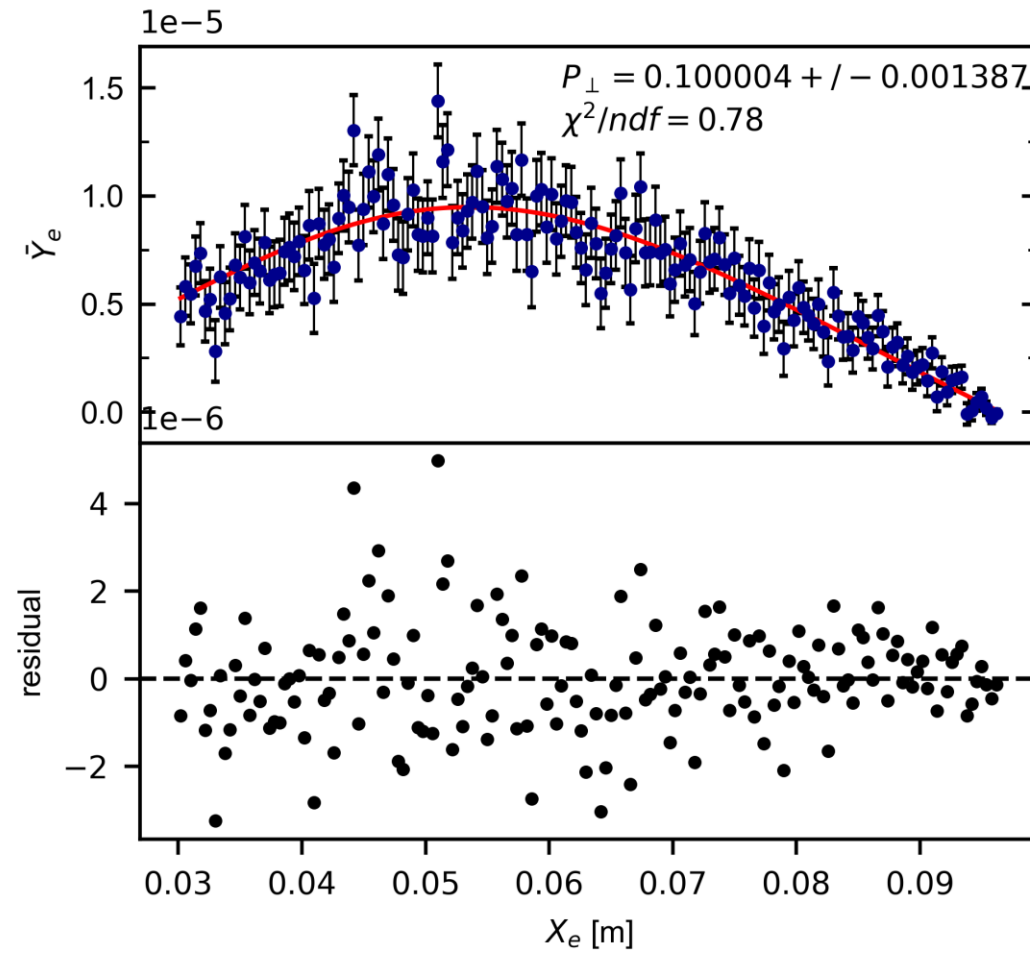
Review...

- principle



Review...

- Monte-Carlo simulation & Fit



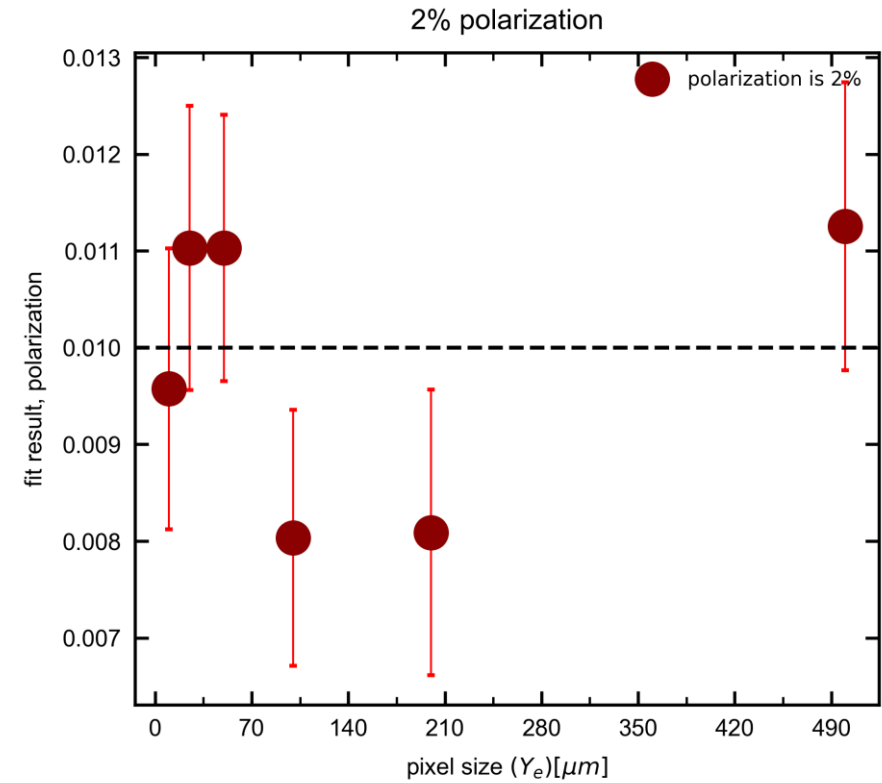
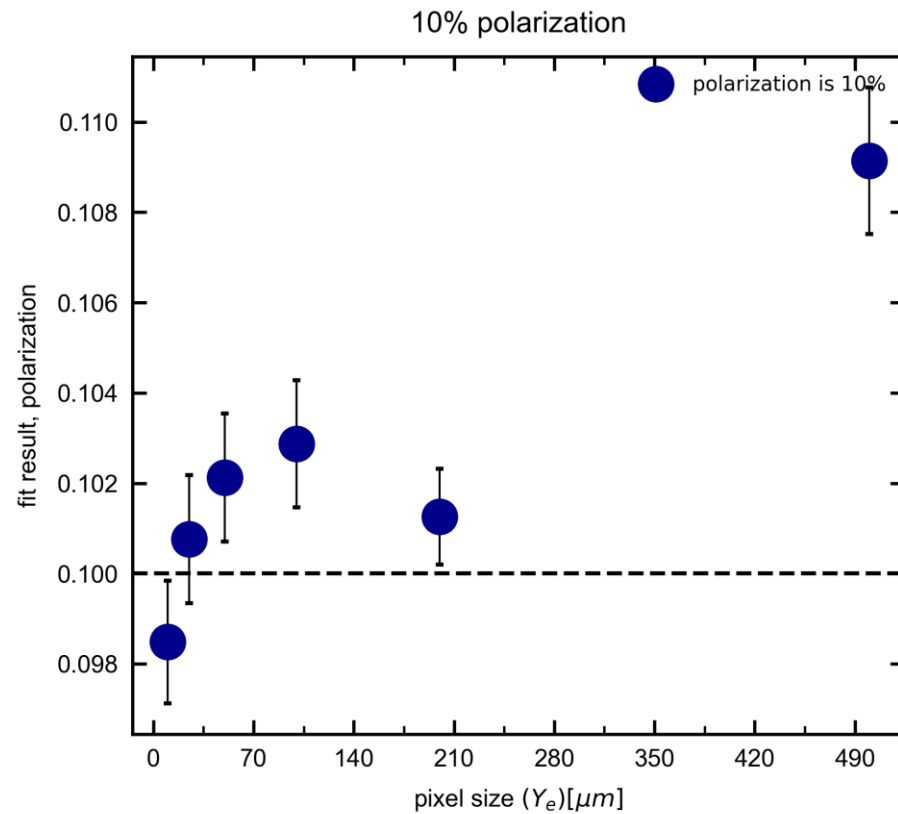
三个问题:

1. 同 entries, 同pixel size, 不同的 polarization level.
2. 同 entries, 同polarization level, 不同的pixel size.
3. 同polarization level, 同pixel size, 不同 entries.

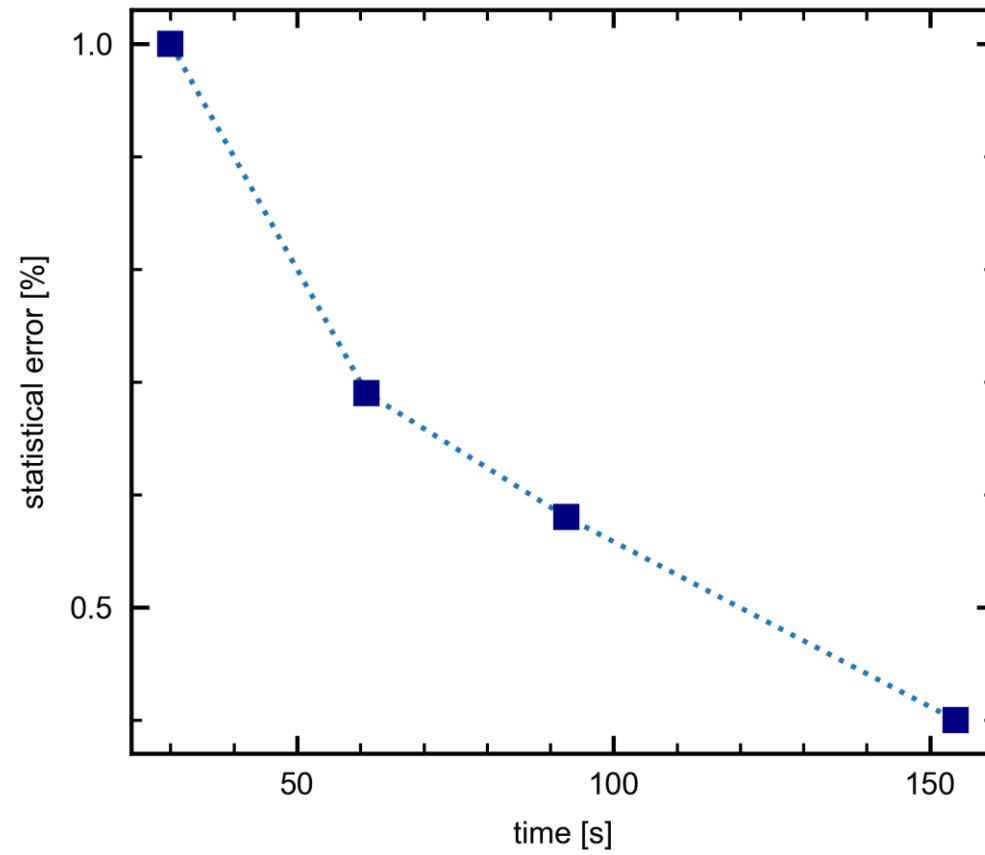
Detector pixel size

pixel y: $10\mu m, 25\mu m, 50\mu m, 100\mu m, 200\mu m, 500\mu m$

pixel x: $200\mu m$



Statistic error

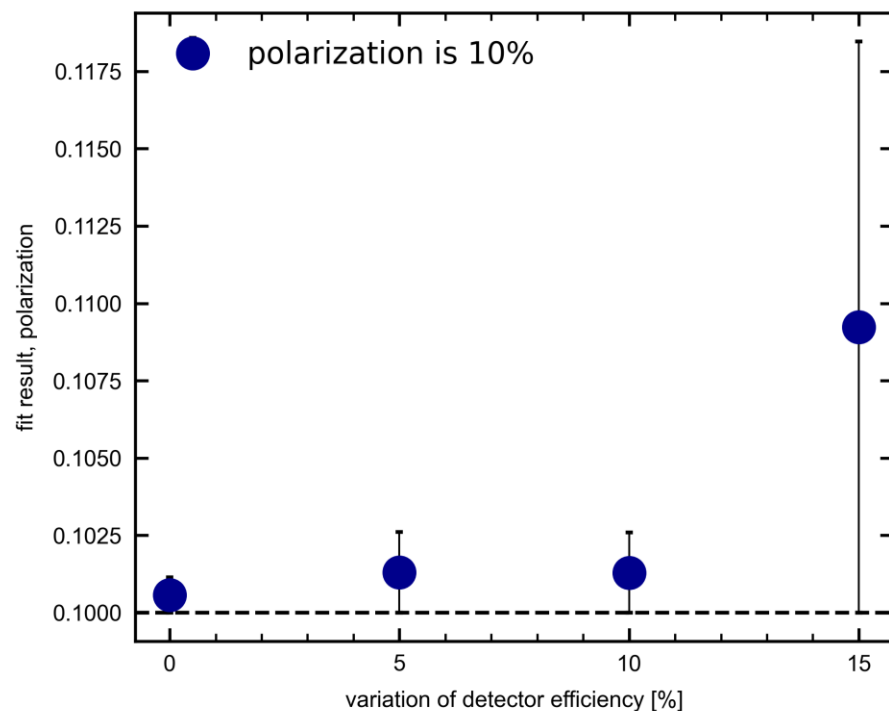


Study the detector linearity

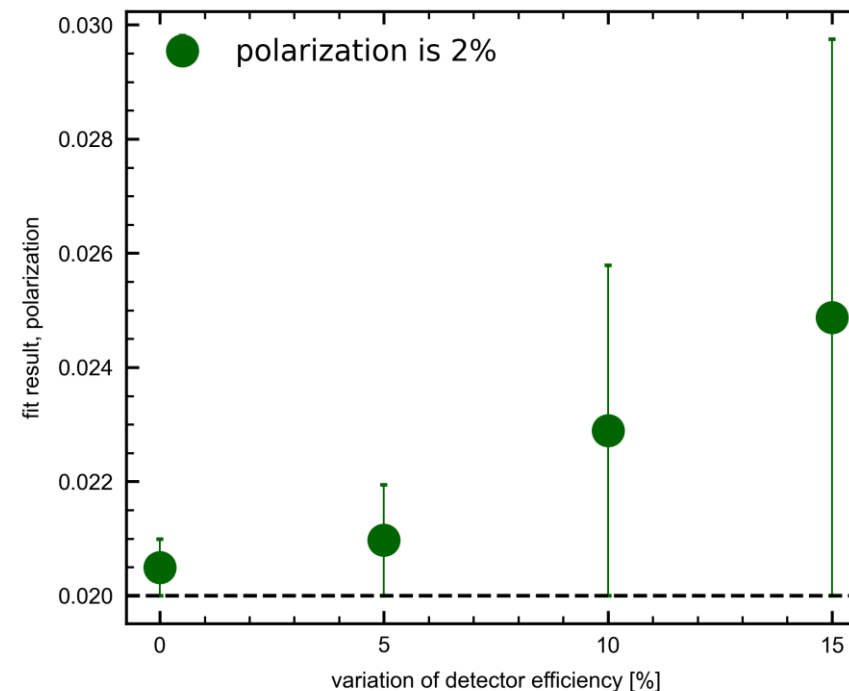
- The variation of the detector efficiency would influence the performance position asymmetry, is thought to be a decrease in detector counts.

$$N' = N(0.8 - \delta U(0, 1))$$

N' is the updated counts considering the jitter, N is the original number of counts, $U(0, 1)$ is the uniform distribution.



$P_{\perp} = 10\%$ ($400\mu m \times 25\mu m$)



$P_{\perp} = 2\%$ ($200\mu m \times 25\mu m$)

接下来准备进行的工作：

- 束流能量测量工作：
 - W/Z mode的模拟分析；
 - 模型中加入能散
 - Center-of-mass work...
- 极化测量：lattice-related systematic errors

Thank you!