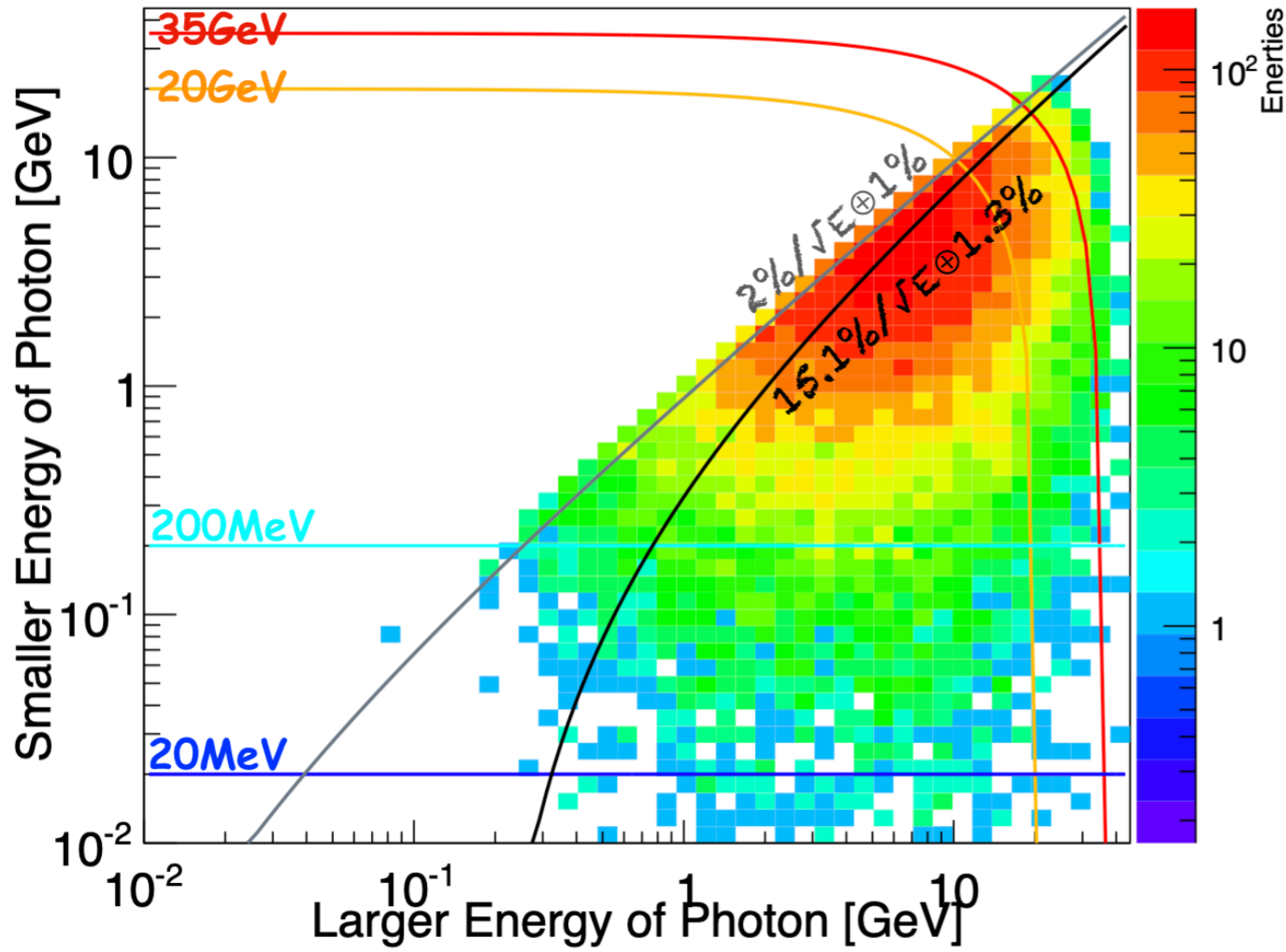
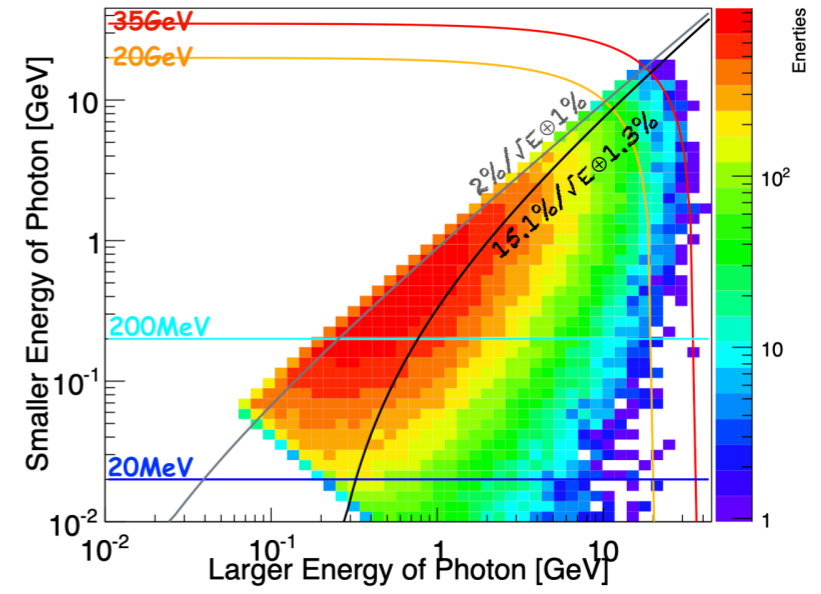


Reconstruction of π^0

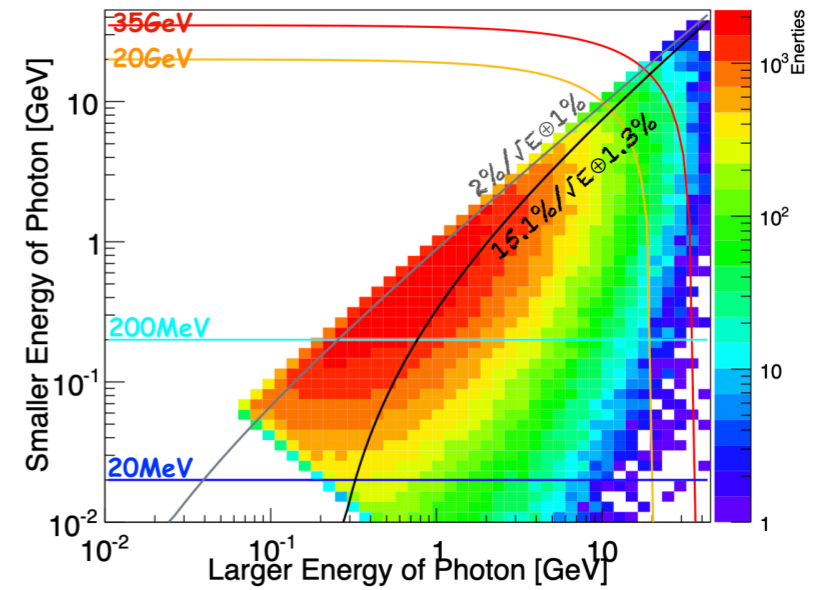
Z \rightarrow $\tau\tau$



Z \rightarrow qq



qqH \rightarrow X



LowE ~ 200MeV & HighE ~ 20GeV

| | Z-> $\tau\tau$ | Z->qq | qqH->X |
|--|----------------|-------|--------|
| Statistics | 20000 | 20000 | 21990 |
| $E_\gamma < 200\text{MeV}$ | 7.5% | 44.7% | 42.1% |
| $E_{\pi^0} > 20\text{GeV}$ | 14.9% | 0.4% | 0.7% |
| Confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 23.3% | 57.8% | 55.7% |
| Confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 3.9% | 9.5% | 9.1% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ | 77.9% | 54.8% | 57.2% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ without confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 56.8% | 23.6% | 25.5% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ without confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 70.4% | 41.6% | 44.0% |

LowE ~ 20MeV & HighE ~ 20GeV

| | Z-> $\tau\tau$ | Z->qq | qqH->X |
|---|----------------|-------|--------|
| Statistics | 20000 | 20000 | 21990 |
| $E_\gamma < 20\text{MeV}$ | 0.7% | 2.4% | 2.3% |
| $E_{\pi^0} > 20\text{GeV}$ | 14.9% | 0.4% | 0.7% |
| Confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 23.3% | 57.8% | 55.7% |
| Confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 3.9% | 9.5% | 9.1% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ | 84.5% | 97.2% | 97.0% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ without confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 62.9% | 39.6% | 41.5% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 20\text{GeV}$ without confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 81.0% | 87.8% | 87.9% |

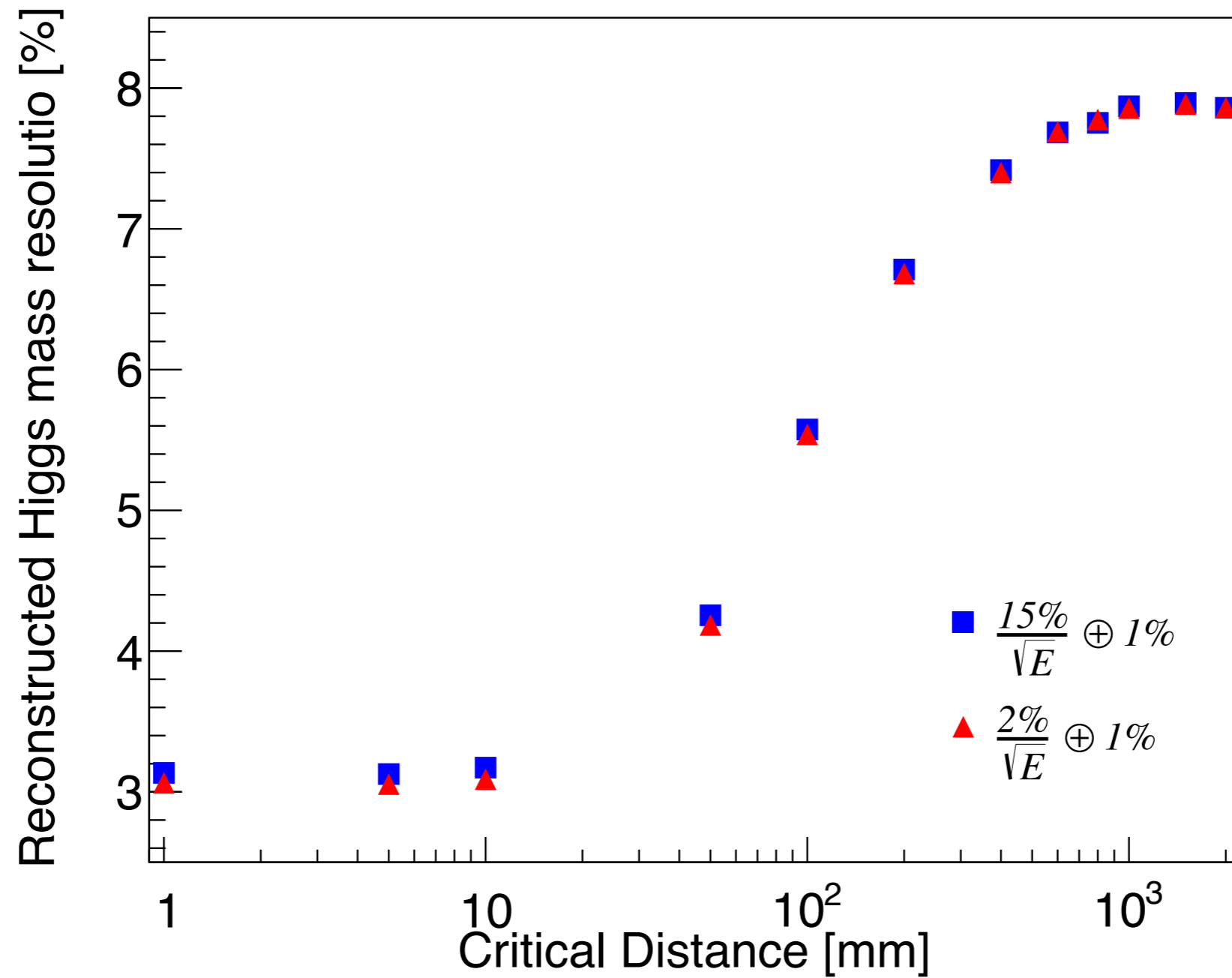
LowE ~ 200MeV & HighE ~ 35GeV

| | Z-> $\tau\tau$ | Z->qq | qqH->X |
|--|----------------|-------|--------|
| Statistics | 20000 | 20000 | 21990 |
| $E_\gamma < 200\text{MeV}$ | 7.5% | 44.7% | 42.1% |
| $E_{\pi^0} > 35\text{GeV}$ | 1.8% | 0.02% | 0.1% |
| Confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 23.3% | 57.8% | 55.7% |
| Confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 3.9% | 9.5% | 9.1% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ | 90.7% | 55.2% | 57.8% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ without confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 68.1% | 23.9% | 26.0% |
| $E_\gamma > 200\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ without confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 82.6% | 42.0% | 44.6% |

LowE ~ 20MeV & HighE ~ 35GeV

| | Z-> $\tau\tau$ | Z->qq | qqH->X |
|---|----------------|-------|--------|
| Statistics | 20000 | 20000 | 21990 |
| $E_\gamma < 20\text{MeV}$ | 0.7% | 2.4% | 2.3% |
| $E_{\pi^0} > 35\text{GeV}$ | 1.8% | 0.02% | 0.1% |
| Confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 23.3% | 57.8% | 55.7% |
| Confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 3.9% | 9.5% | 9.1% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ | 97.5% | 97.6% | 97.6% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ without confusion @ $15.1\%/\sqrt{E} \oplus 1.3\%$ | 74.4% | 39.9% | 42.0% |
| $E_\gamma > 20\text{MeV} \ \& \ E_{\pi^0} < 35\text{GeV}$ without confusion @ $2\%/\sqrt{E} \oplus 1\%$ | 93.7% | 88.2% | 88.5% |

Higgs mass resolution by fast simulation



Simplified Digitization

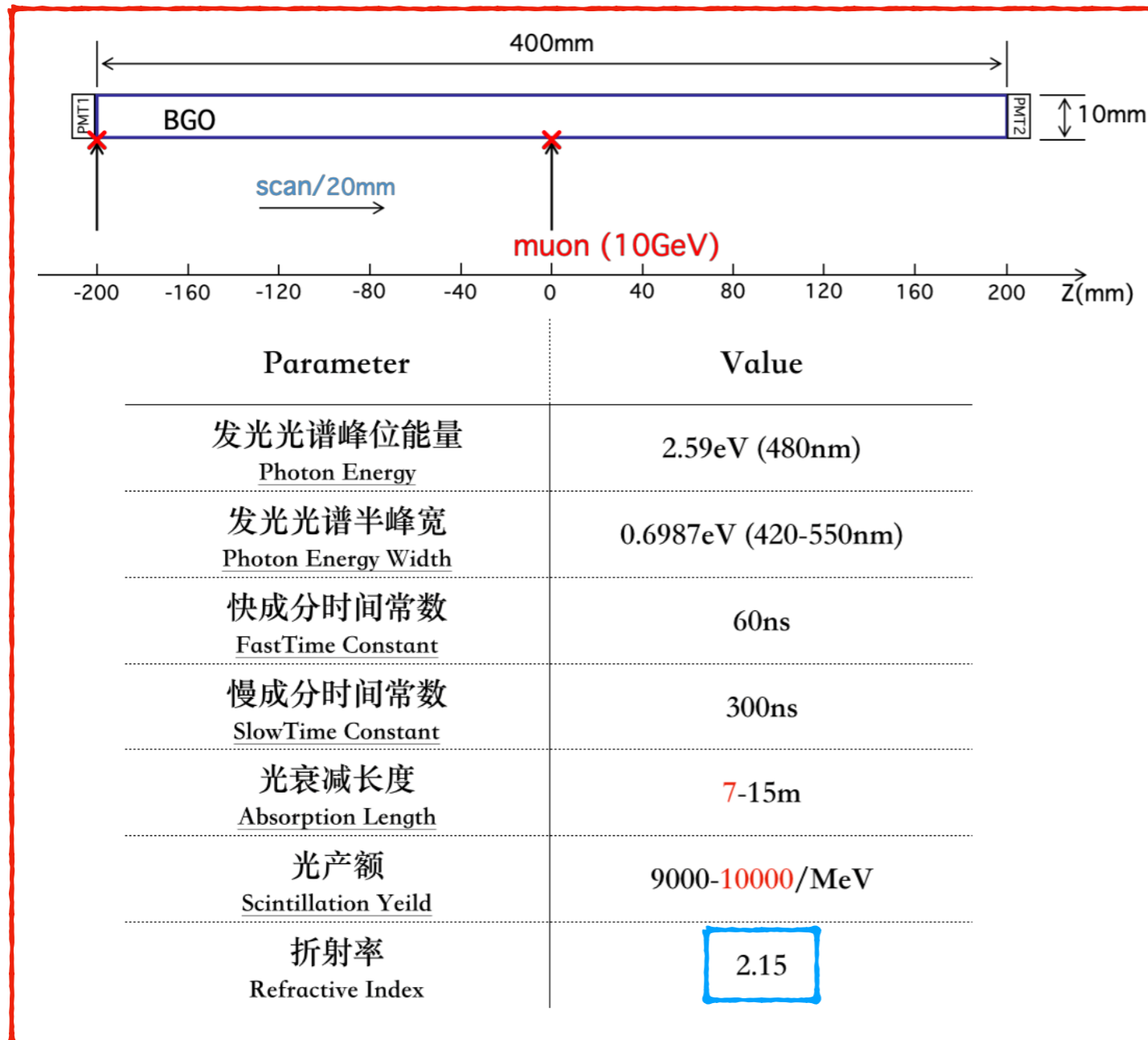
$$\sigma_t = \sigma_{\text{intrinsic}} \oplus \sigma_{\text{PMT}} \oplus \sigma_{\text{electronics}} \oplus \sigma_{\text{time-walk}}$$



30ps

30ps

10ps

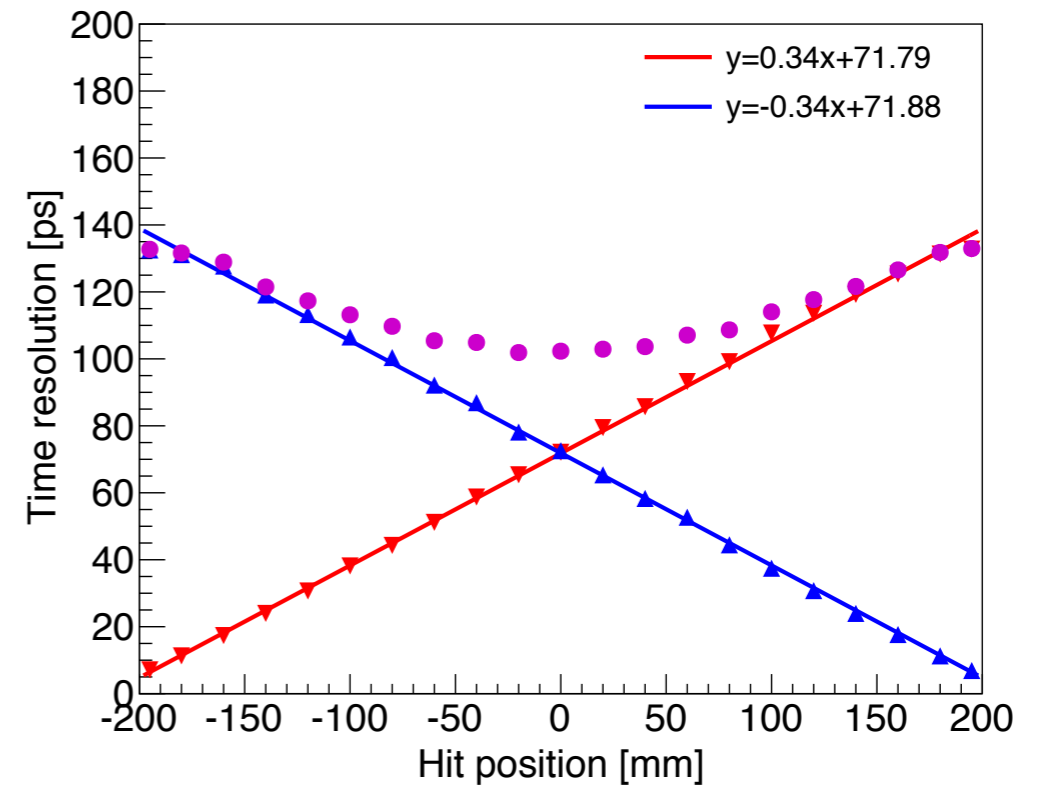
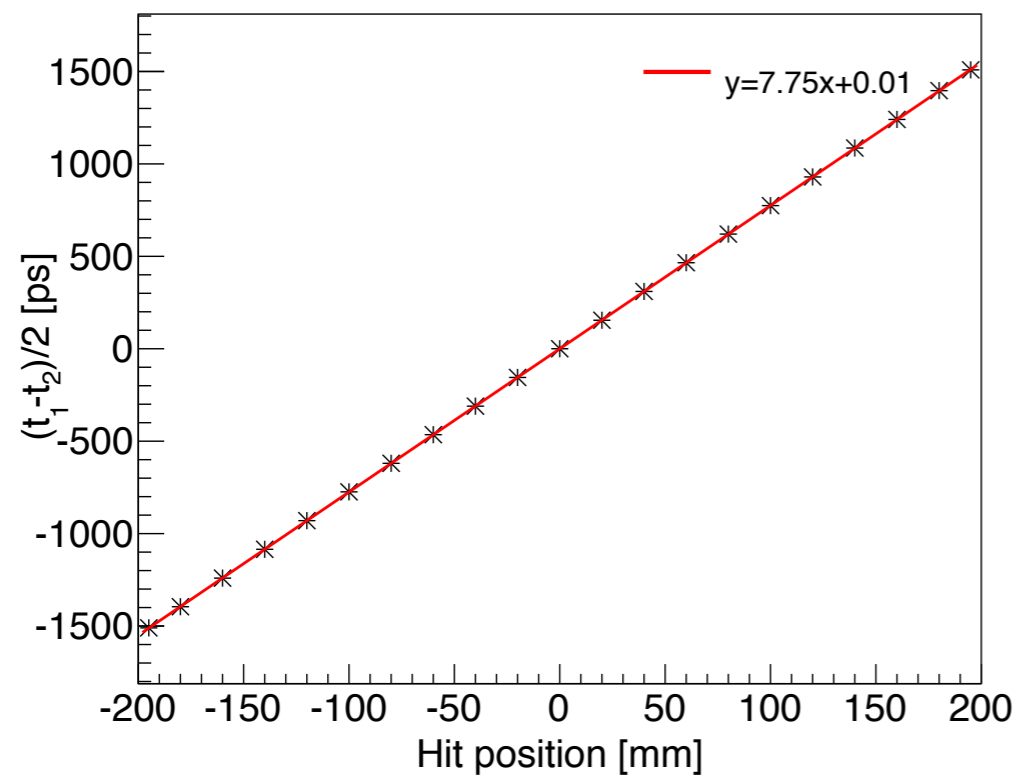
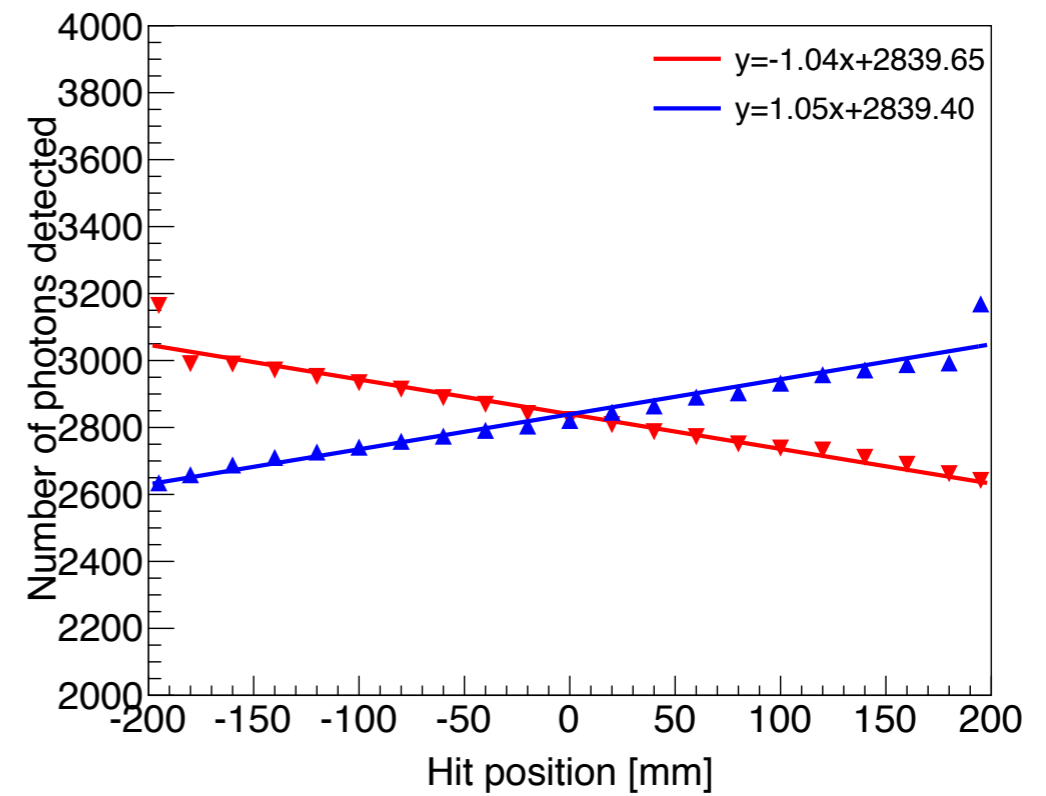
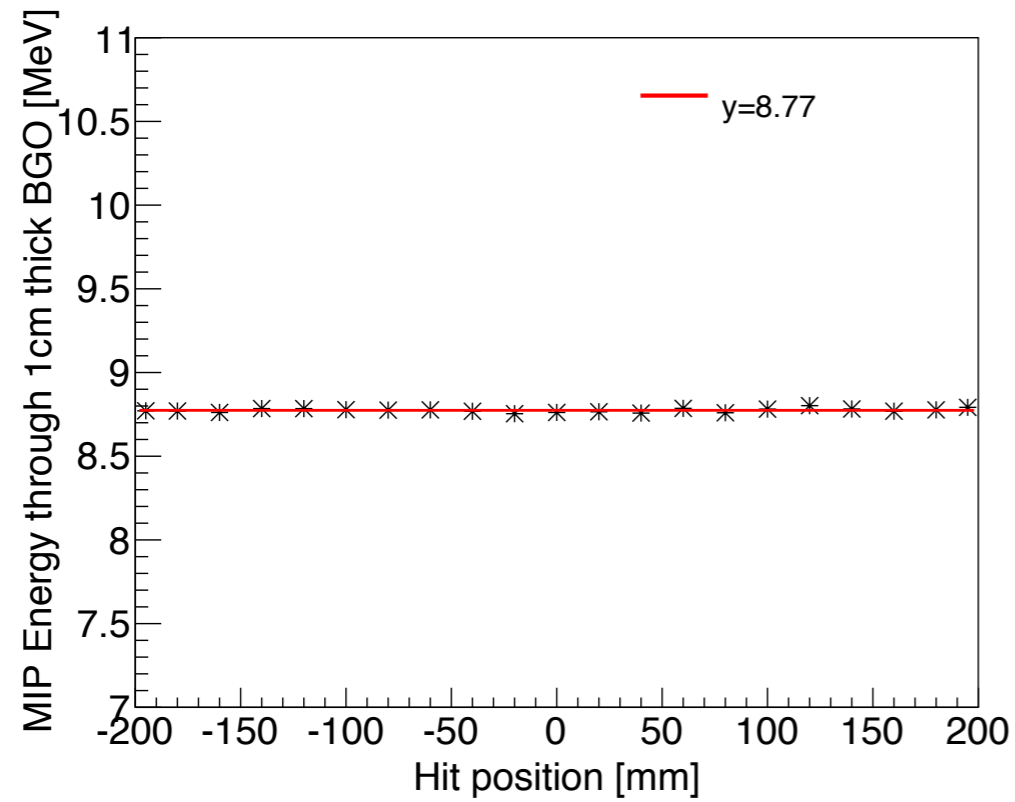


Also the information of Energy

- MIP
- number of photons detected by 2 PMTs

表面反射率: 0.99

Simplified Digitization



Simplified Digitization

10GeV $\pi^0 \rightarrow \gamma\gamma$

