

# Fast simulation sample of 3Tesla

Gang LI

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# Basic information

- Charged tracks:

- ◆  $a = 0.45E-5$

- ◆  $b = 1.0E-3$

- ◆  $B = 3T$

$$\sigma_{1/p_T} = a \oplus \frac{b}{B \cdot p_T \cdot \sin \theta}$$

- Photons :

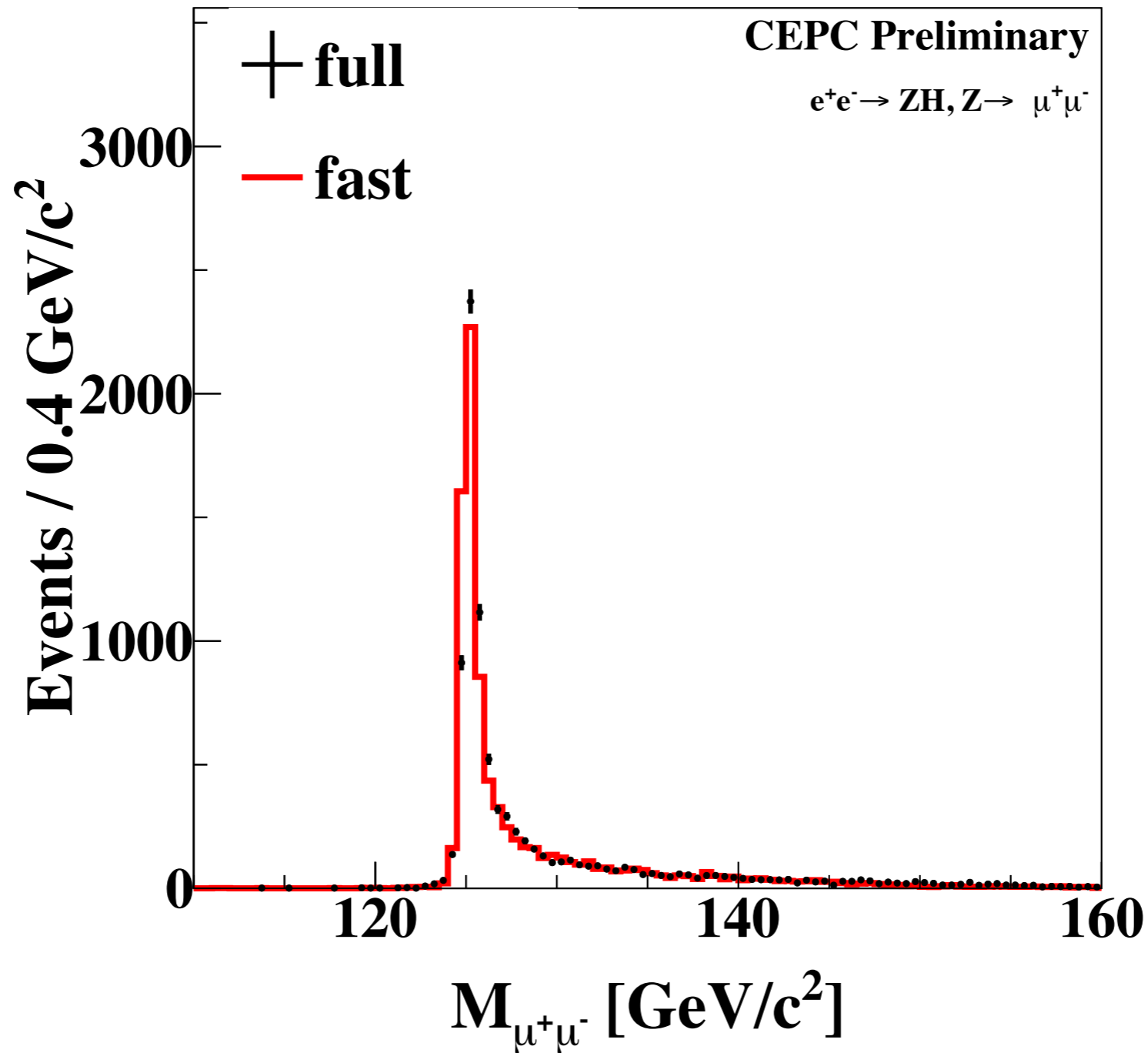
$$\Delta E_\gamma = 16\% / \sqrt{E(\text{GeV})}$$

- Neutral hadrons:

$$\Delta E_{\text{neutral hadrons}} = 50\% / \sqrt{E(\text{GeV})}$$

- Parameters tuned according to full simulation

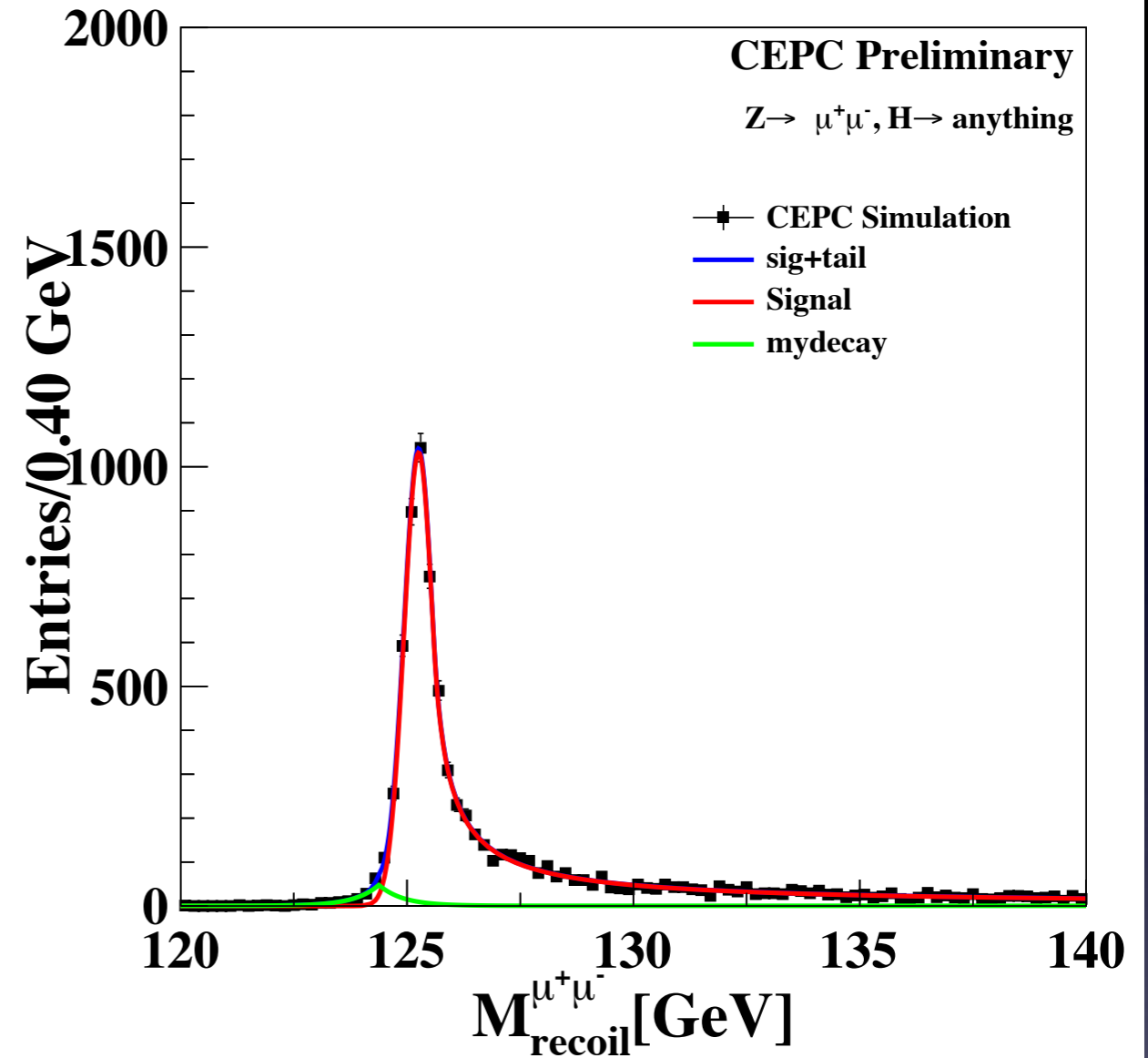
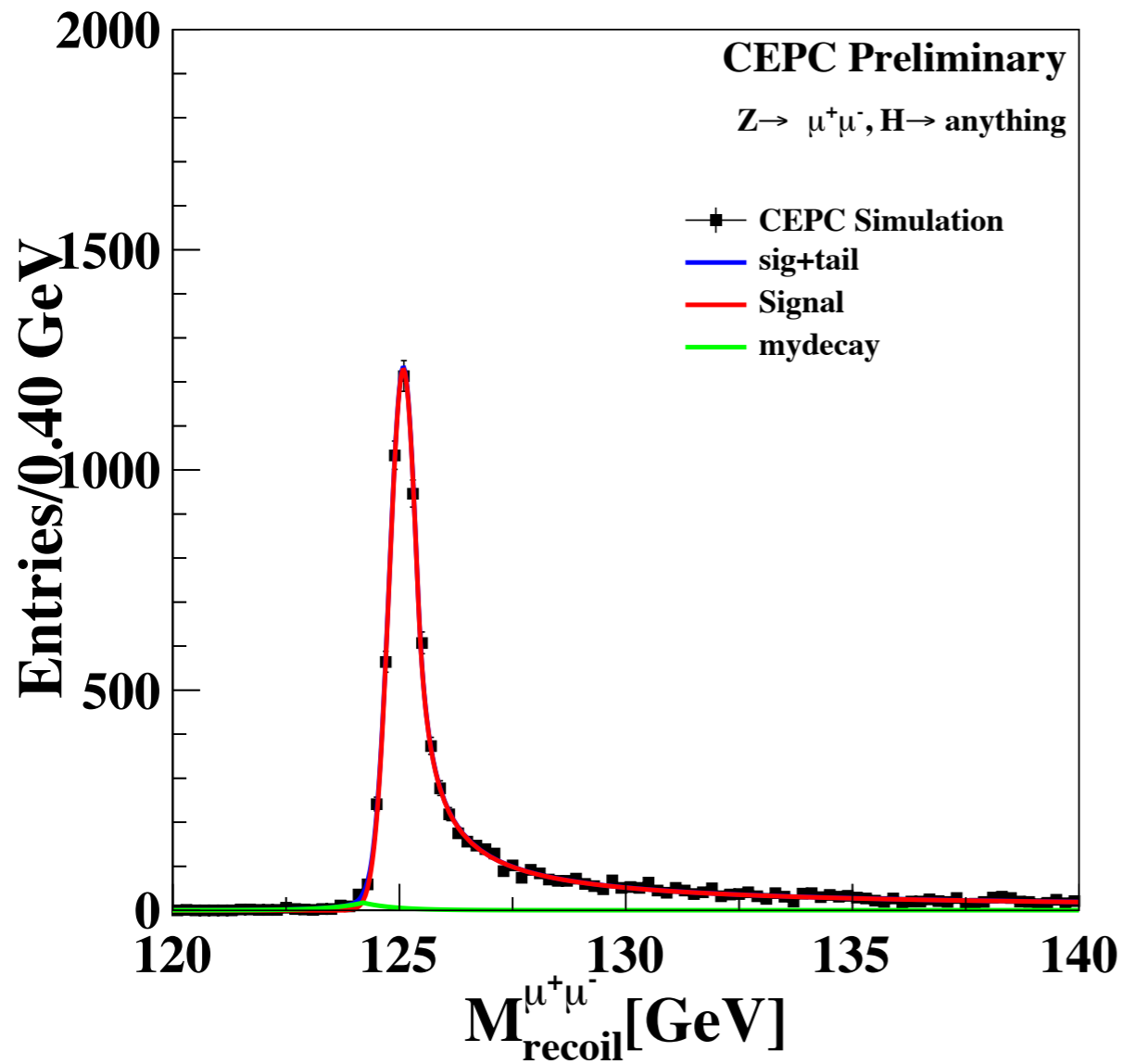
- Flavor tagging and photon conversion not covered



~10k events each

Eff.: 97%, 91% for fast and full

Pid not optimized for new version



With BaiYu's model  
 Resolutions (sigma)  
 v1:v4 = 312 : 322 (MeV): consistent

- $E_{cm}=240\text{GeV}$ , Int L = 5/ab

- Samples can be found at

/cefs/data/FastSim/CEPC240/v02

- \* Higgs signal and

- \* 4fermions background

- ❖ 2fermions will be processed as request

```
.
|-- 4fermions
|   |-- E240.Psw_l.e0.p0.whizard195
|   |-- E240.Psw_sl.e0.p0.whizard195
|   |-- E240.Psze_l.e0.p0.whizard195
|   |-- E240.Psze_sl.e0.p0.whizard195
|   |-- E240.Pszeorsw_l.e0.p0.whizard195
|   |-- E240.Psznu_l.e0.p0.whizard195
|   |-- E240.Psznu_sl.e0.p0.whizard195
|   |-- E240.Pww_h.e0.p0.whizard195
|   |-- E240.Pww_l.e0.p0.whizard195
|   |-- E240.Pww_sl.e0.p0.whizard195
|   |-- E240.Pzz_h.e0.p0.whizard195
|   |-- E240.Pzz_l.e0.p0.whizard195
|   |-- E240.Pzz_sl.e0.p0.whizard195
|   |-- E240.Pzzbosons.e0.p0.whizard195
|   |-- E240.Pzzorww_h.e0.p0.whizard195
|   |-- E240.Pzzorww_l.e0.p0.whizard195
|-- higgs
|   |-- E240.Pe1e1h_X.e0.p0.whizard195
|   |-- E240.Pe2e2h_X.e0.p0.whizard195
|   |-- E240.Pe3e3h_X.e0.p0.whizard195
|   |-- E240.Pnnh_X.e0.p0.whizard195
|   |-- E240.Pqqh_X.e0.p0.whizard195
|-- jobs
|   |-- all_stdhep_files.txt
|   |-- combined.py
|   |-- combined.py~
|   |-- init.xml
|   |-- init.xml~
|   |-- pbsjob
|-- work
|   |-- 4fermions
|   |-- higgs
```

## Only 3 Collections

Used them exactly same as full simulation

COLLECTION NAME	COLLECTION TYPE	NUMBER OF ELEMENTS
ArborPFOs	ReconstructedParticle	76
MCParticle	MCParticle	175
RecoMCTruthLink	LCRelation	76
dummyParticles	ReconstructedParticle	76

Take `/cefs/data/FastSim/CEPC240/v02/jobs/e2e2h.xml` as an example

Please try this sample and feed back,  
We need several fast iterations.