Updates & toward CDR

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Reconstruction of physics objects at the Circular Electron Positron Collider with Arbor

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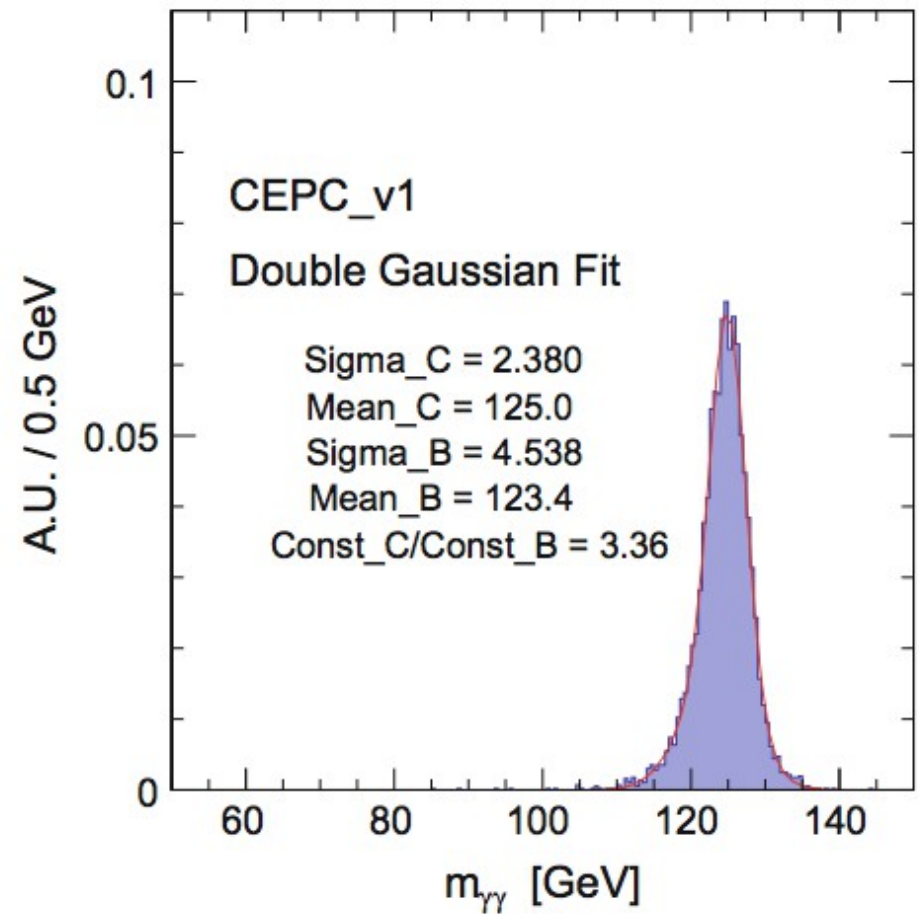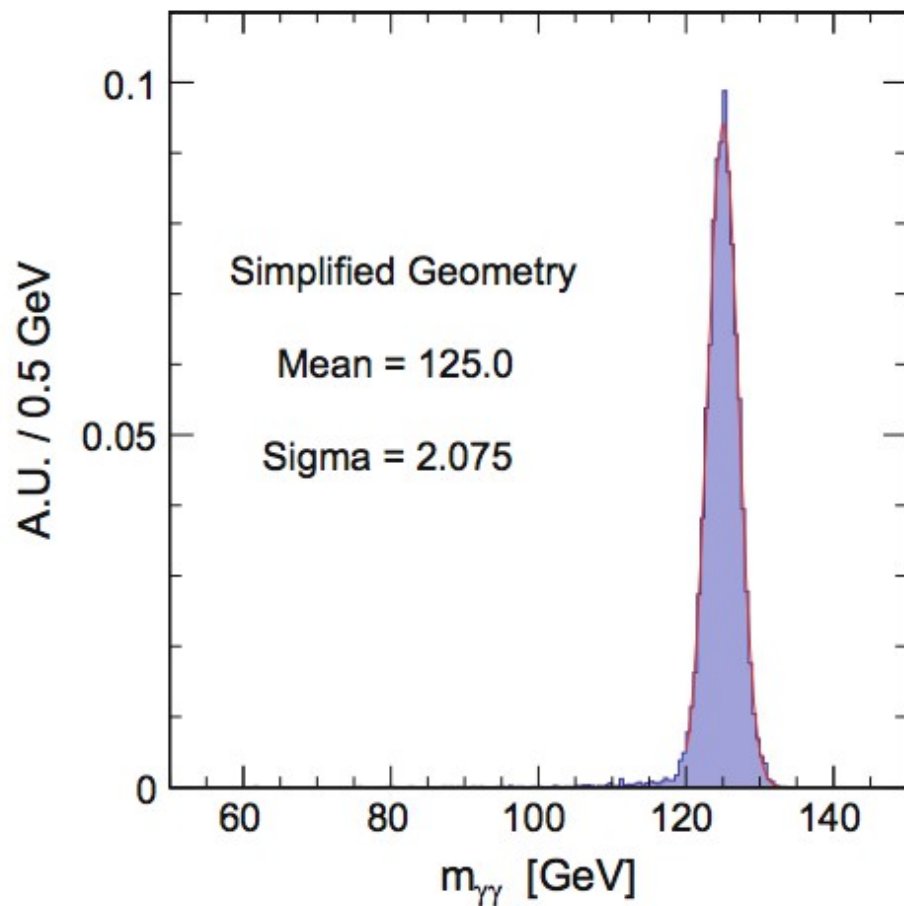Recommend this article
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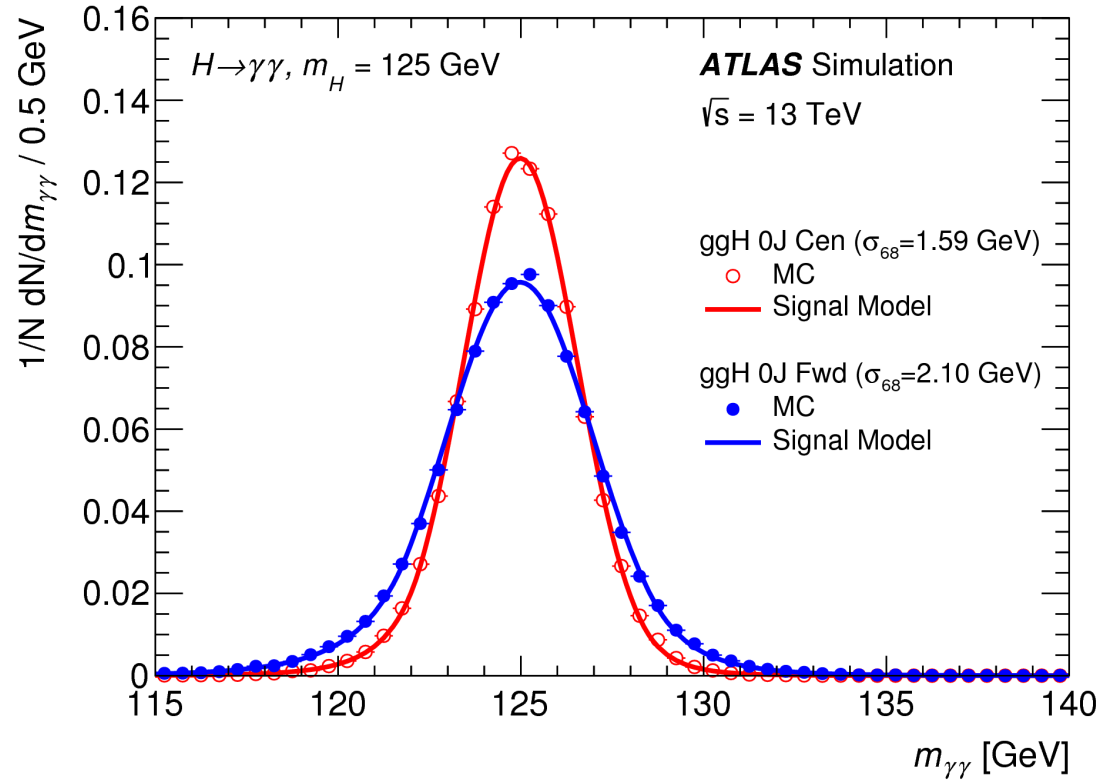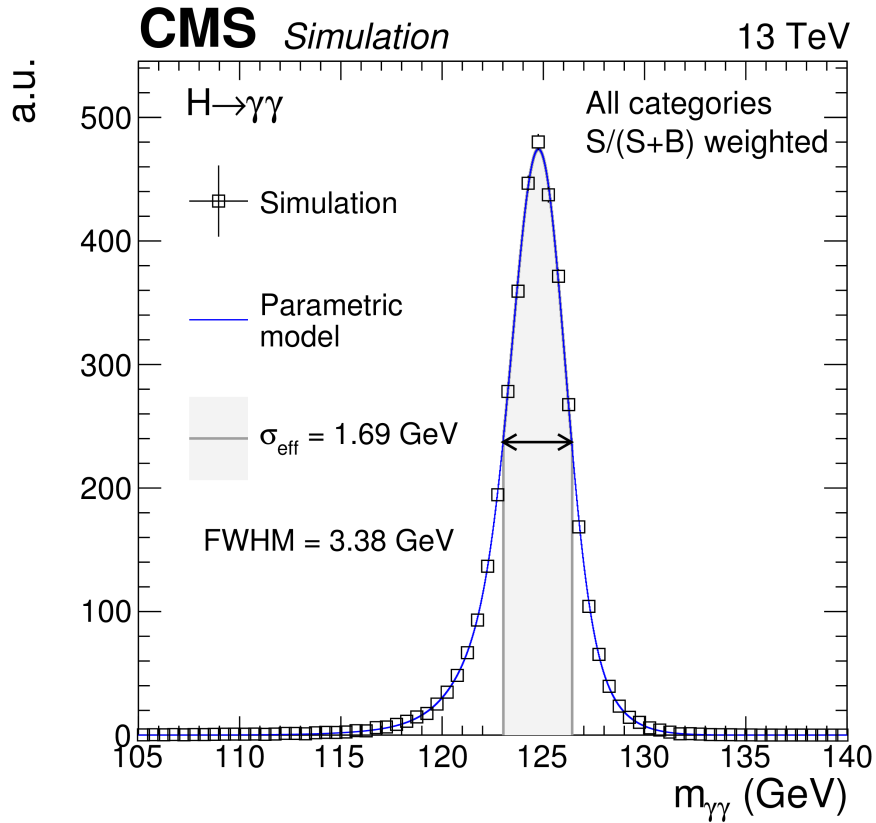
Inclusive Performance
At Object level:

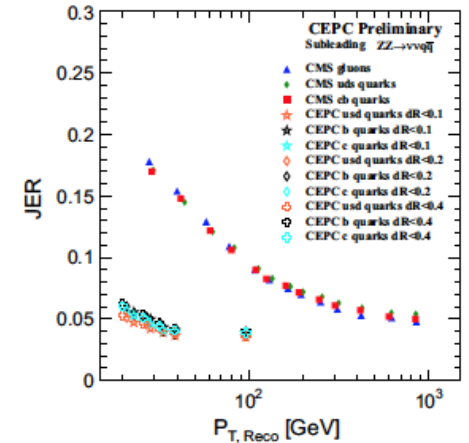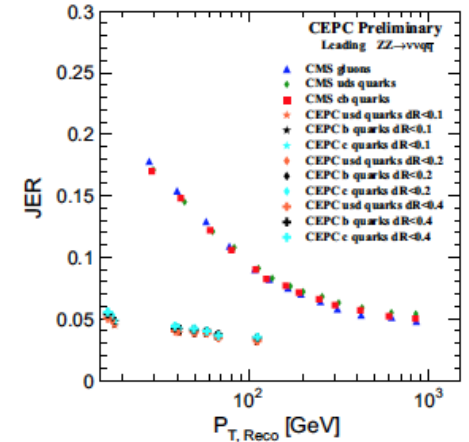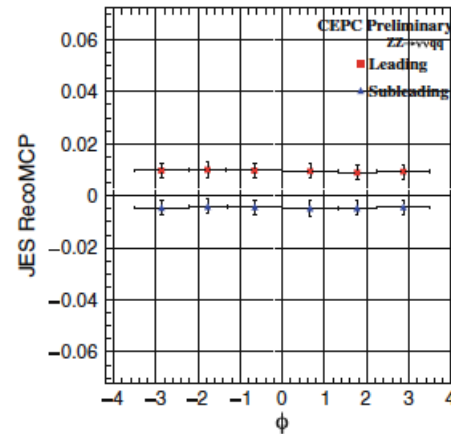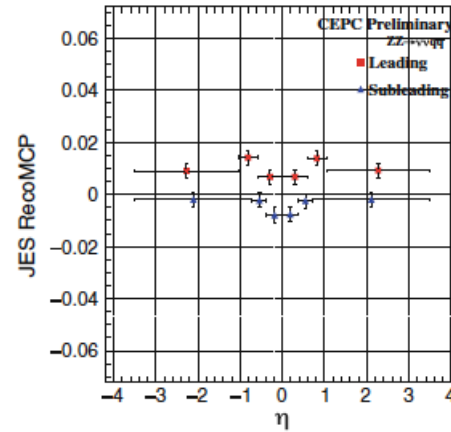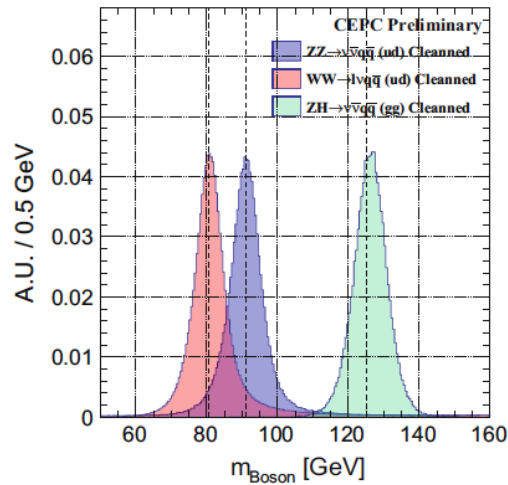**Lepton
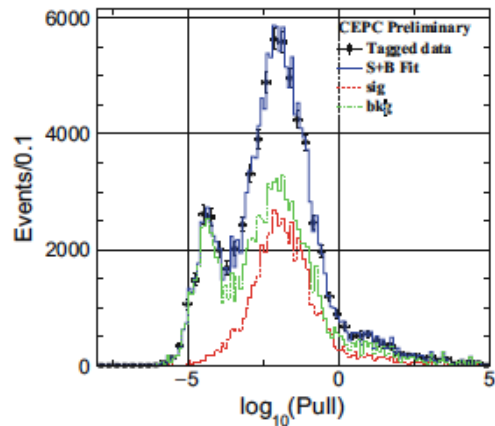Photon
Kaon
Tau
Jet
Jet Flavor**
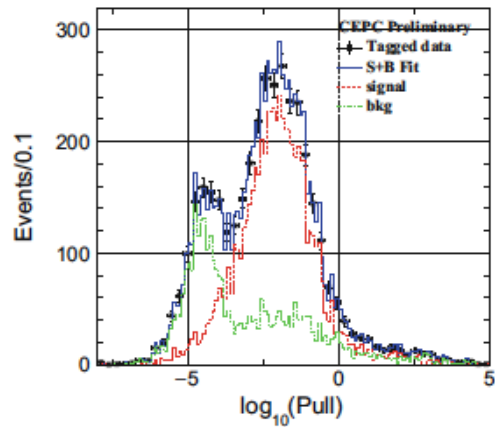
At H->gammagamma

Sigma = 2- 3 GeV

At H->gammagamma

Sigma = 1.6 – 2.1 GeV

PFA Oriented: good tau/jet/lepton

About Photon energy resolution

- H->gammagamma is one of the benchmark but not the most important Higgs property measurements at the CEPC

- Limited by the sampling fraction, the H->gammagamma resolution is 20~30% worse than the LHC experiments. However, the high granularity ECAL leads to a successful reconstruction of all physics objects,thus is VALID, and suitable for the CEPC program

- The investigation of better photon energy resolution, Software wise Or Hardware oriented, is an interesting & potentially influential study

Benchmark analysis: mumuH
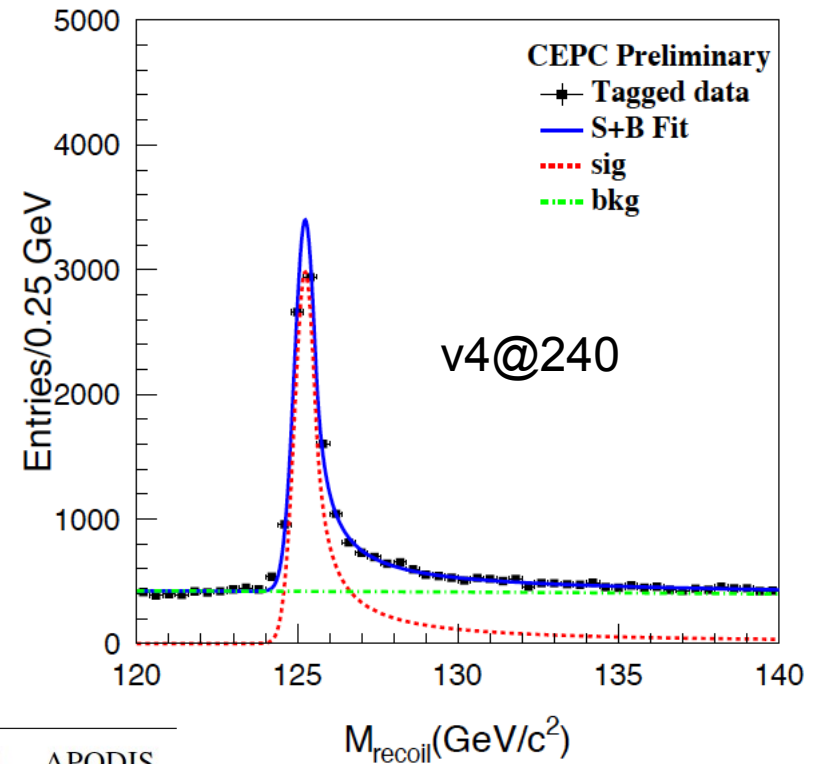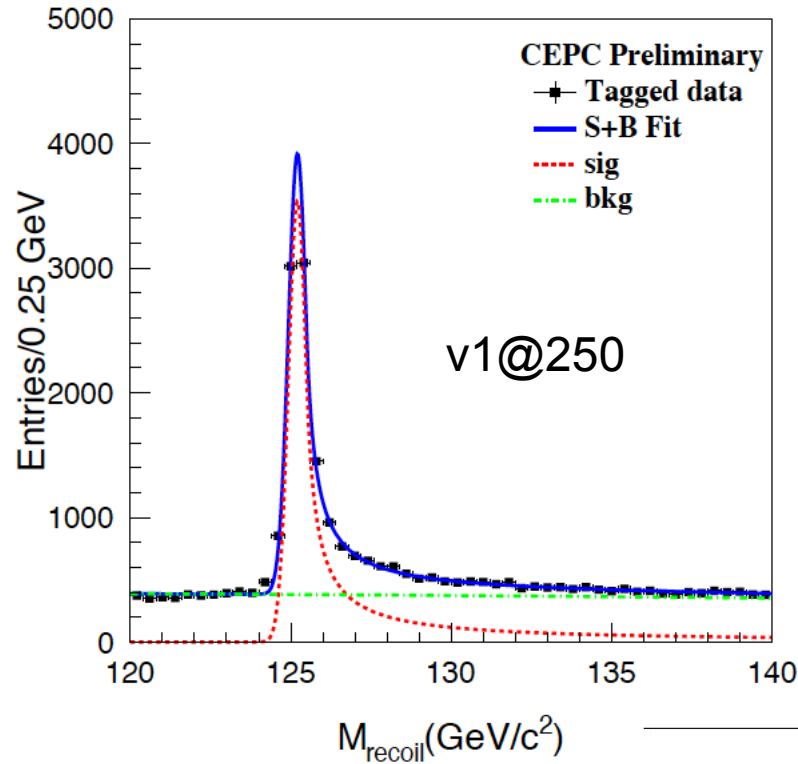
	CEPC v_1	APODIS
$\sqrt{s}/GeV$	250	240
$\int Ldt/ab^{-1}$	5	5
$\delta m_H/MeV$ (M-I)	6.5	6.9
$\delta m_H/MeV$ (M-D)	5.4	5.9
$\delta\sigma_{ZH}/\sigma_{ZH}$	0.81%	0.85%

Benchmark analysis: mumuH
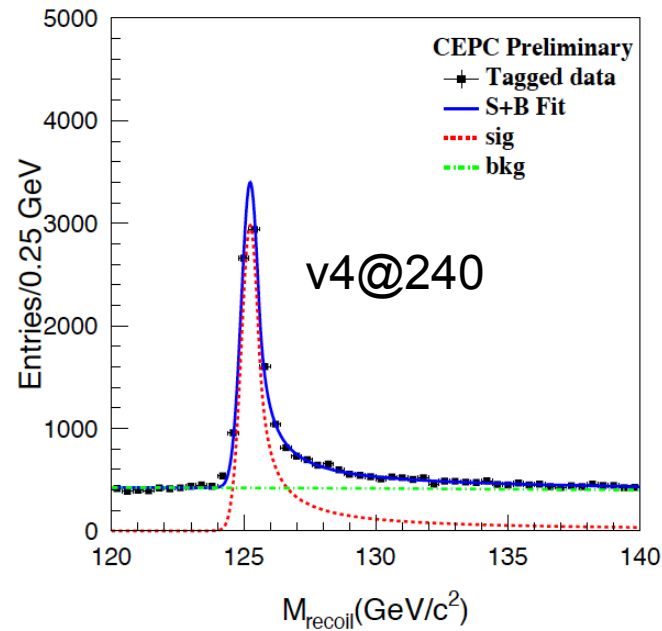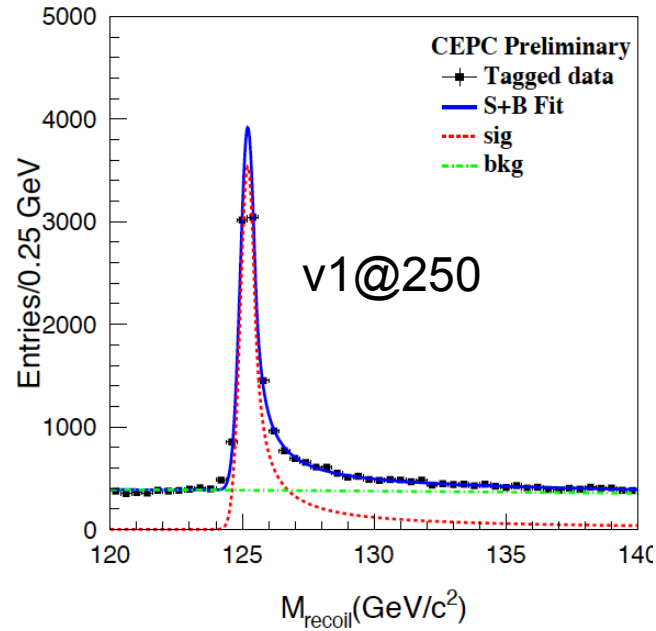
	CEPC v_1	APODIS
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Benchmark: H->tautau
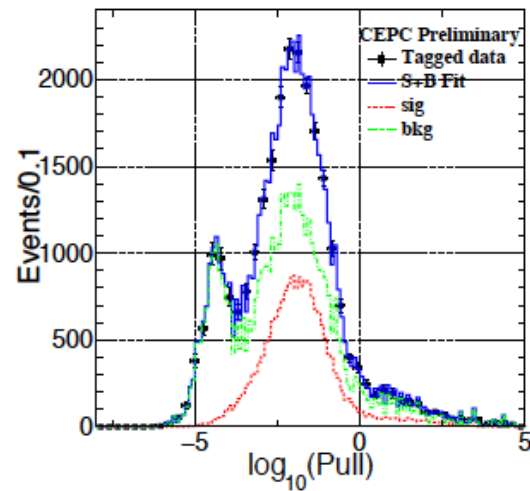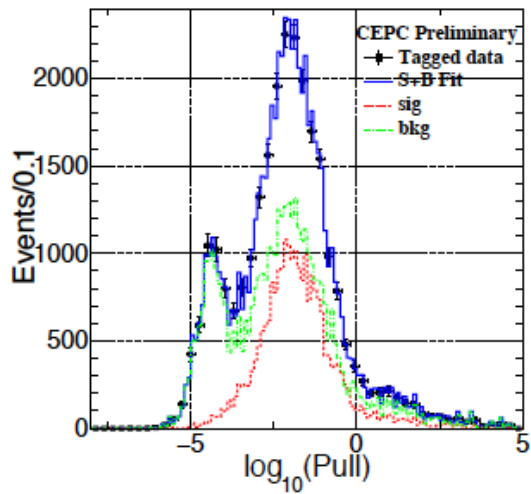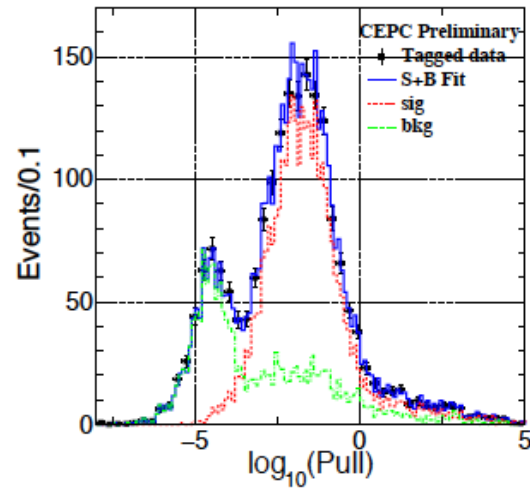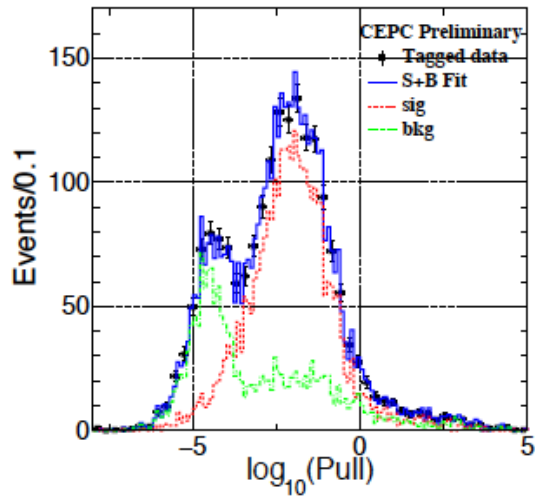
$\delta(\mu)/\mu$	PreCDR	CDR
$\mu^+\mu^-H$	2.26%	2.21%
e^+e^-H	2.72%	2.69%
$\nu\nu H$	4.29%	4.95%
qqH	0.93%	0.97%
Combined	0.81%	0.83%

Almost converged except
The background at CDR
Is still scaled from PreCDR
Sample

Need 1 more month to
Fully converge