Update of ECAL barrel beam background simulation

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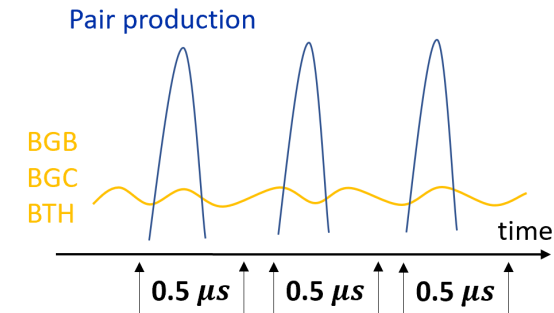
IHEP

24.7.5

Beam background simulation

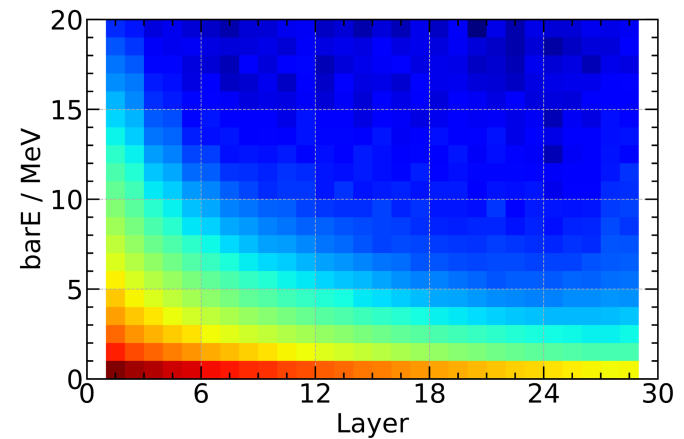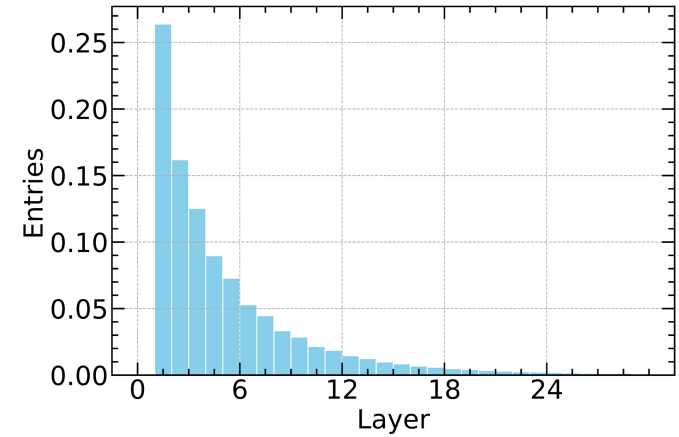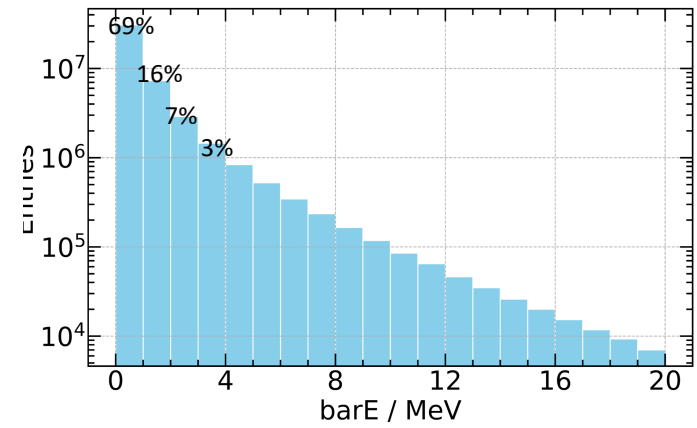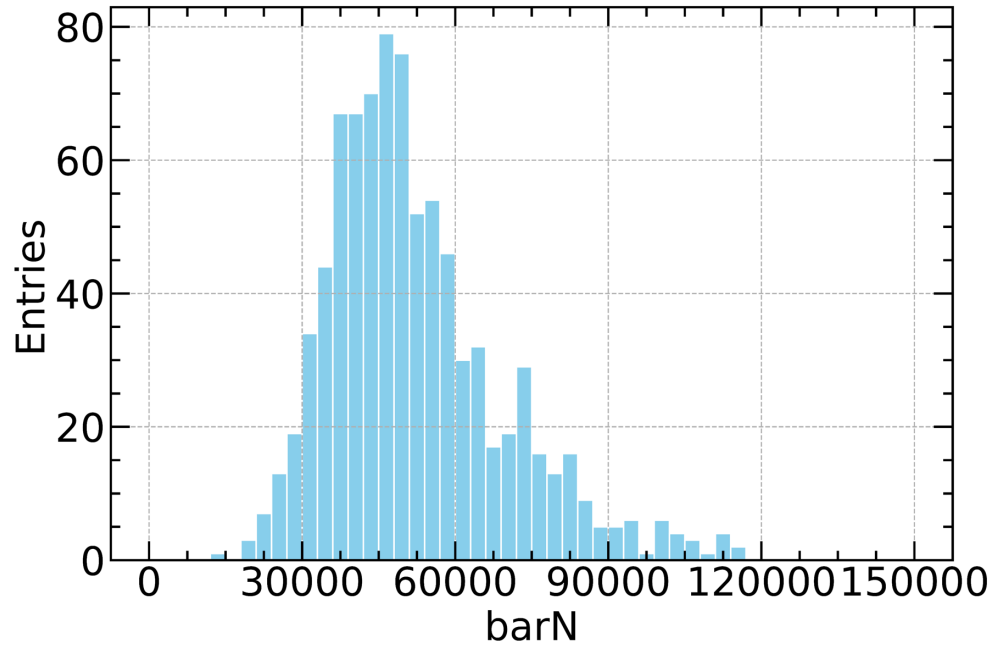| Background	Rate/Hz	$N_{\text{MCParticle}}$ / bunch $\propto 0.5\ \mu s$ time window
Pair production	---	~ 150
Beam-Gas Bremsstrahlung (BGB)	49,181,897.5	~ 25
Beam-Gas Coulomb (BGC)	636,290,798.6	~ 318
Beam Thermal Photon Scattering (BTH)	200,960,378.6	~ 100
Synchrotron Radiation	---	---
Radiative Bhabha	---	---
Touschek	---	---

- **Single beam** in higgs mode.
- Using **4 types** of beam backgrounds.
- 1 event: 0.5 us time window.

- Simulation of **barrel** long crystal bar ECAL.
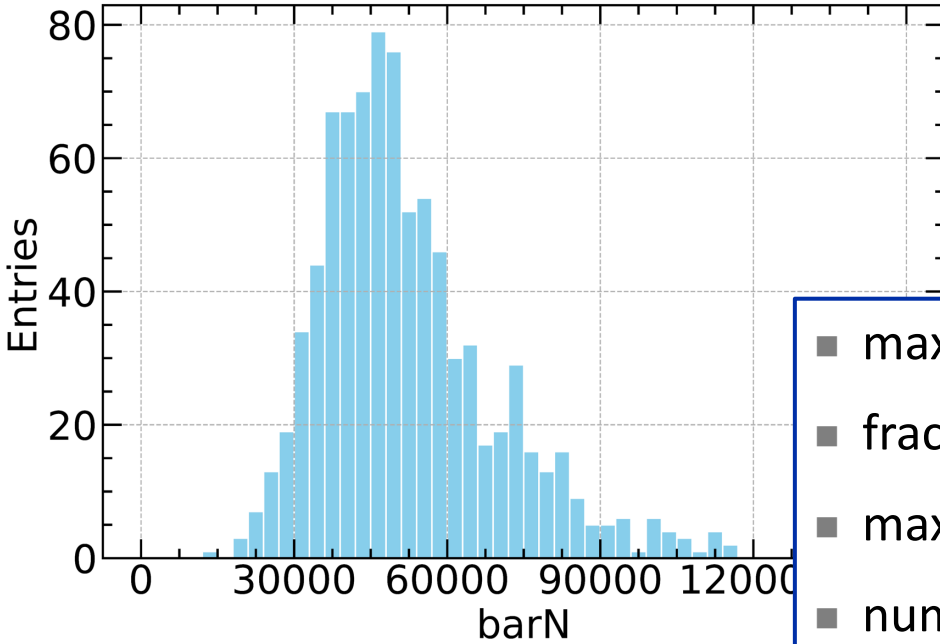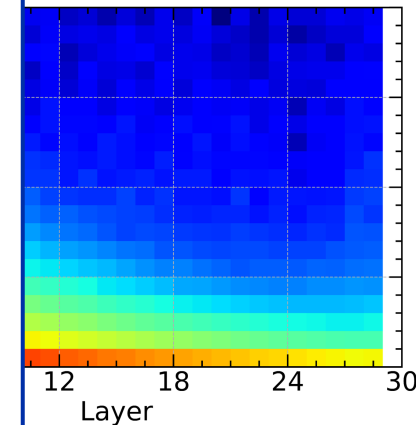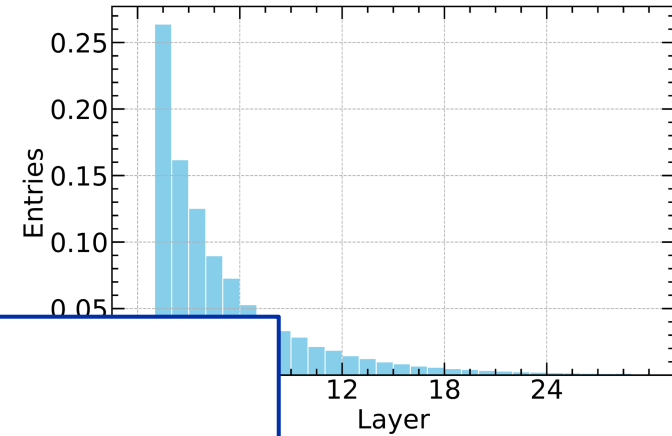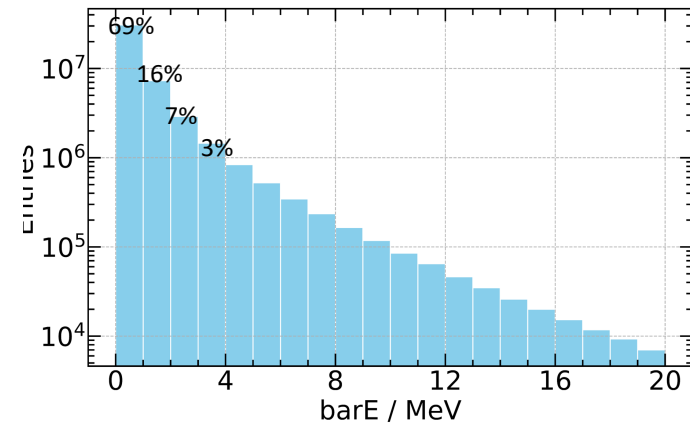- Assuming **delta response** in each crystal.

Count

- There are 850 events in total.

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- max of fired bars = 116,705

- fraction of bars = 26.4%

- max of fired bars in 1st layer $\approx$ 30,810

- number of bars in 1st layer $\approx$ 16,800

- ➤ bars in 1st layer keep fired!

- ➤ count: 2 MHz

Backup