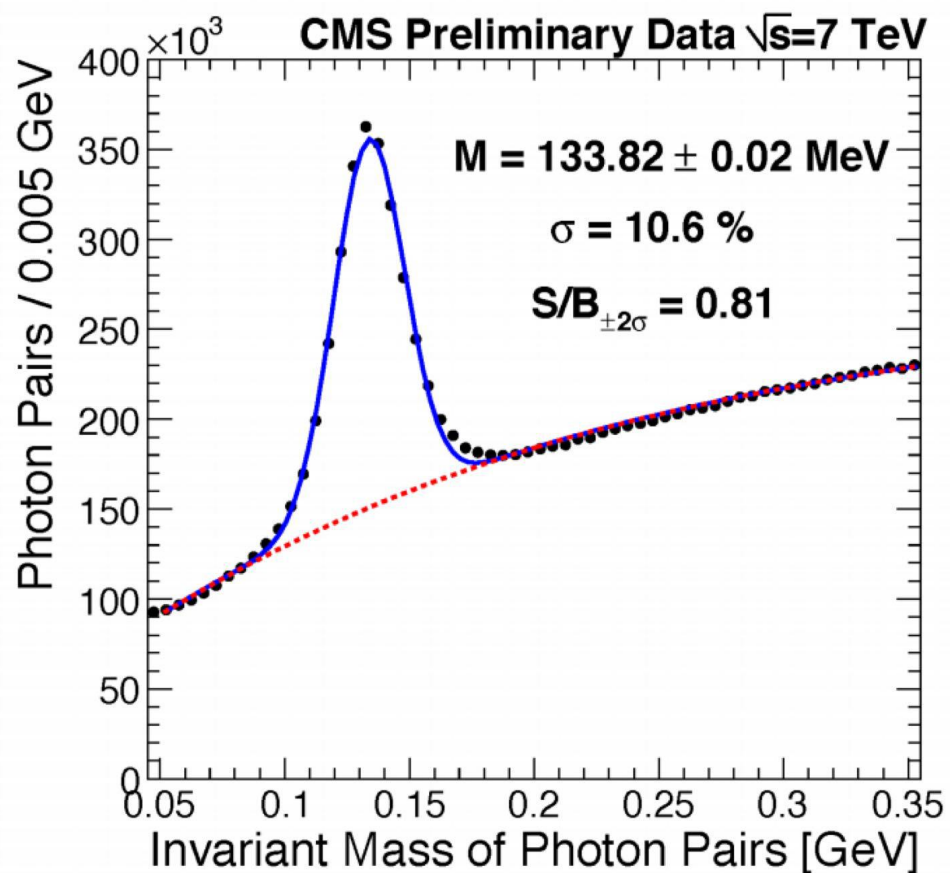


Photon Reconstruction Performance

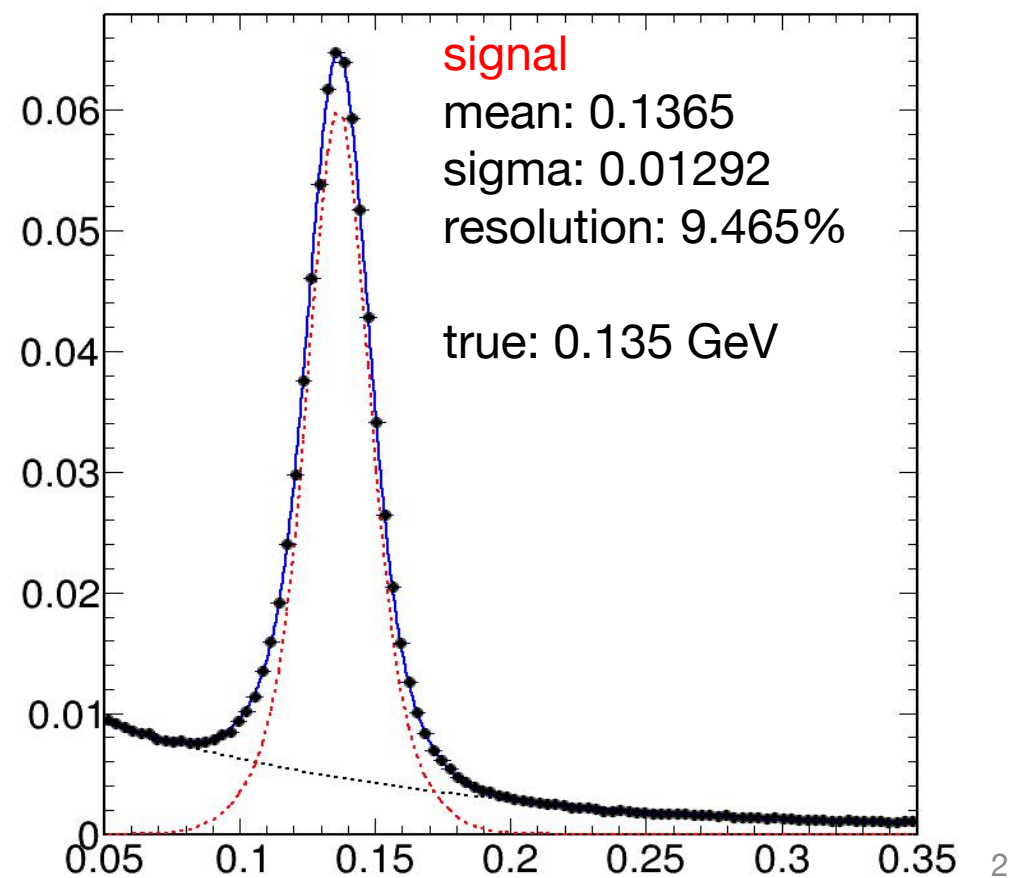
2020.02.11

pi-0 peak in ztautau sample

effective sigma 0.0315



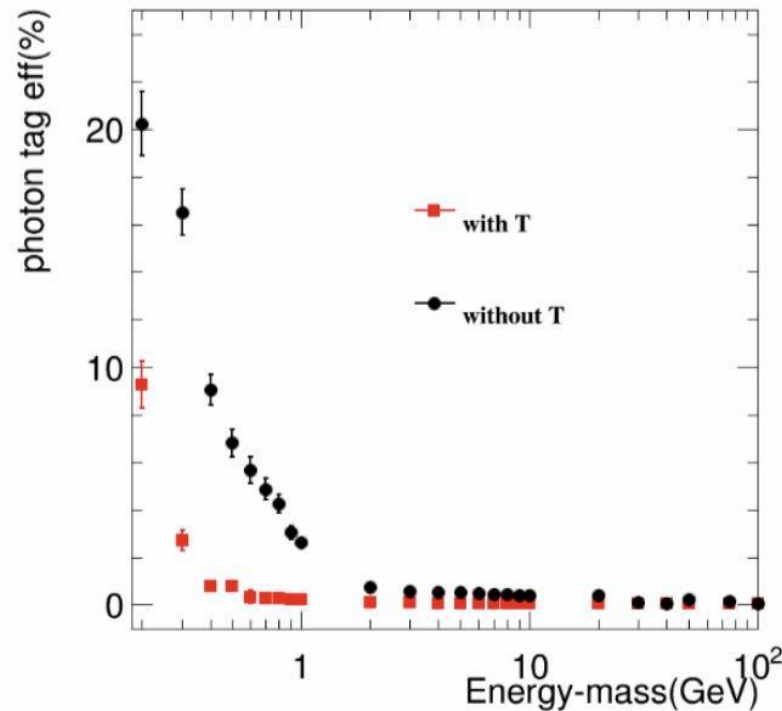
2020-2-11



Photon ID-Time information

- It would also be good to clarify up to which energy the ToF information provides discrimination. Probably not more than a couple of GeV ?

Photon Identification



Sample: single neutrons

TMVA method

Keep the photon identification efficiency above 99%.

Photon ID-Time information

```
float ClusterT0(Cluster * a_Clu)
{
    float T0 = 1E9;
    float tmpTime = 0;
    TVector3 CluHitPos;
    for(unsigned int i = 0; i < a_Clu->getCalorimeterHits().size(); i++)
    {
        CalorimeterHit * a_hit = a_Clu->getCalorimeterHits()[i];
        CluHitPos = a_hit->getPosition();

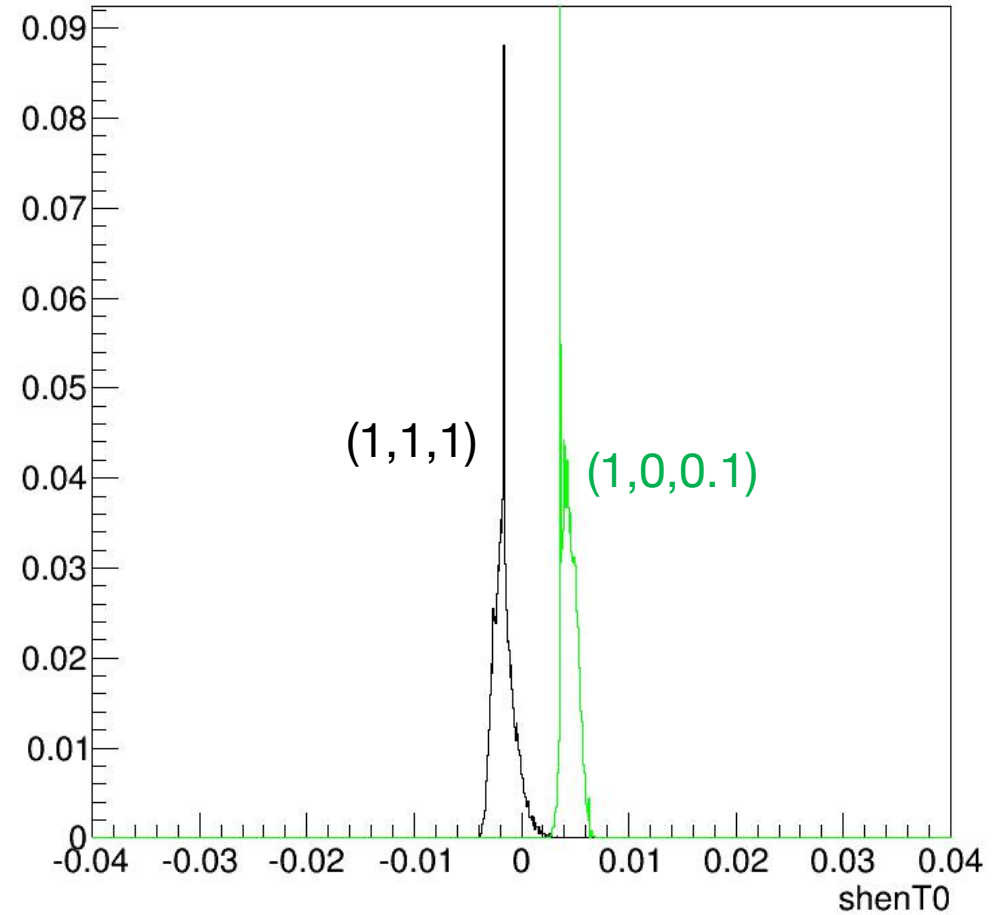
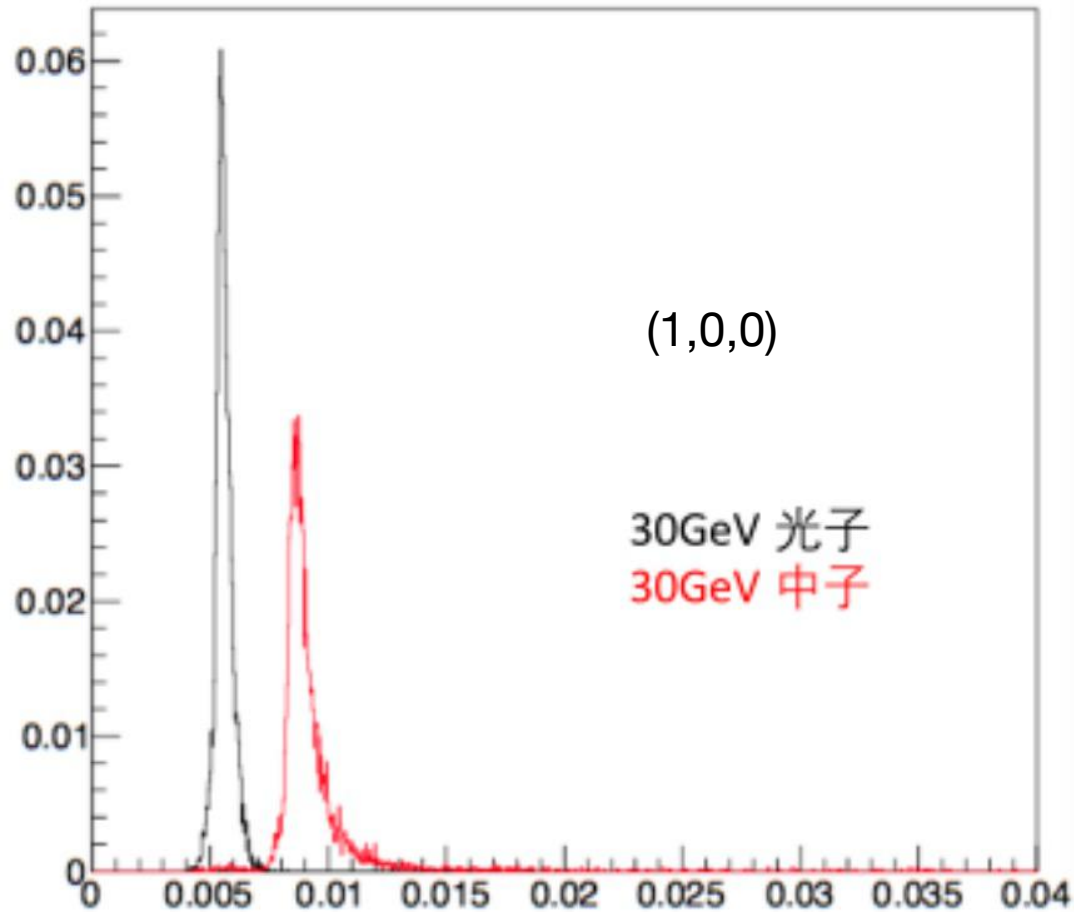
        tmpTime = a_hit->getTime() - 1.0/300*CluHitPos.Mag();
        if(tmpTime < T0)
        {
            T0 = tmpTime;
        }
    }
    return T0;
}
```

$$\Delta T = \frac{L}{\beta c} - \frac{L}{c} = \frac{L}{c} \left(\left(1 - \left(\frac{m}{E} \right)^2 \right)^{-\frac{1}{2}} - 1 \right)$$

Photon ID-Time information

$$\Delta T = \frac{L}{\beta c} - \frac{L}{c} = \frac{L}{c} \left(\left(1 - \left(\frac{m}{E}\right)^2\right)^{-\frac{1}{2}} - 1 \right)$$

photon



backup

- gaus: max 4.28854e-02 5.66281e-04
- mean 1.36626e-01 3.67165e-05
- sigma 1.01453e-02 7.77004e-05
- gaus2 max 1.71337e-02 5.92205e-04
- mean 1.36138e-01 8.71289e-05
- sigma 1.98381e-02 2.11385e-04
-
- expo p0 -4.28681e+00 5.13001e-03
- pq -7.94213e+00 2.60492e-02

backup

