

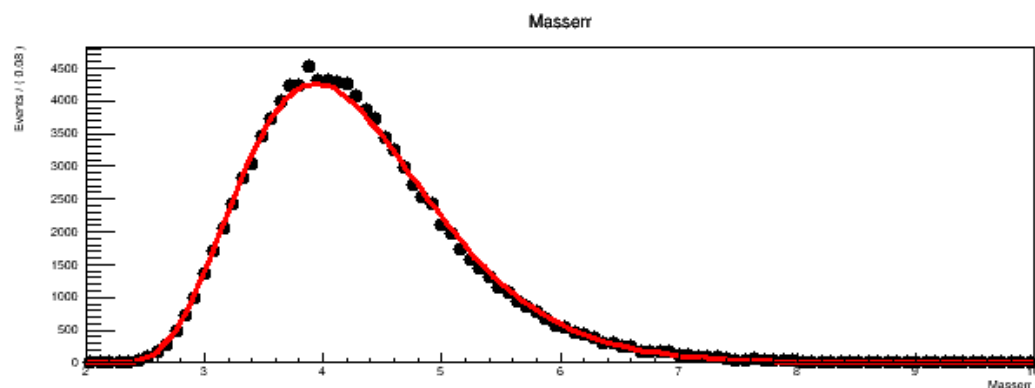
组会报告

2018.5.8

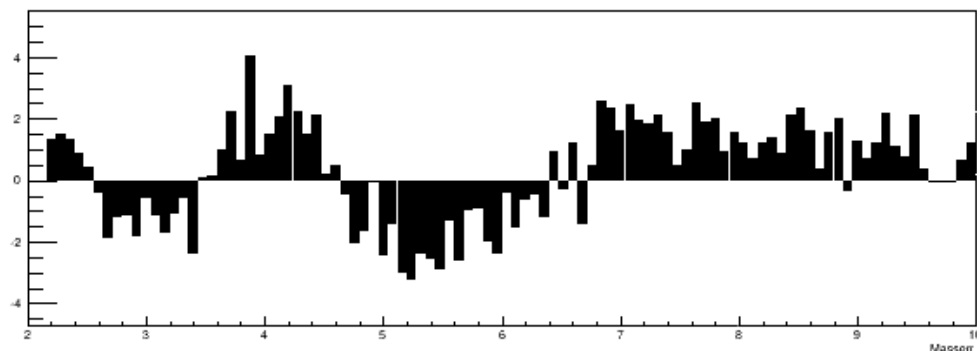
敖冬

对merr分布用gamma分布拟合

$$\bullet f(x) = \frac{(x-\mu)^{\gamma-1} \cdot e^{-\frac{x-\mu}{\beta}}}{\Gamma(\gamma) \cdot \beta^{\gamma}} \quad \text{Mean} = \mu + \gamma \cdot \beta$$



A RooPlot of "Masserr"

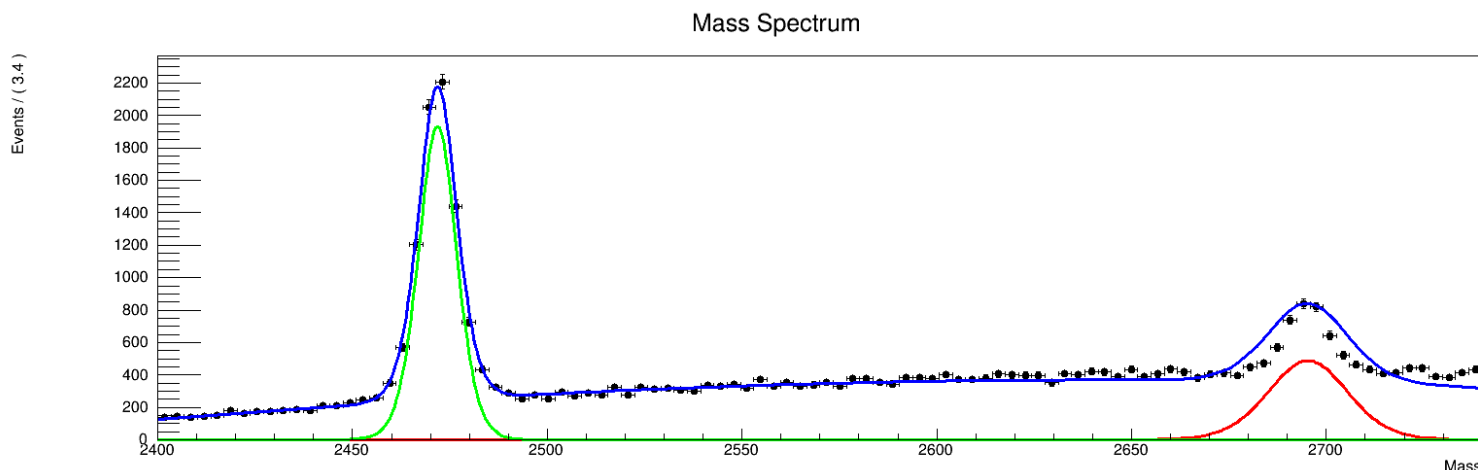


Ω_c^0 信号区间

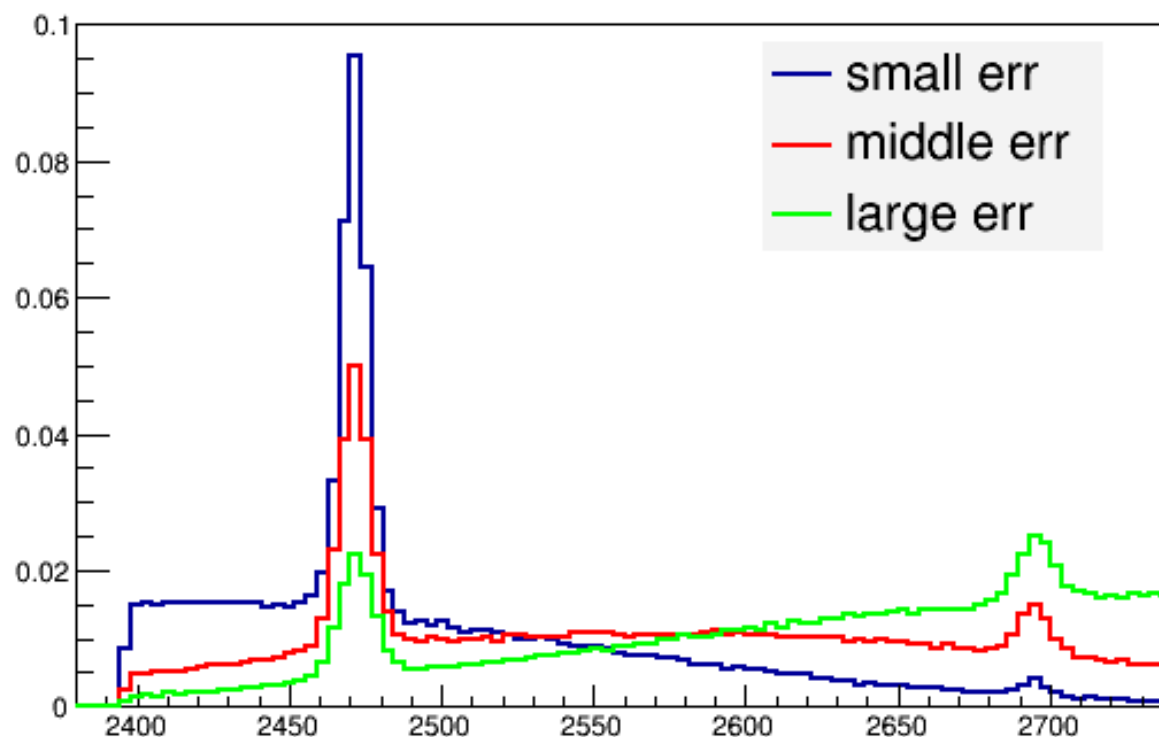
NO.	NAME	VALUE	ERROR
1	beta	4.26380e-01	4.36587e-03
2	gamma	5.62993e+00	8.81342e-02
3	mu	2.99618e+00	1.50886e-02
:	:	:	:

对mass和masserr二维分布的研究

- $p.d.f. = P_{\Xi}(m|merr) * F_{\Xi}(merr) + P_{\Omega}(m|merr) * F_{\Omega}(merr) + P_{bkg}(m|merr) * F_{bkg}(merr)$
- $P_{\Xi}(m|merr)$ 和 $P_{\Omega}(m|merr)$ 用 $Gauss(m, mean, \sigma = merr * scale - factor)$, $F_{\Xi}(merr)$ 、 $F_{\Omega}(merr)$ 用gamma函数进行拟合。
- $P_{bkg}(m|merr)$ 用二阶切比雪夫多项式(关于m), $F_{bkg}(merr)$ 用RooKeysPdf或者RooHistPdf拿整体形状
- 出现了拟合不上的问题

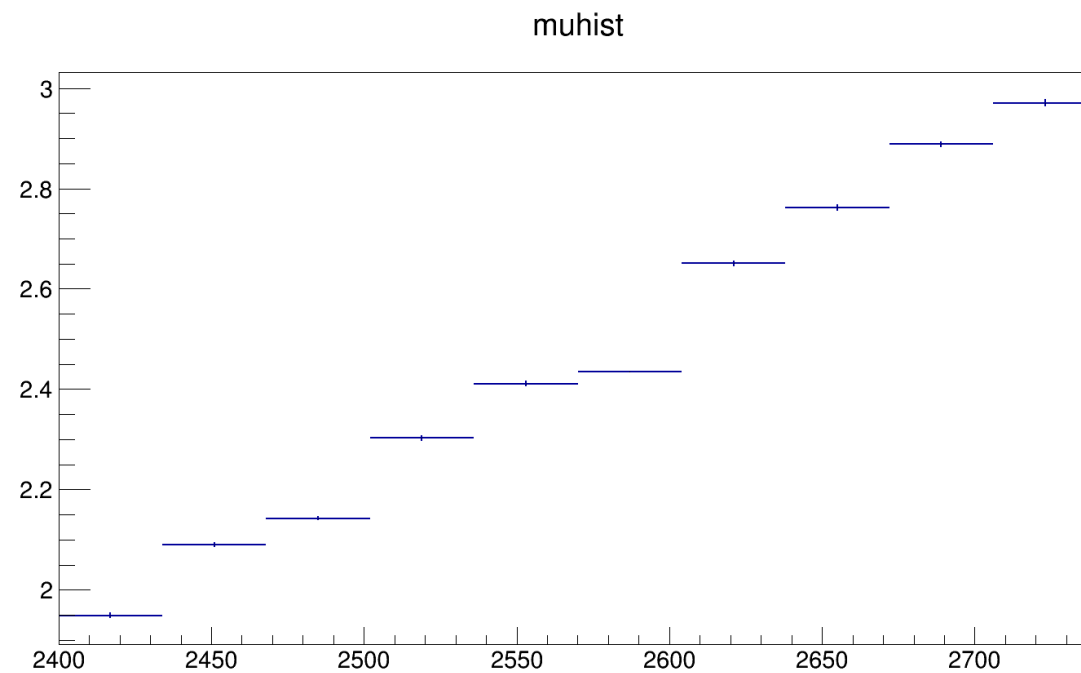
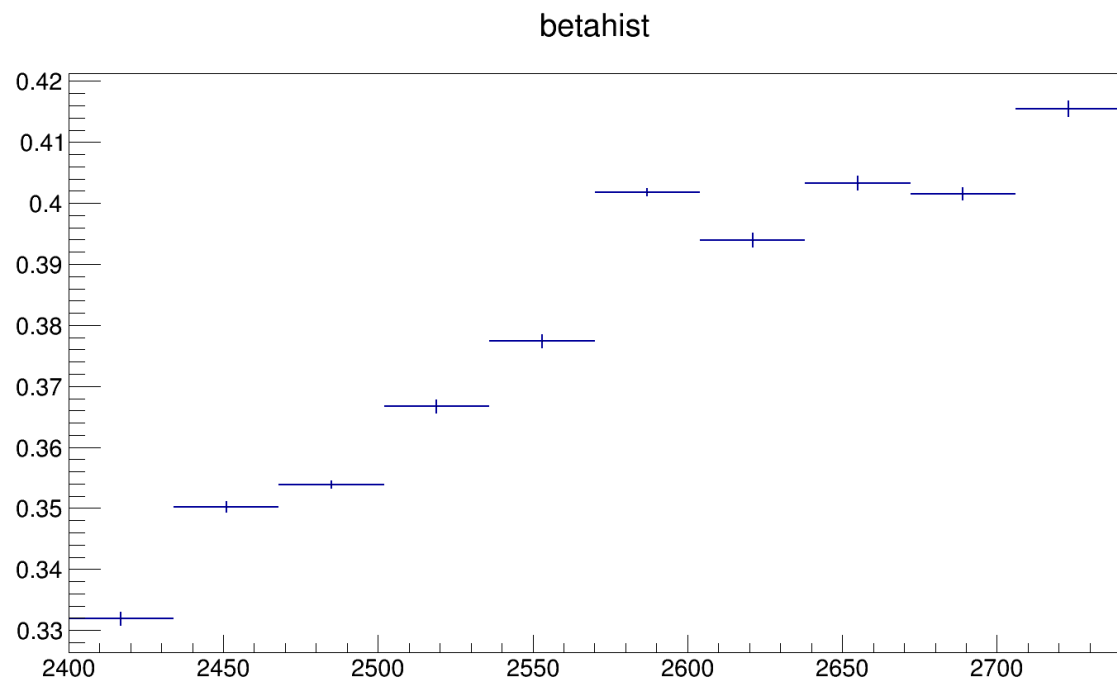


- $p.d.f. = P_{\Xi}(m|merr) * F_{\Xi}(merr) + P_{\Omega}(m|merr) * F_{\Omega}(merr) + P_{bkg}(m|merr) * F_{bkg}(merr)$
- 问题原因, $P_{bkg}(m|merr)$ 与 merr 并非无关

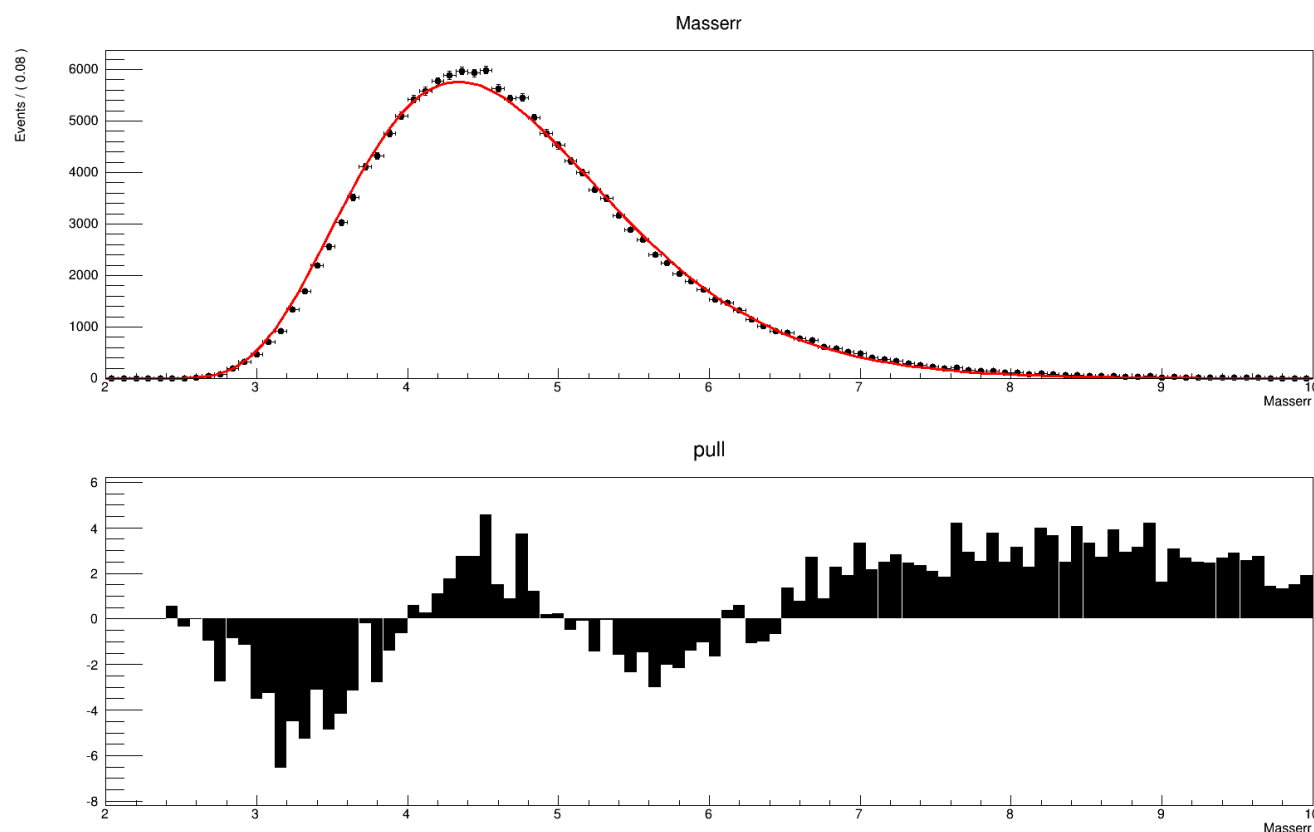


- 采用解决思路: $P_{bkg}(m|merr) * F_{bkg}(merr)$ 替换
- $P_{bkg}(m|merr) * F_{bkg}(merr) = P_{bkg}(m, merr) = P_{bkg}(merr|m) * F_{bkg}(m)$
- 其中 $F_{bkg}(m)$ 为二次函数, $P_{bkg}(merr|m)$ 为参数与 m 有关的 gamma 函数
- $$f(x) = \frac{(x-\mu)^{\gamma-1} \cdot e^{-\frac{x-\mu}{\beta}}}{\Gamma(\gamma) \cdot \beta^{\gamma}}$$
- 对 $merr$ 在不同 mass-bin 进行拟合

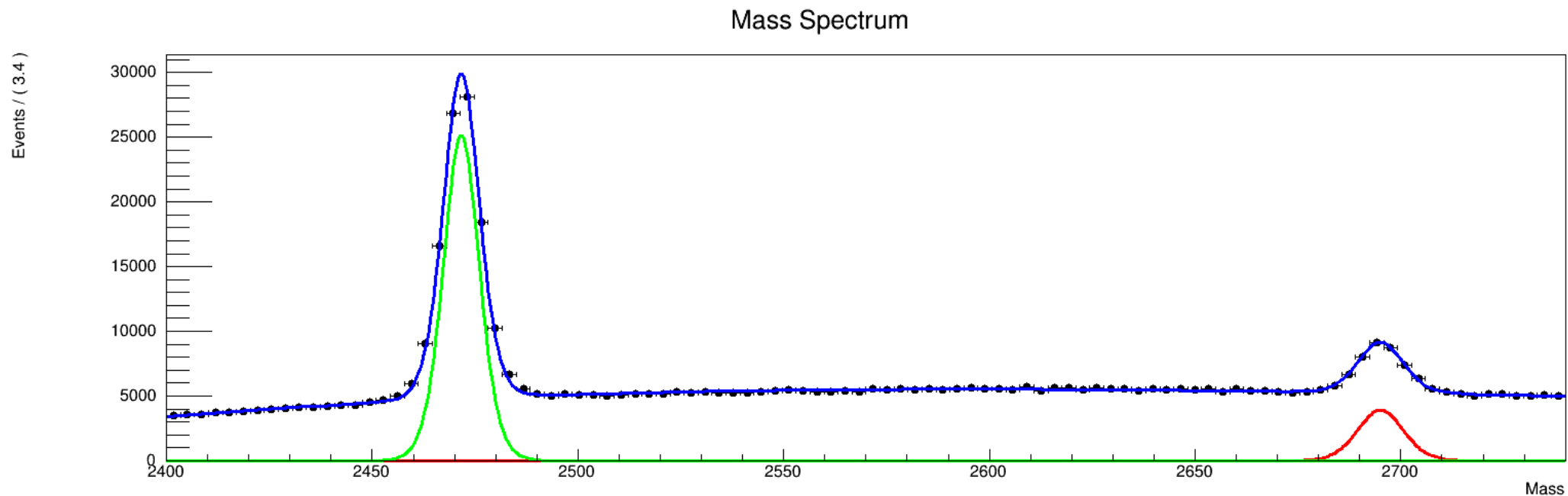
- $f(x) = \frac{(x-\mu)^{\gamma-1} \cdot e^{-\frac{x-\mu}{\beta}}}{\Gamma(\gamma) \cdot \beta^{\gamma}}$
- 期待 γ 不随 m 变化，而 β 和 μ 随 m 线性变化



- 期待能用Roofit的conditional功能直接拟合 $P_{bkg}(merr|m)$
- 尚未实现，debugging
- 通过前面m分bin得到的初值与数据的吻合情况

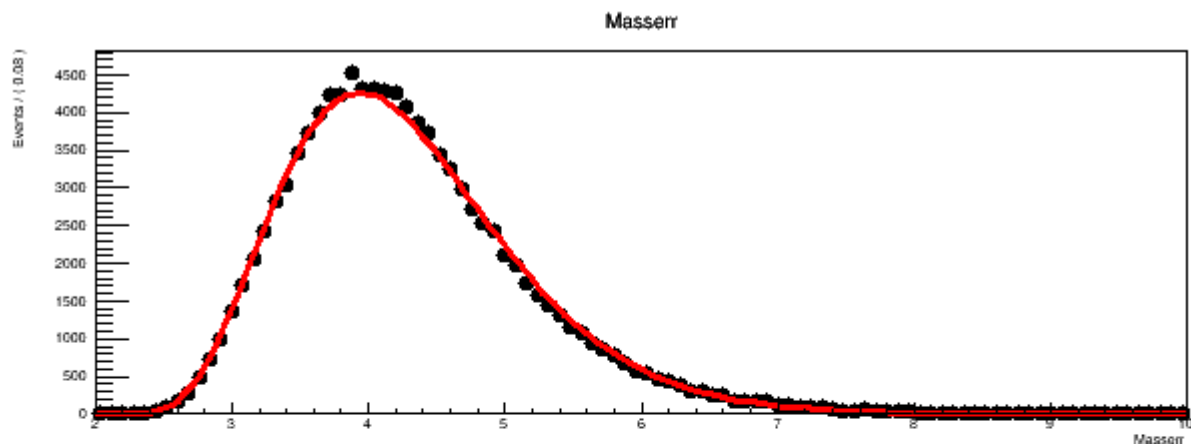


上一页 $P_{bg}(merr|m)$ 应用到整个模型的情况

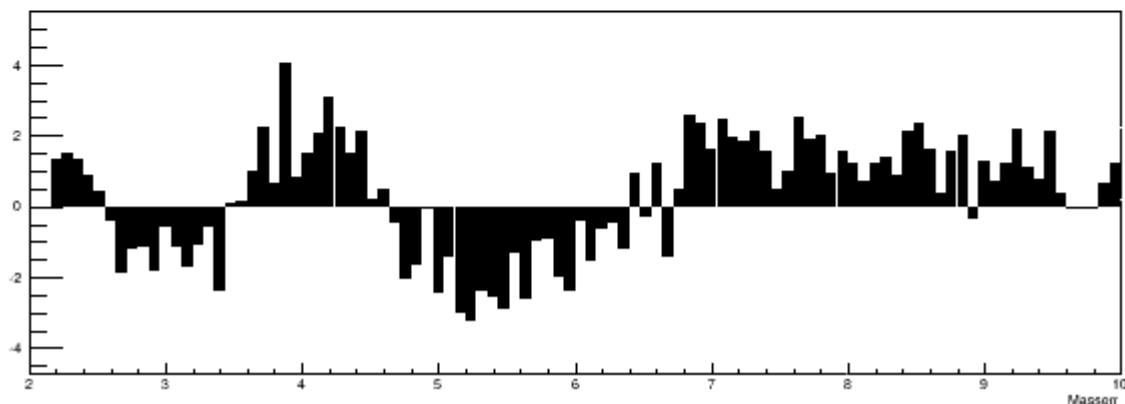


用 gamma分布拟合MMERR

$$f(x) = \frac{(x-\mu)^{\gamma-1} \cdot e^{-\frac{x-\mu}{\beta}}}{\Gamma(\gamma) \cdot \beta^{\gamma}} \quad \text{Mean} = \mu + \gamma \cdot \beta$$

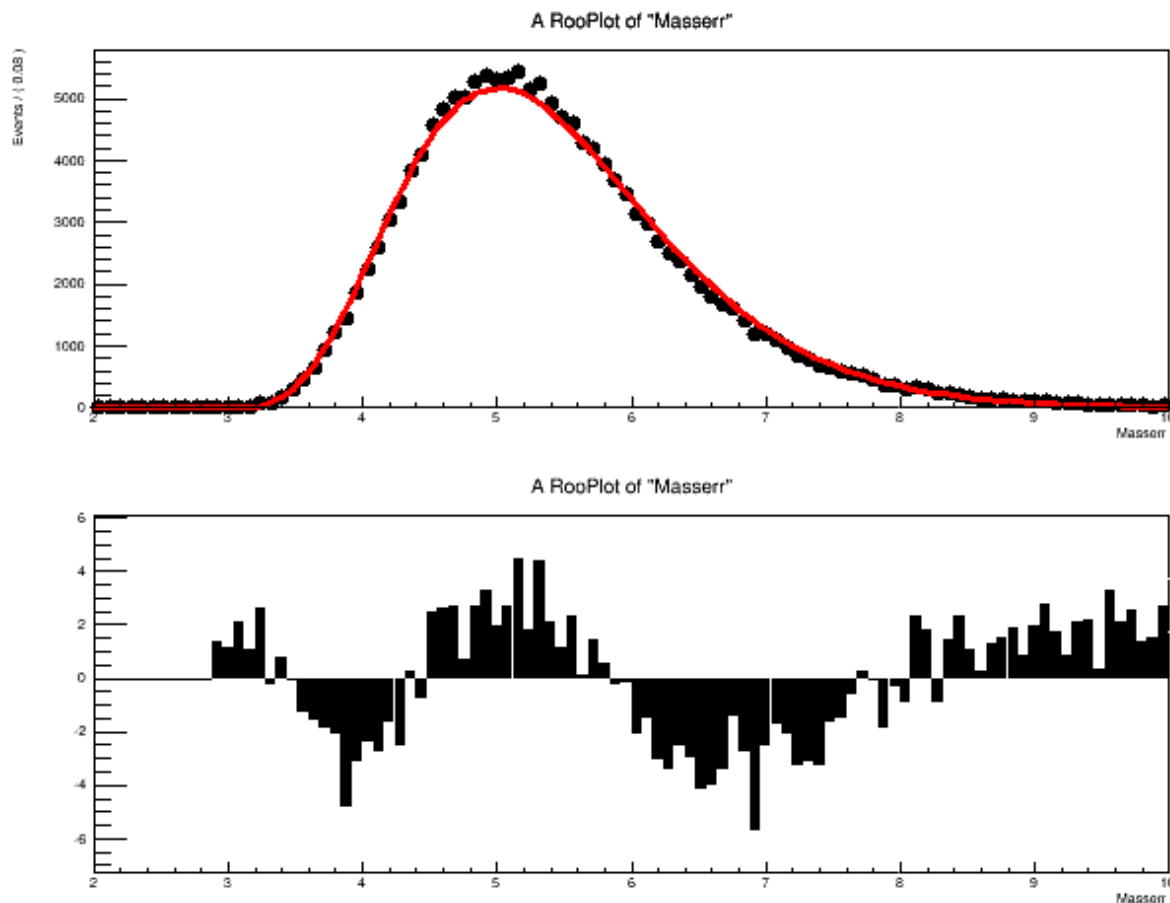


A RooPlot of "Masserr"



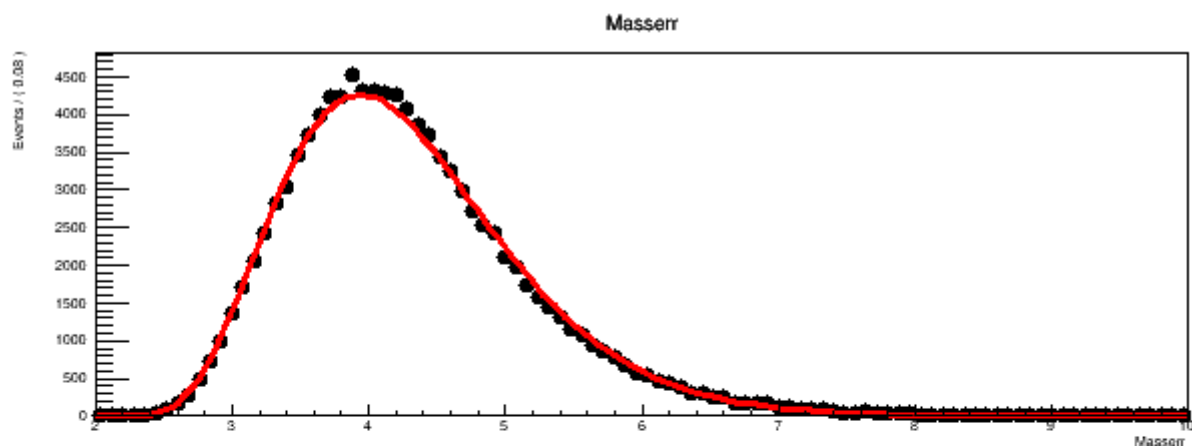
Ω_c^0 信号区间

NO.	NAME	VALUE	ERROR
1	beta	4.26380e-01	4.36587e-03
2	gamma	5.62993e+00	8.81342e-02
3	mu	2.99618e+00	1.50886e-02



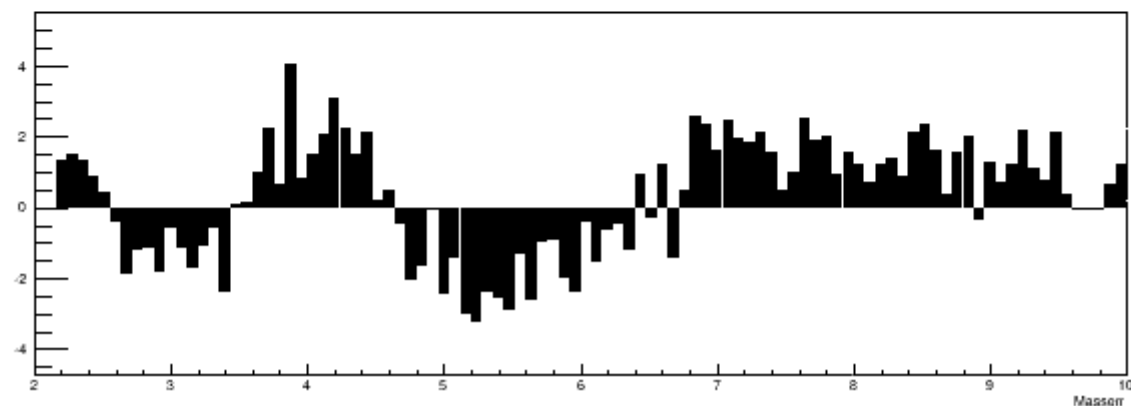
Ω_c^0 sweight

NO.	NAME	VALUE	ERROR
1	beta	4.18352e-01	2.25794e-03
2	gamma	6.05704e+00	4.67778e-02
3	mu	2.89249e+00	7.54710e-03

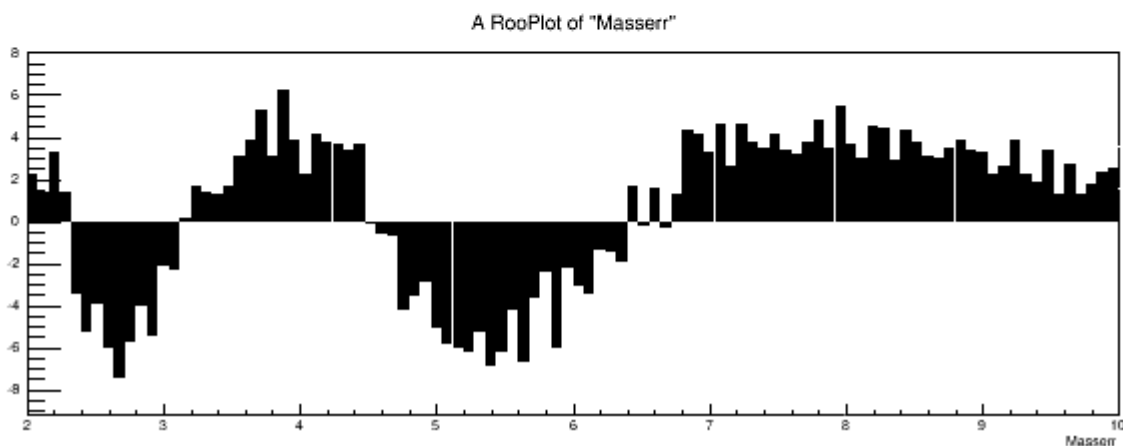
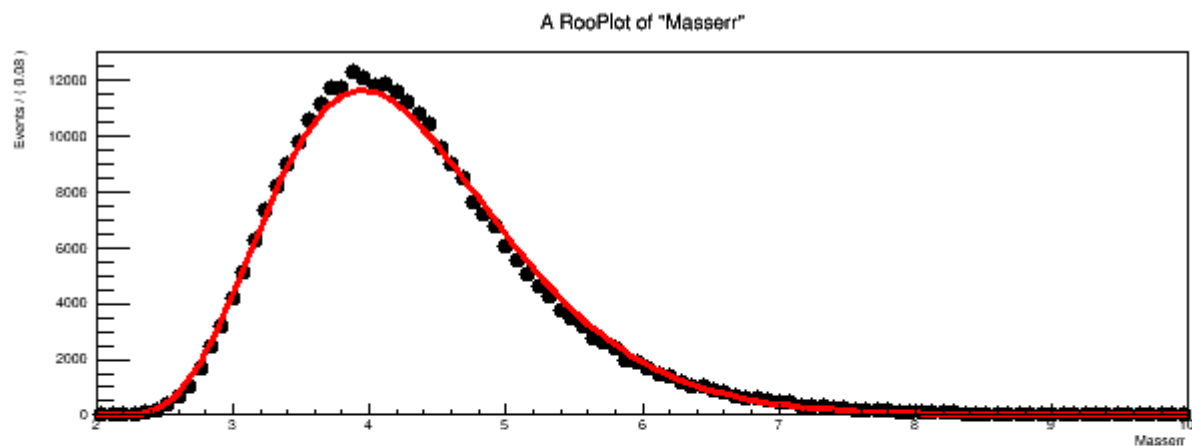


E_c^0 信号区间

A RooPlot of "Masserr"

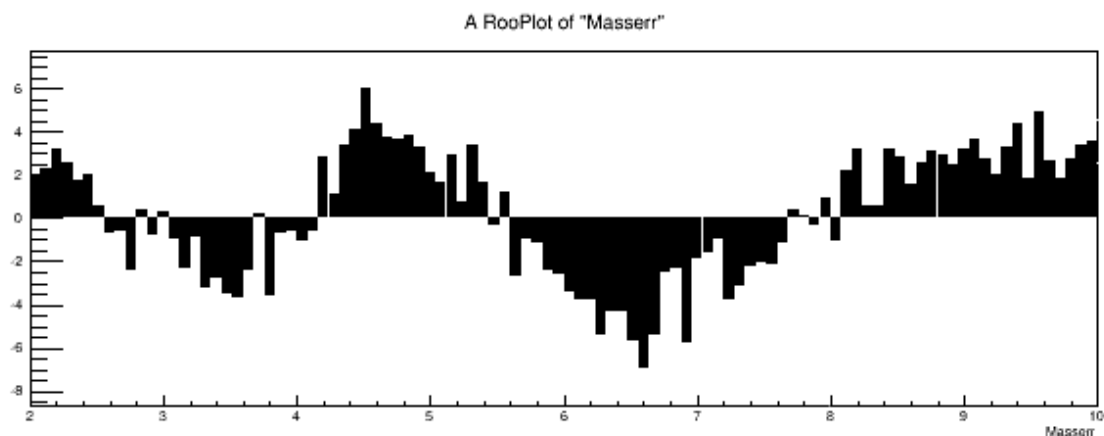
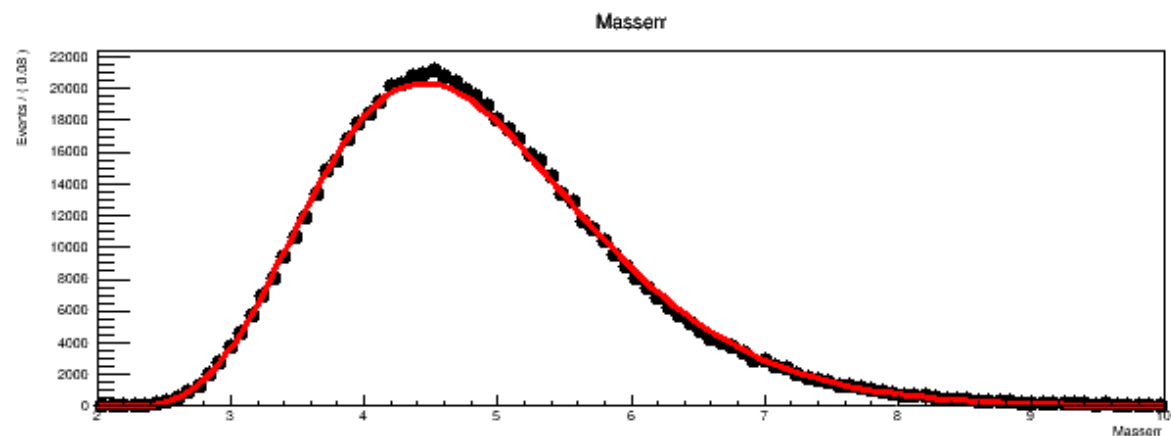


NO.	NAME	VALUE	ERROR
1	beta	3.51097e-01	2.10721e-03
2	gamma	6.16157e+00	5.36949e-02
3	mu	2.14100e+00	7.39290e-03
:	:	:	:



Ξ_C^0 sweight

NO.	NAME	VALUE	ERROR
1	beta	3.57871e-01	9.66179e-04
2	gamma	6.45888e+00	1.84581e-02
3	mu	1.99635e+00	1.45027e-03
:	:	:	:



total

NO.	NAME	VALUE	ERROR
1	beta	4.07385e-01	1.44606e-03
2	gamma	7.19566e+00	4.16421e-02
3	mu	1.91930e+00	7.23616e-03