# 第五组Exam汇报（1）

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# Content

- Motivation
- Analysis Process
- Result

# Motivation

## Tasks:

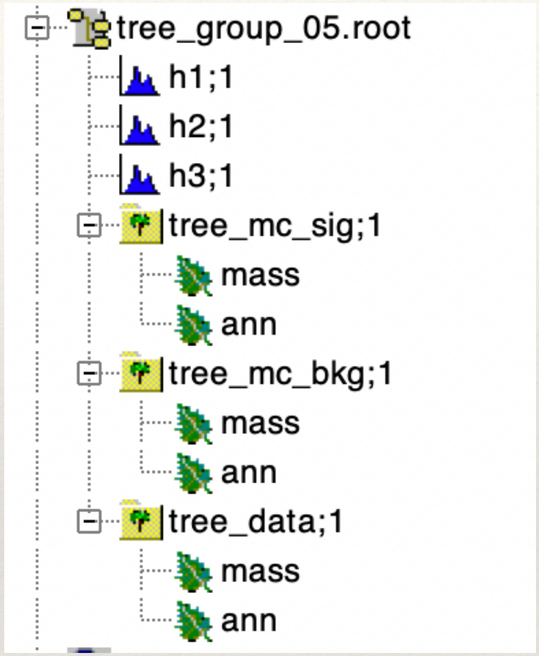
Given 3 trees: mc_sig, mc_bkg and data

Each tree has two branch: ann and mass

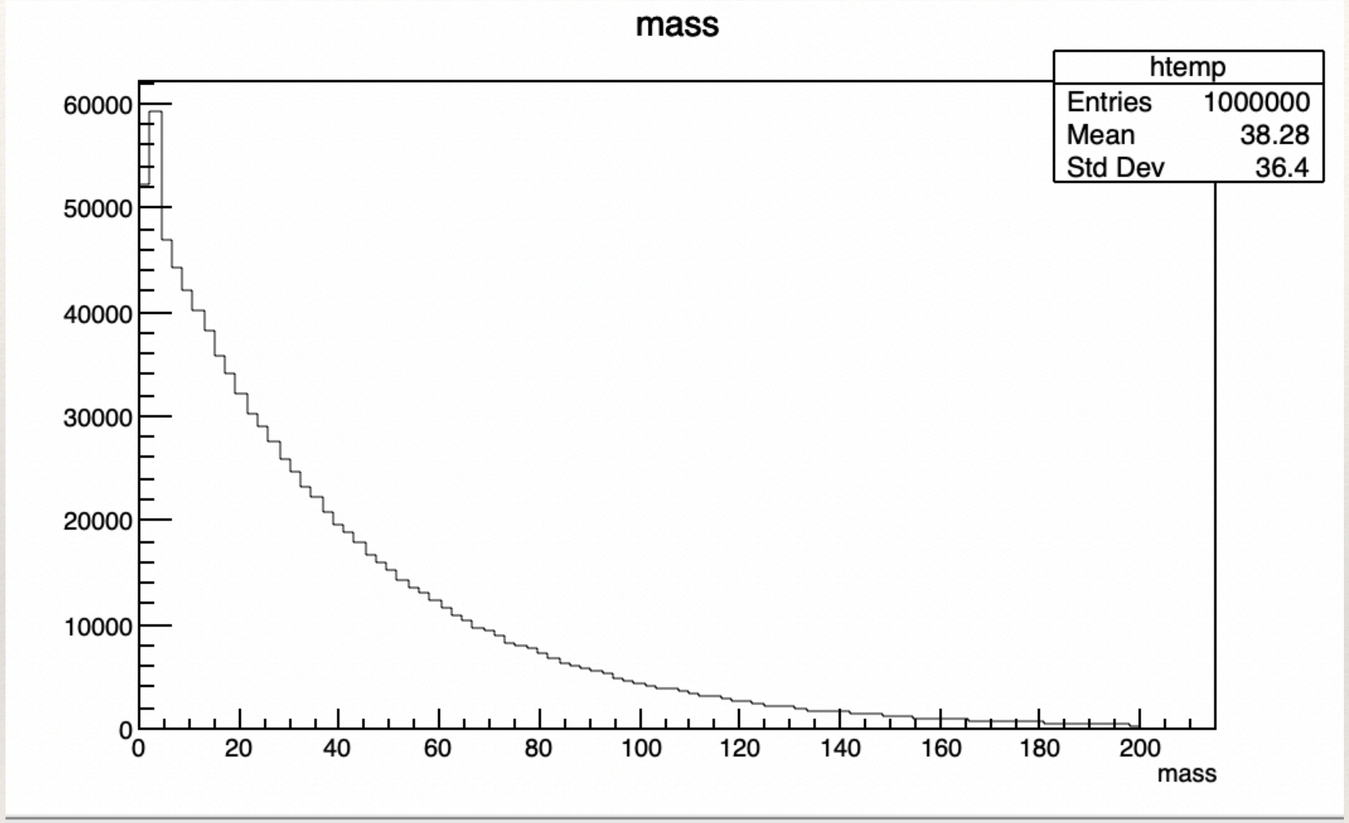
Use MC to find cut

Apply the cut to data

Fit histogram and get the result



# Motivation




Raw data: 无法区分本底与信号

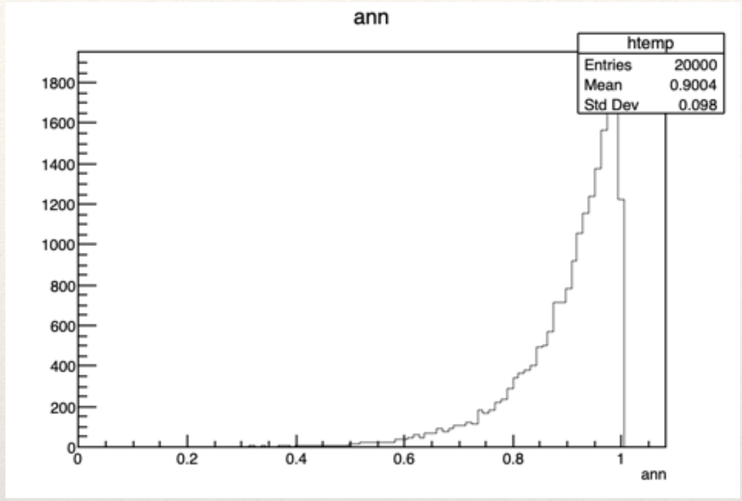
↓

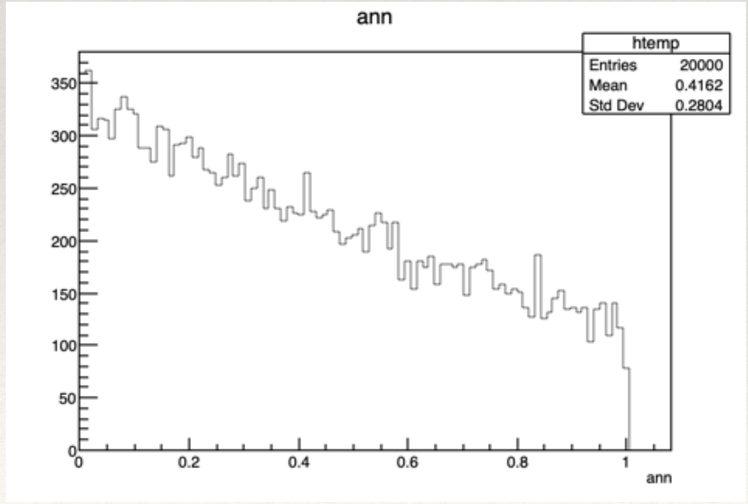
利用MC，找到合适的cut，扣除本底

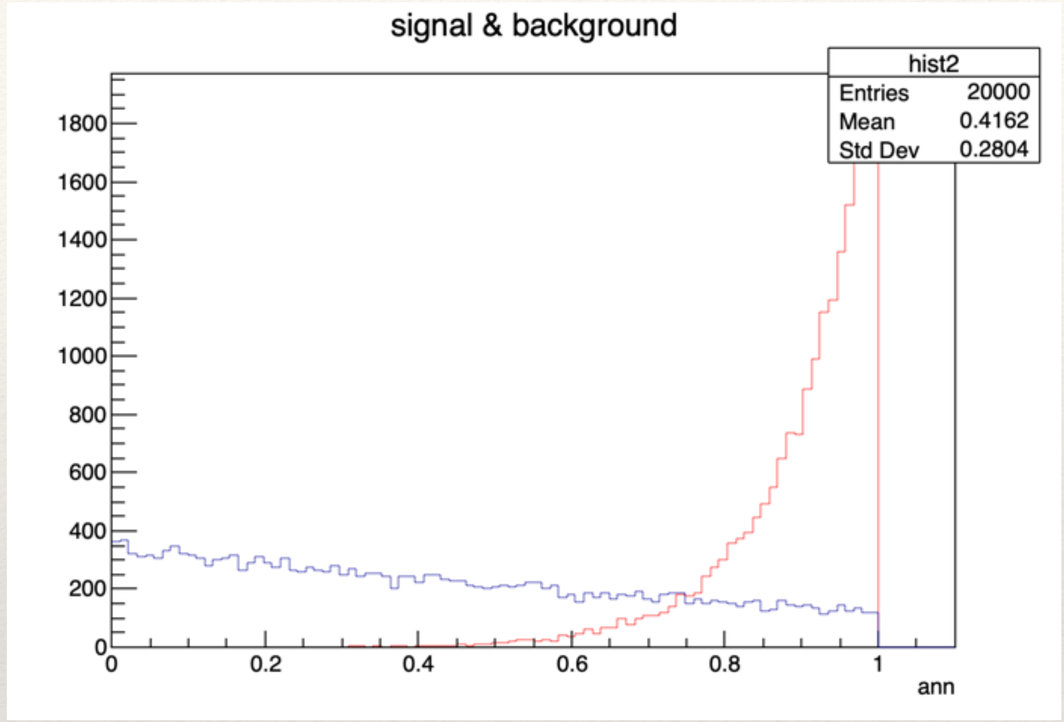
↓

寻找可能的质量峰

# Analysis Process



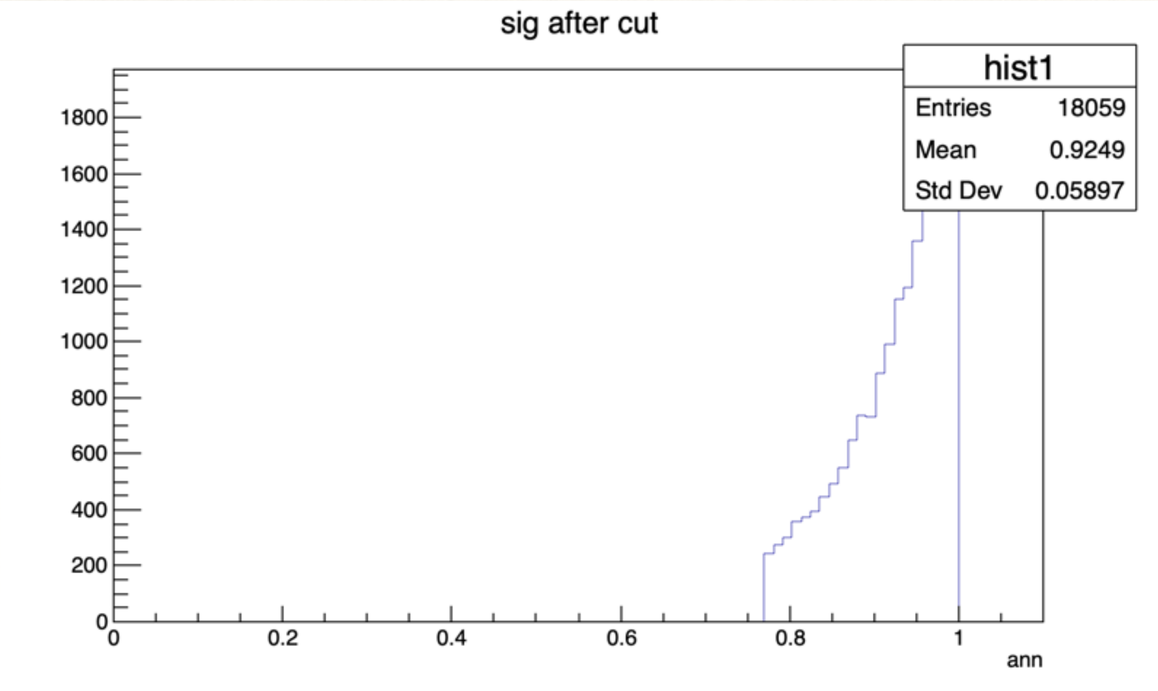




可以看出约在0.75之后信号开始显著高于本底

# Analysis Process

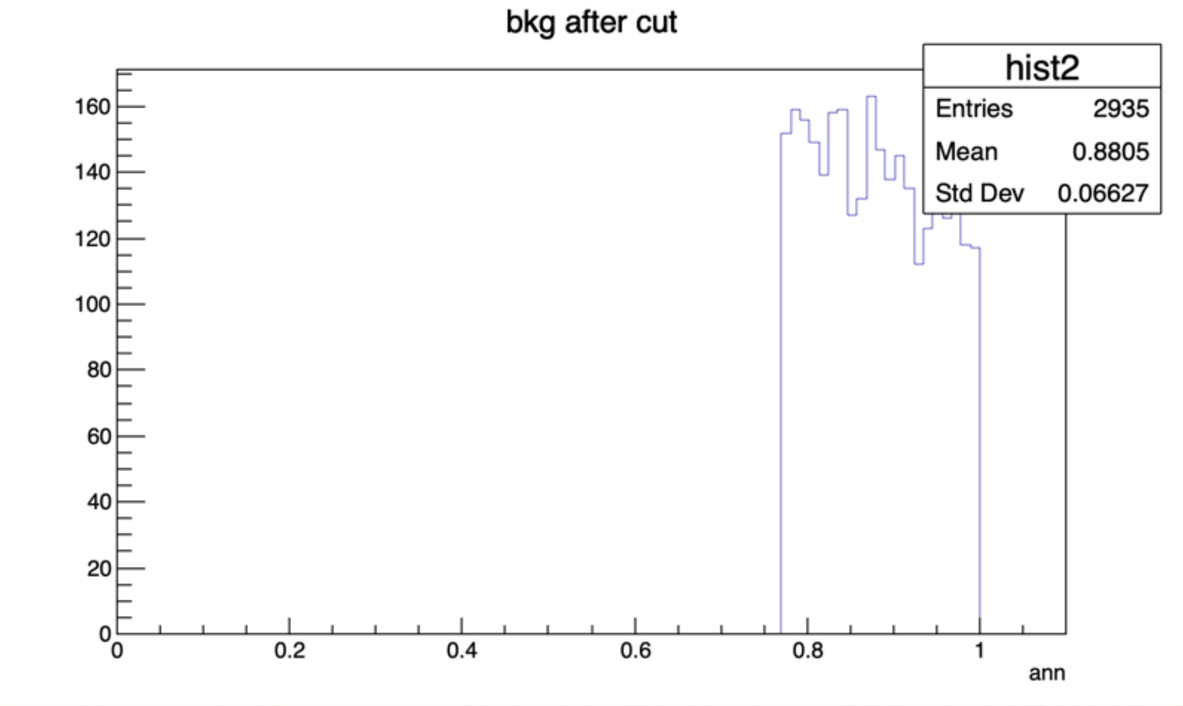
**Applying cut: ann > 0.77**




**18059/20000 = 0.903**

信号经过截断后保留了约90.3%的事例

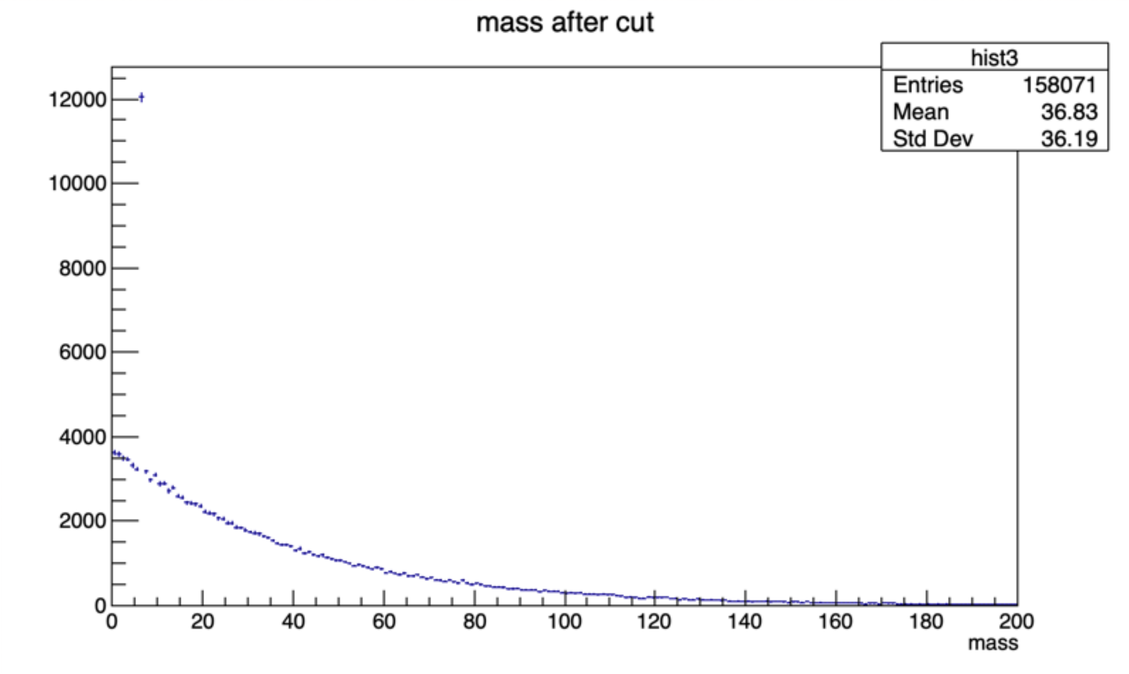
# Analysis Process

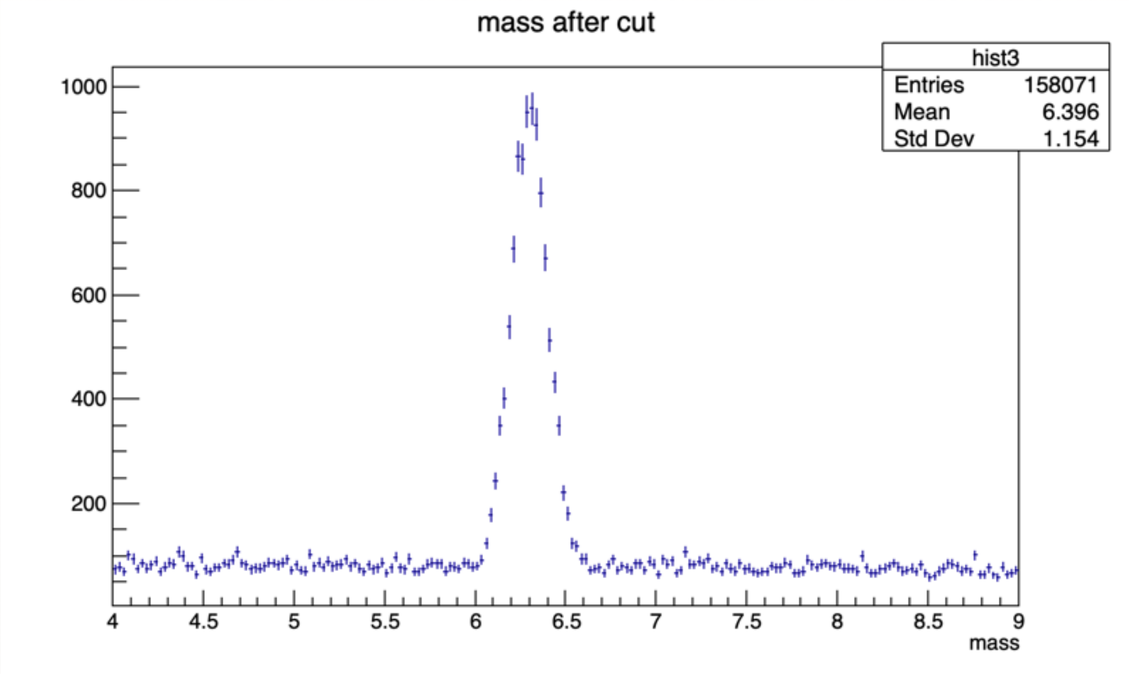



**“power”= 1 - 2935/20000**
**= 0.85325**

经过截断后扣除了约85.3%的本底事例

# Analysis Process



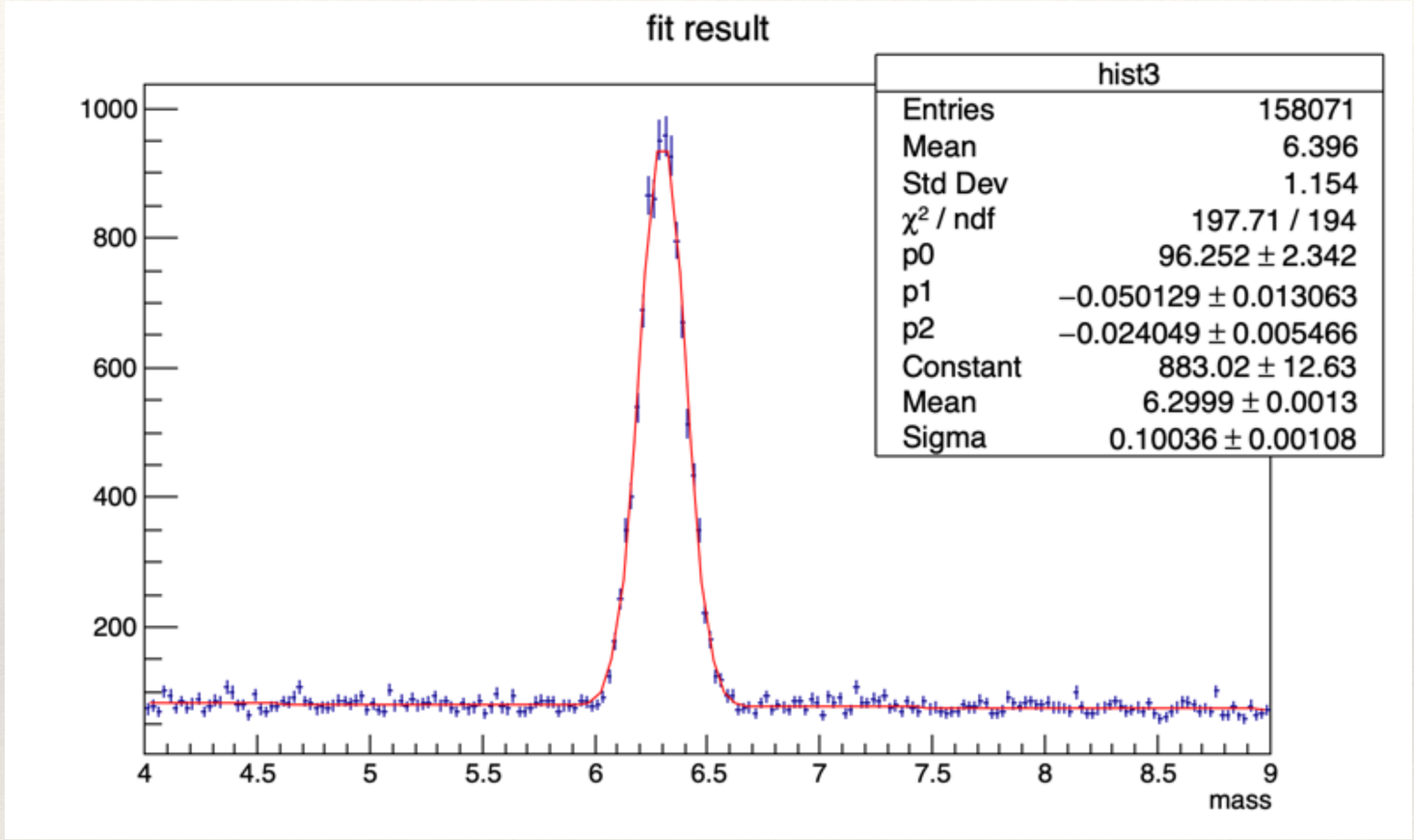




通过缩小直方图的范围，可以发现高斯峰值约在6.3附近

# Analysis Process

**Fit function:**

**[0]*exp([1]+[2]*x) + [3]*TMath::Gaus(x,[4],[5])**



# Result

**Task1:**

选择的截断区间为 $ann > 0.77$， 截断后保留了90.3%的信号事件

本底事件扣除率为 85.3%

**Task2:**

| EXT NO. | PARAMETER NAME | VALUE | ERROR | STEP SIZE | FIRST DERIVATIVE |
|---|---|---|---|---|---|
| 1 | p0 | 9.62523e+01 | 2.34192e+00 | 2.86300e-02 | 4.73079e-04 |
| 2 | p1 | -5.01290e-02 | 1.30625e-02 | 1.53968e-04 | 4.55823e-02 |
| 3 | p2 | -2.40488e-02 | 5.46632e-03 | -6.90958e-05 | 2.22326e-01 |
| 4 | Constant | 8.83020e+02 | 1.26349e+01 | 3.72037e-02 | 4.52948e-05 |
| 5 | Mean | 6.29987e+00 | 1.32157e-03 | -1.76918e-06 | -3.40333e-03 |
| 6 | Sigma | 1.00357e-01 | 1.07780e-03 | 9.03300e-06 | 8.01149e-01 |

# 谢谢