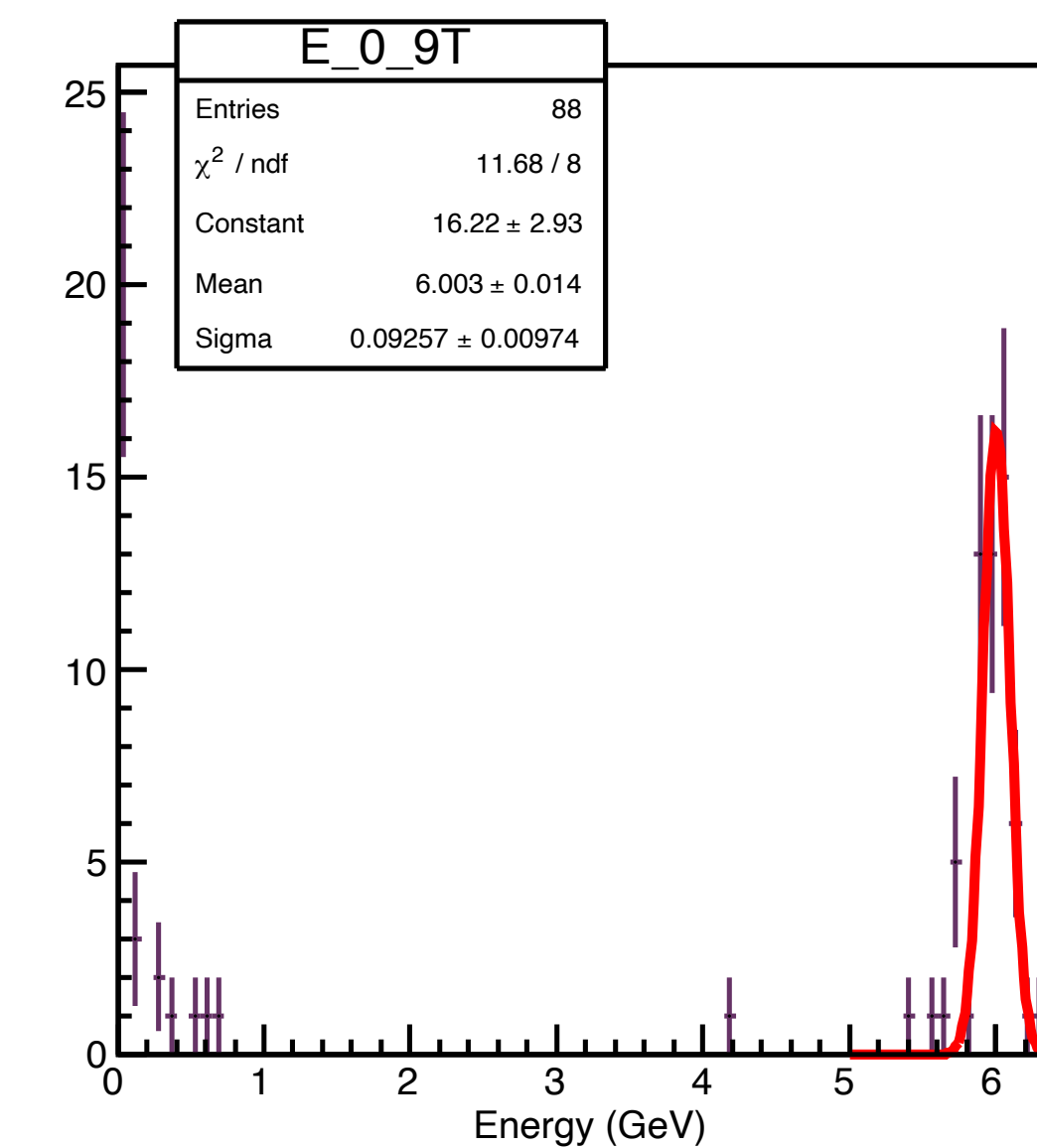
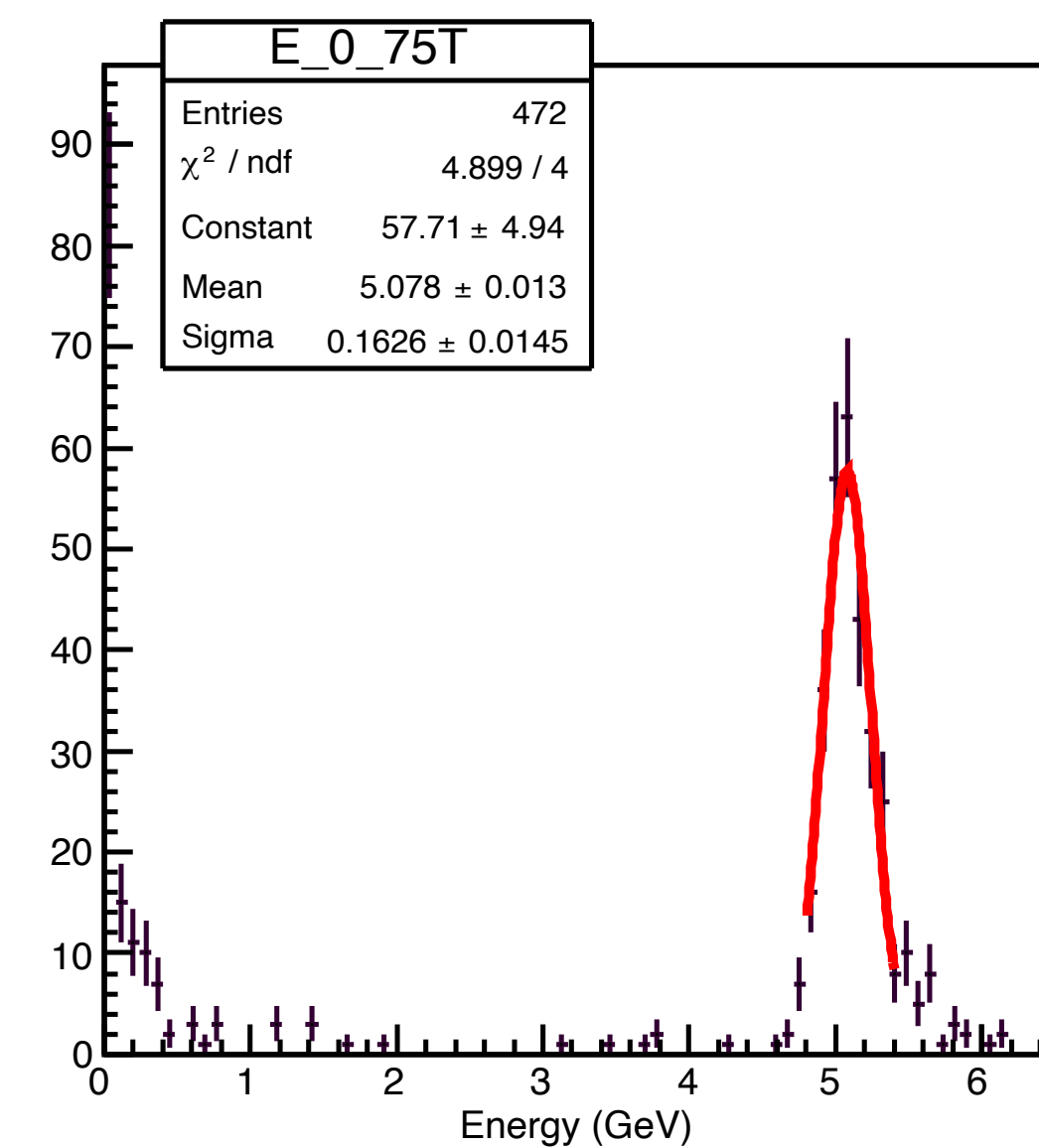
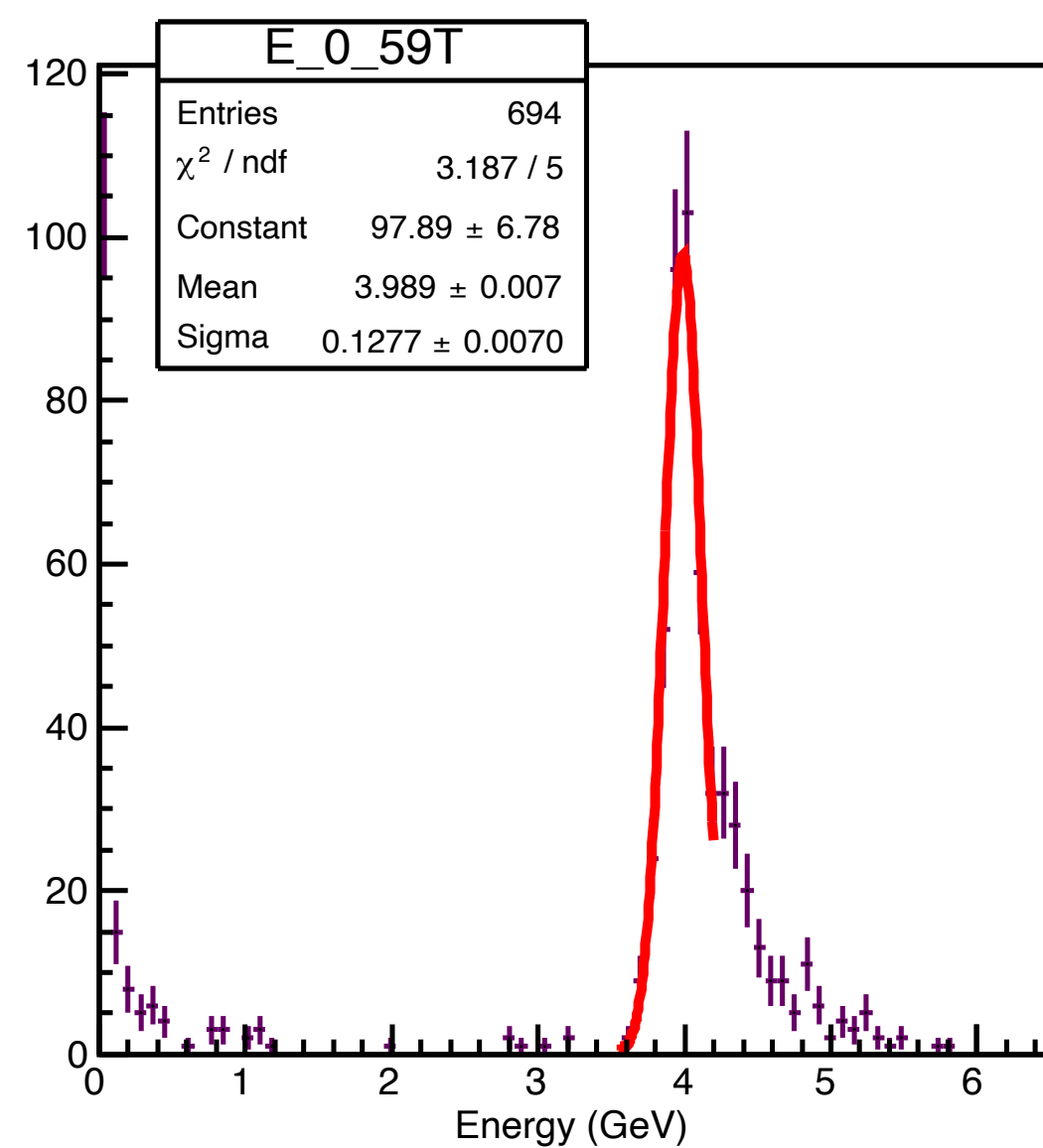
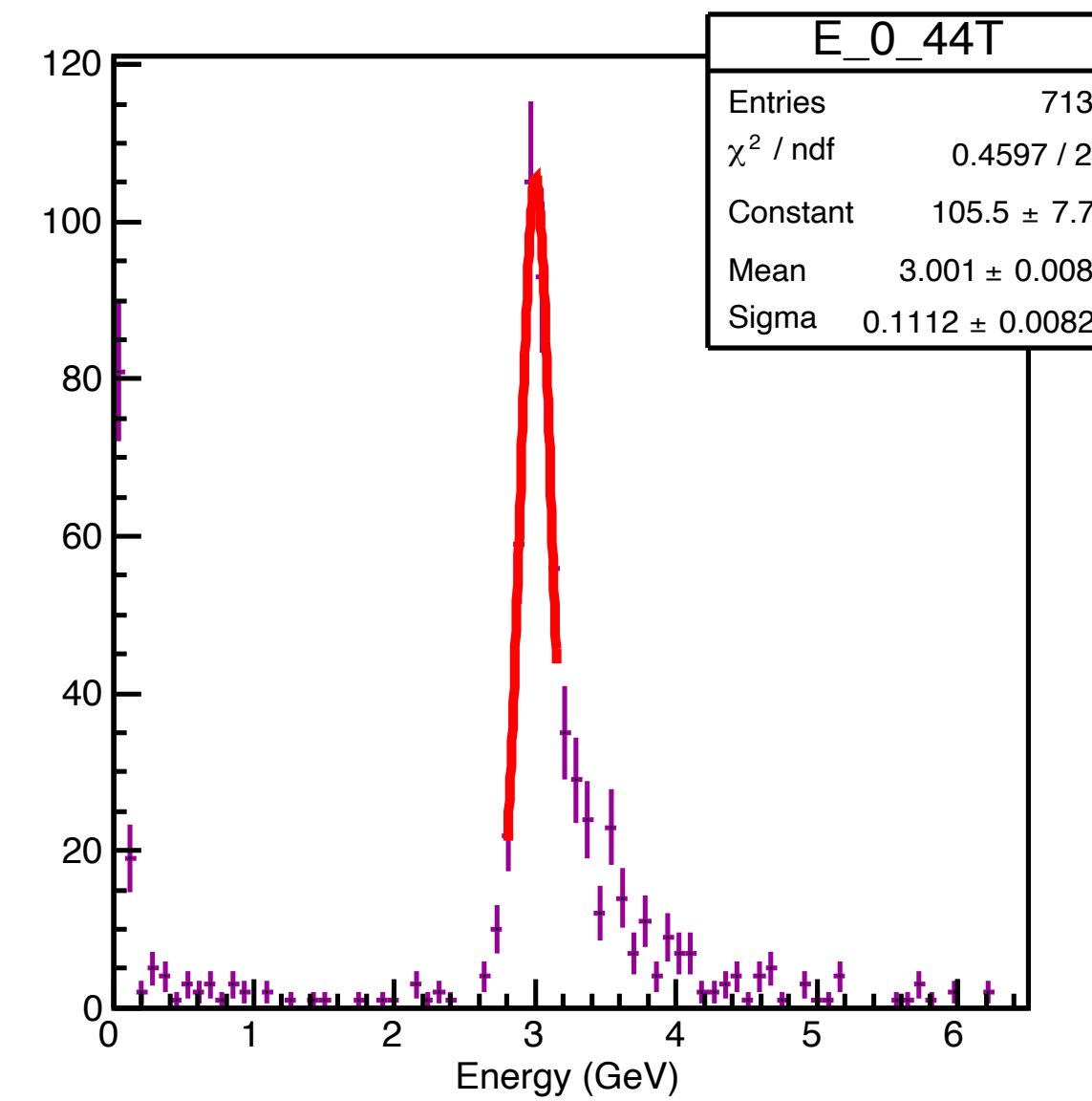
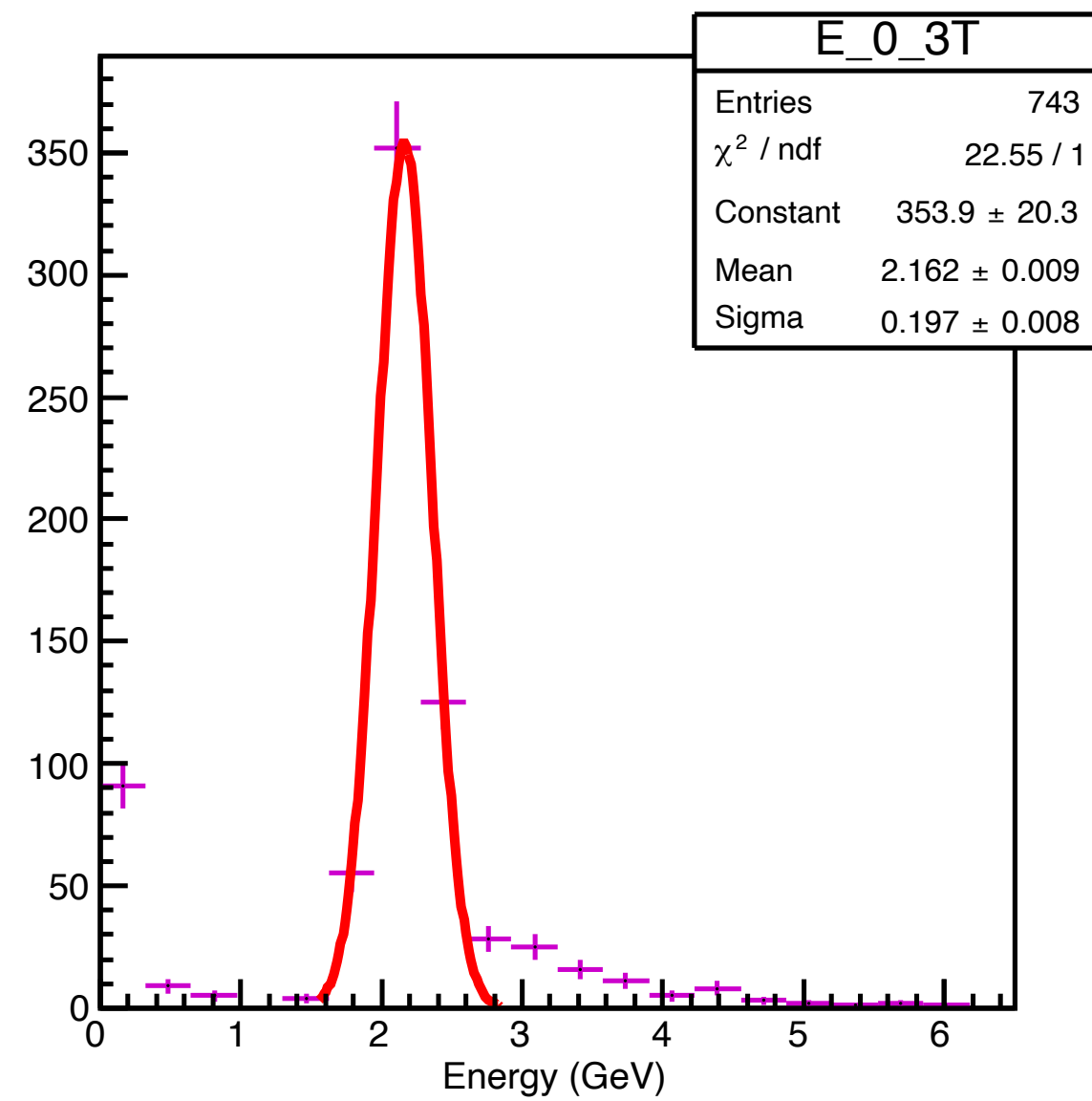
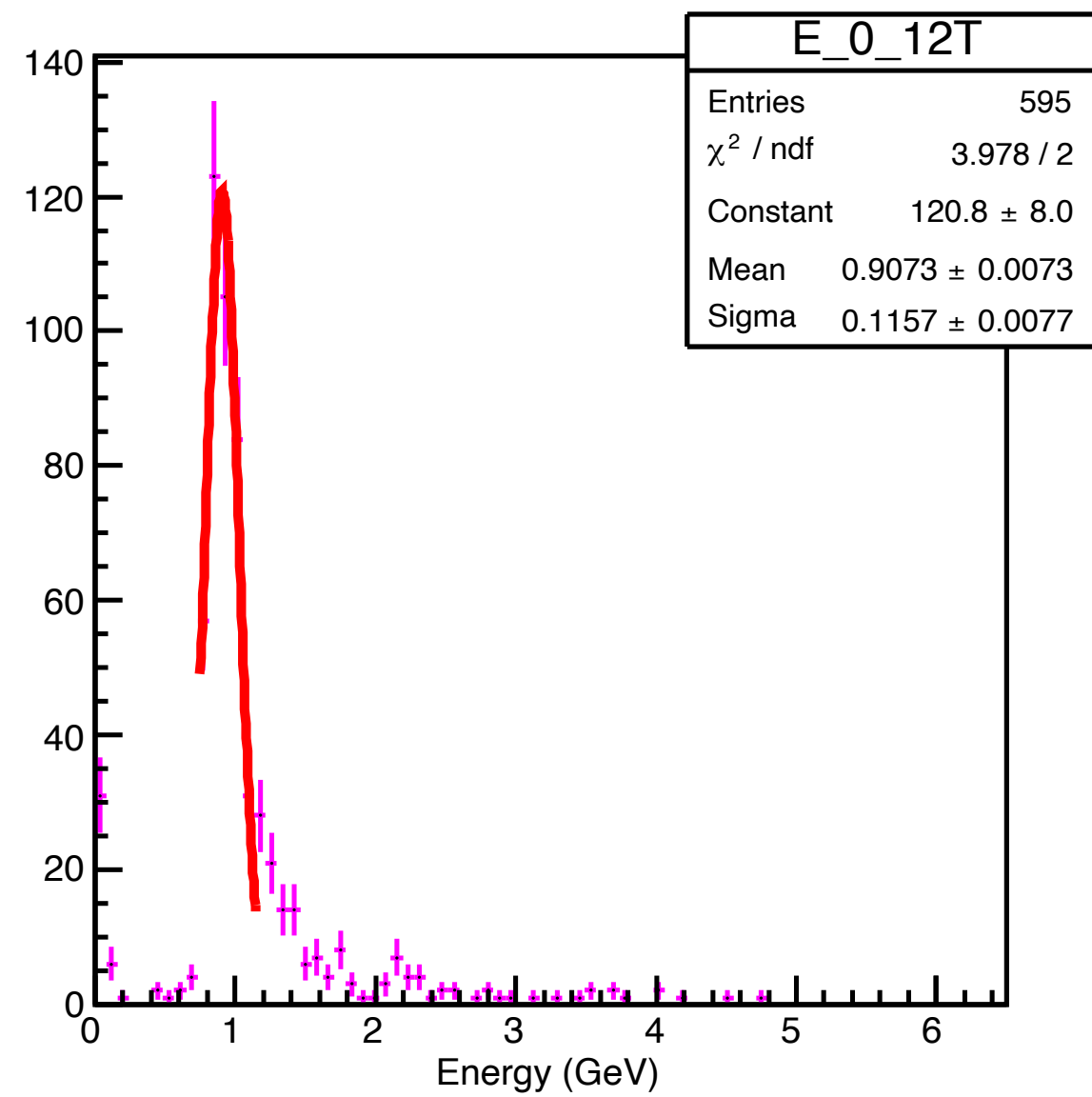


DESY test beam simulation



Modelling the Distributions

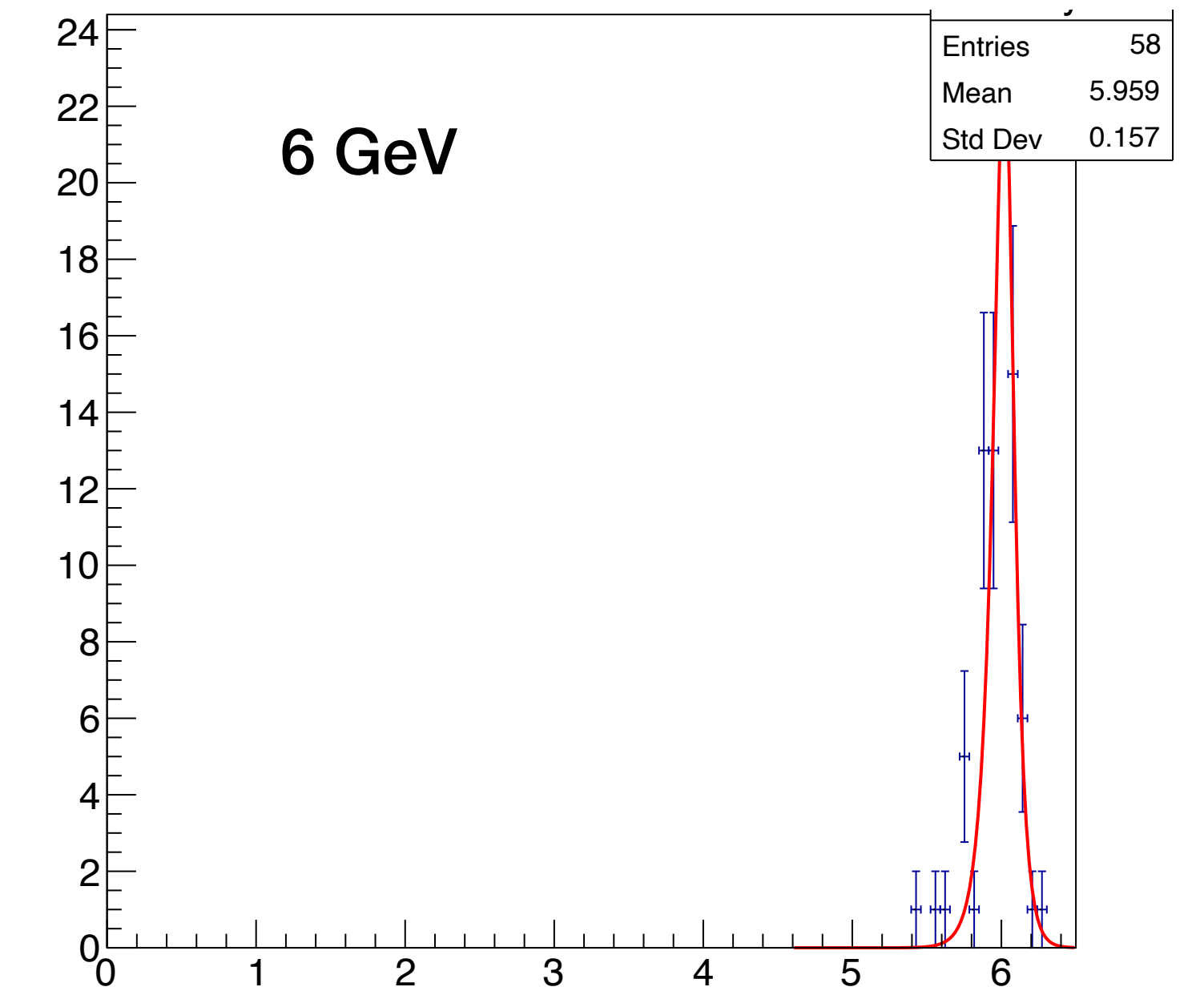
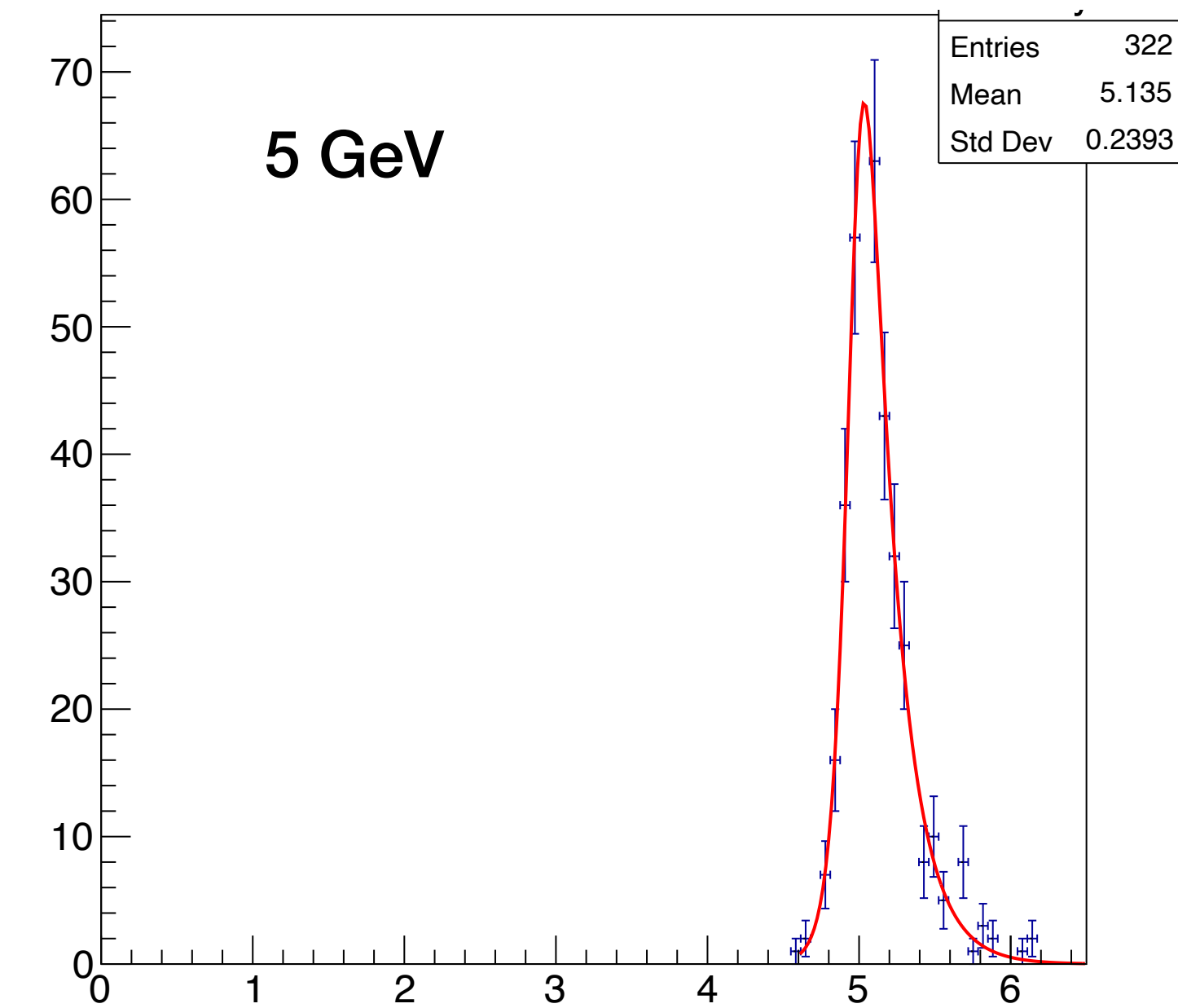
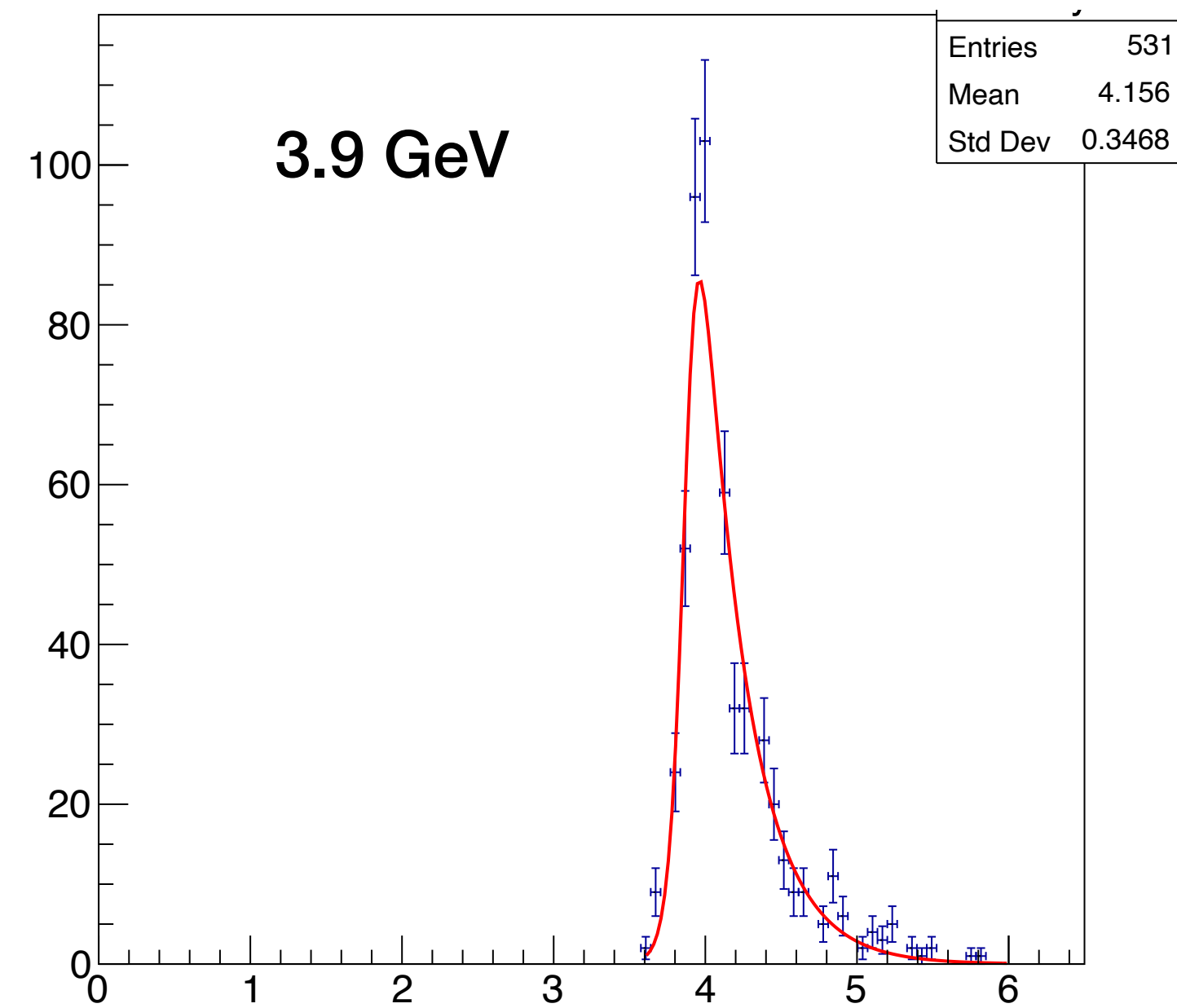
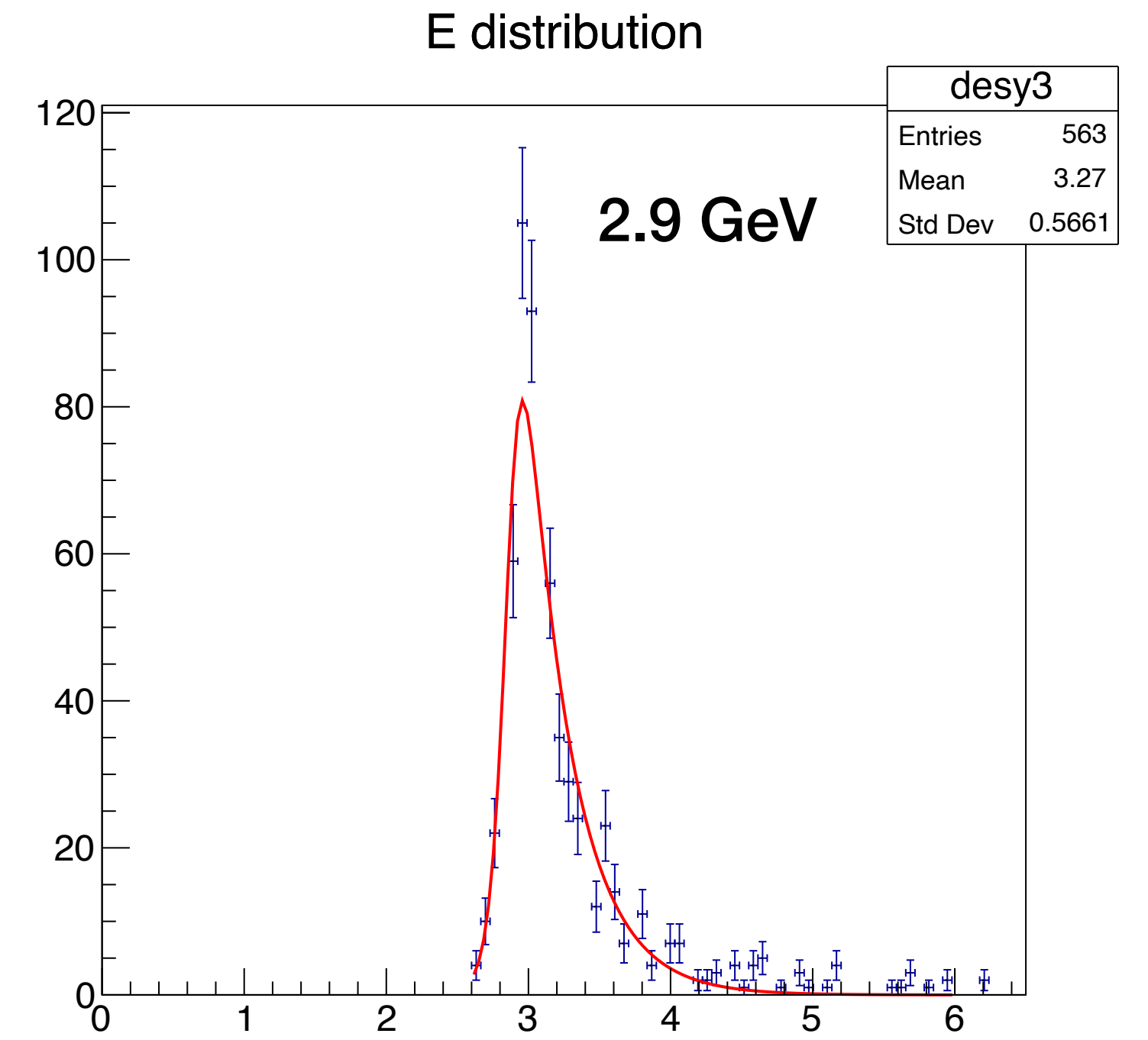
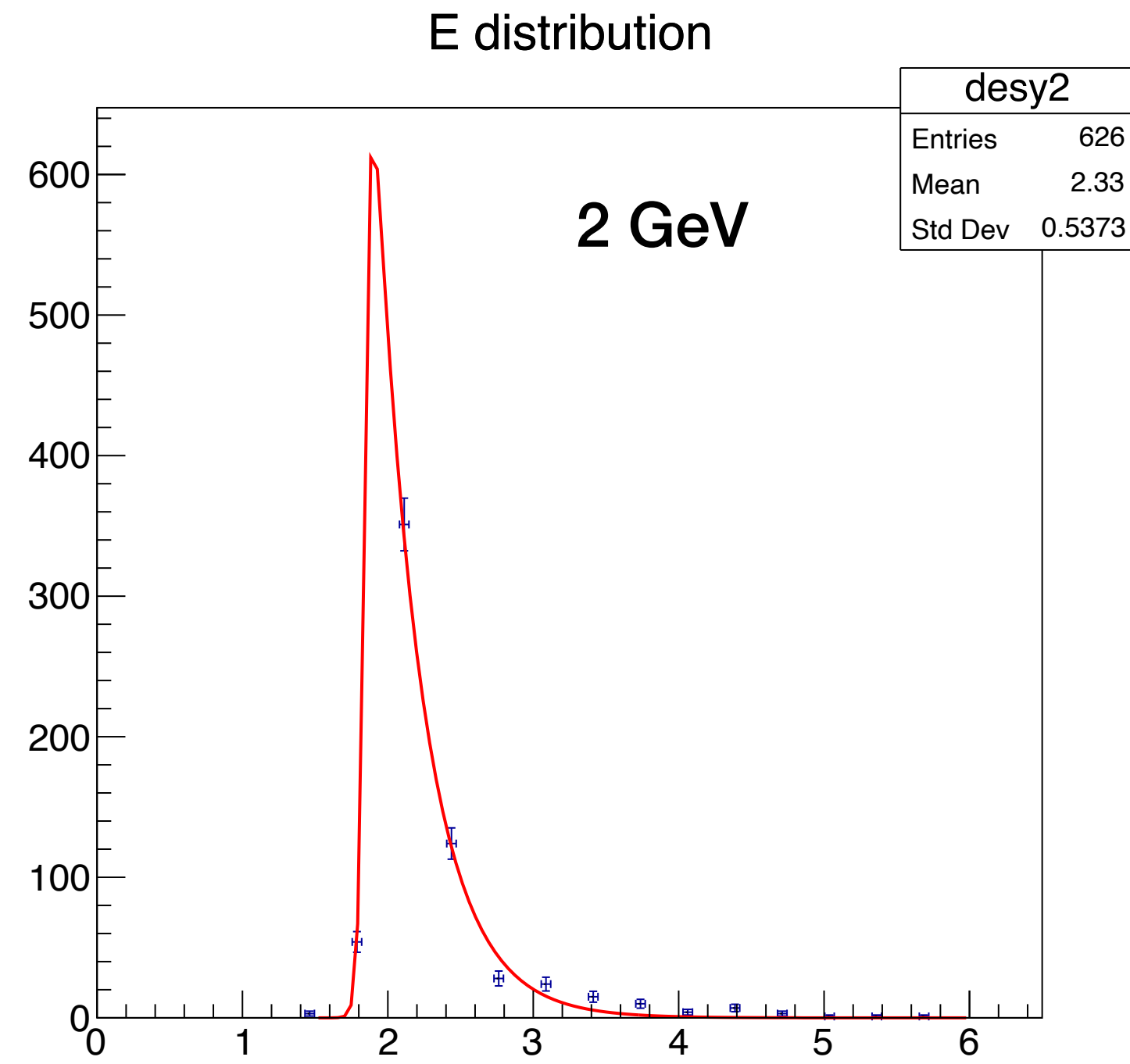
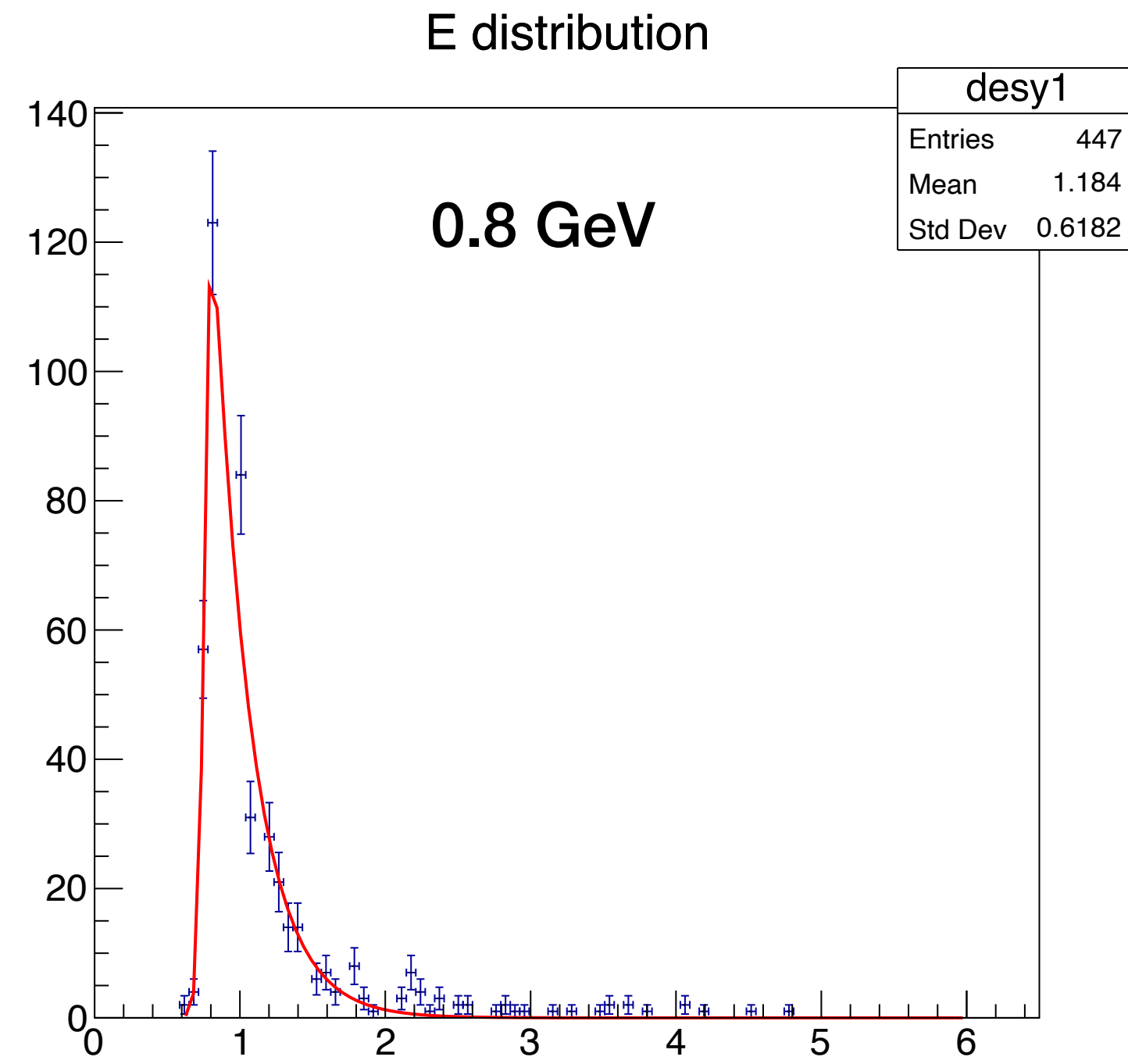
- distributions extracted from Fig. 5.29 in MSc thesis
 - nominal energy (momentum) estimated from B-field
 - ignore low energy background
 - different conditions for 2 GeV?

B (T)	E (GeV)
0.12	0.80
0.30	2.00
0.44	2.93
0.59	3.93
0.75	5.00
0.90	6.00

- all distributions asymmetric, asymmetry reduced for higher energy
 - approaching accelerator limit
- simplest function to describe main features:

$$f(E) = A \frac{\exp[-b(E - E_0)]}{1 + \exp[-a(E - E_0)]}$$

DESY test beam fits



Modelling the Test Beam Energy Distributions

- data points extracted from Fig. 5.29 in MSc thesis

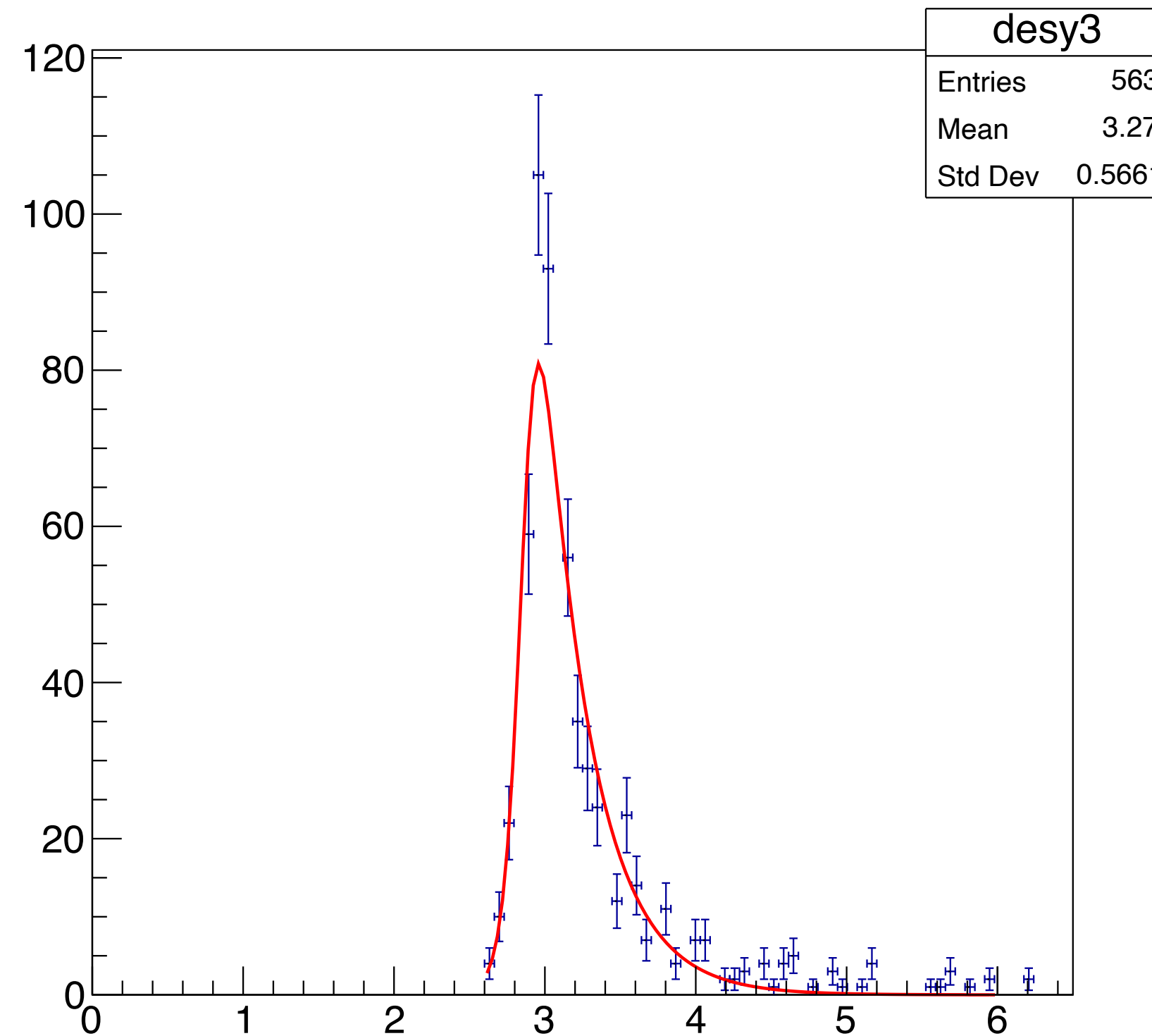
- comparison to measurements at intermediate energy (here 3 GeV)
 - asymmetry significant
- ignore low-E bkg
- nominal energy (momentum) estimated from B-field: 0.44T \rightarrow 2.93 GeV
 - energy scale?
 - mean from histogram \approx 3.27 GeV
 - mean from Gauss \approx 3.03 GeV

- simplest function to describe main features:

$$f(E) = A \frac{\exp[-b(E - E_0)]}{1 + \exp[-a(E - E_0)]}$$

4

E distribution



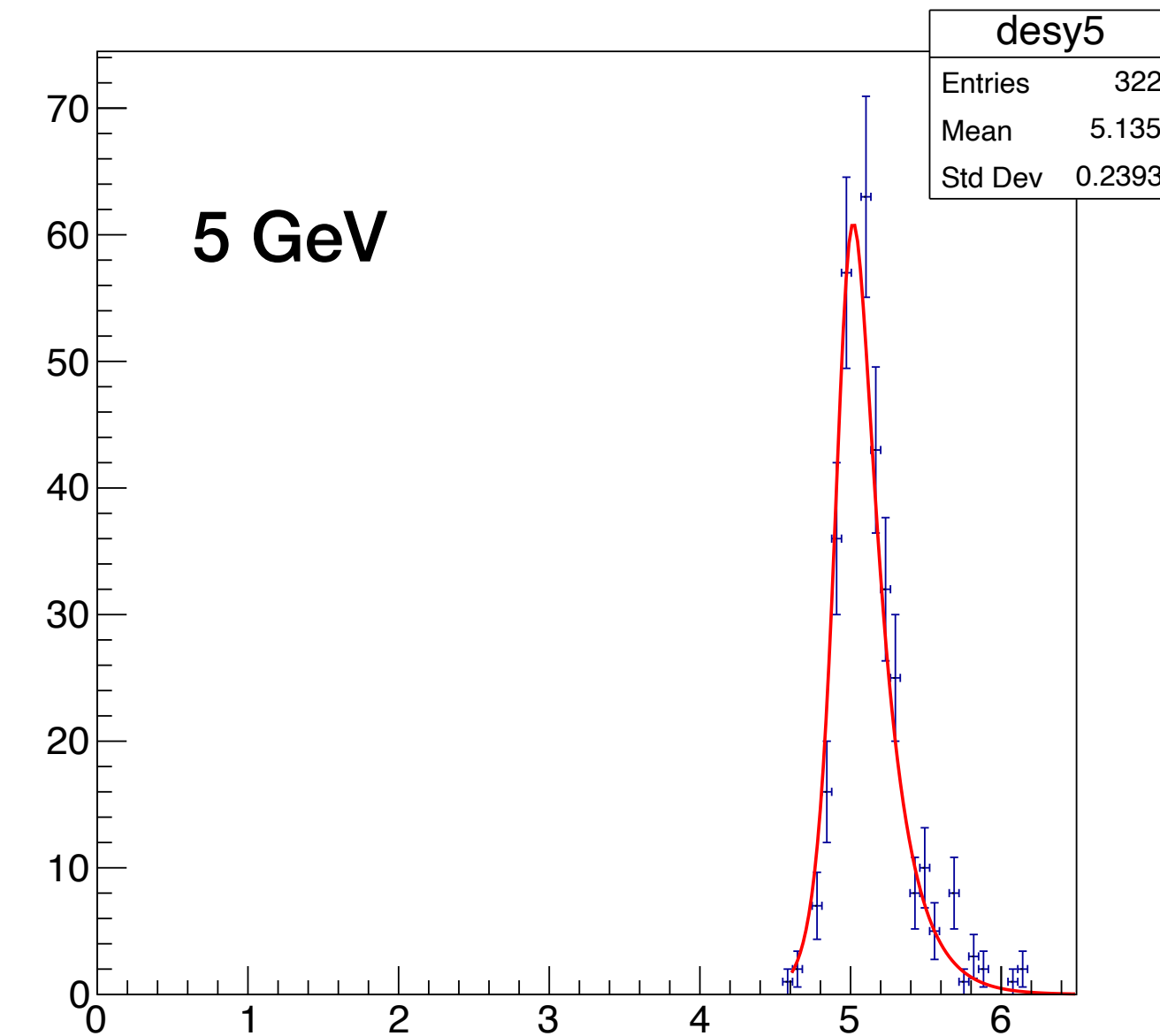
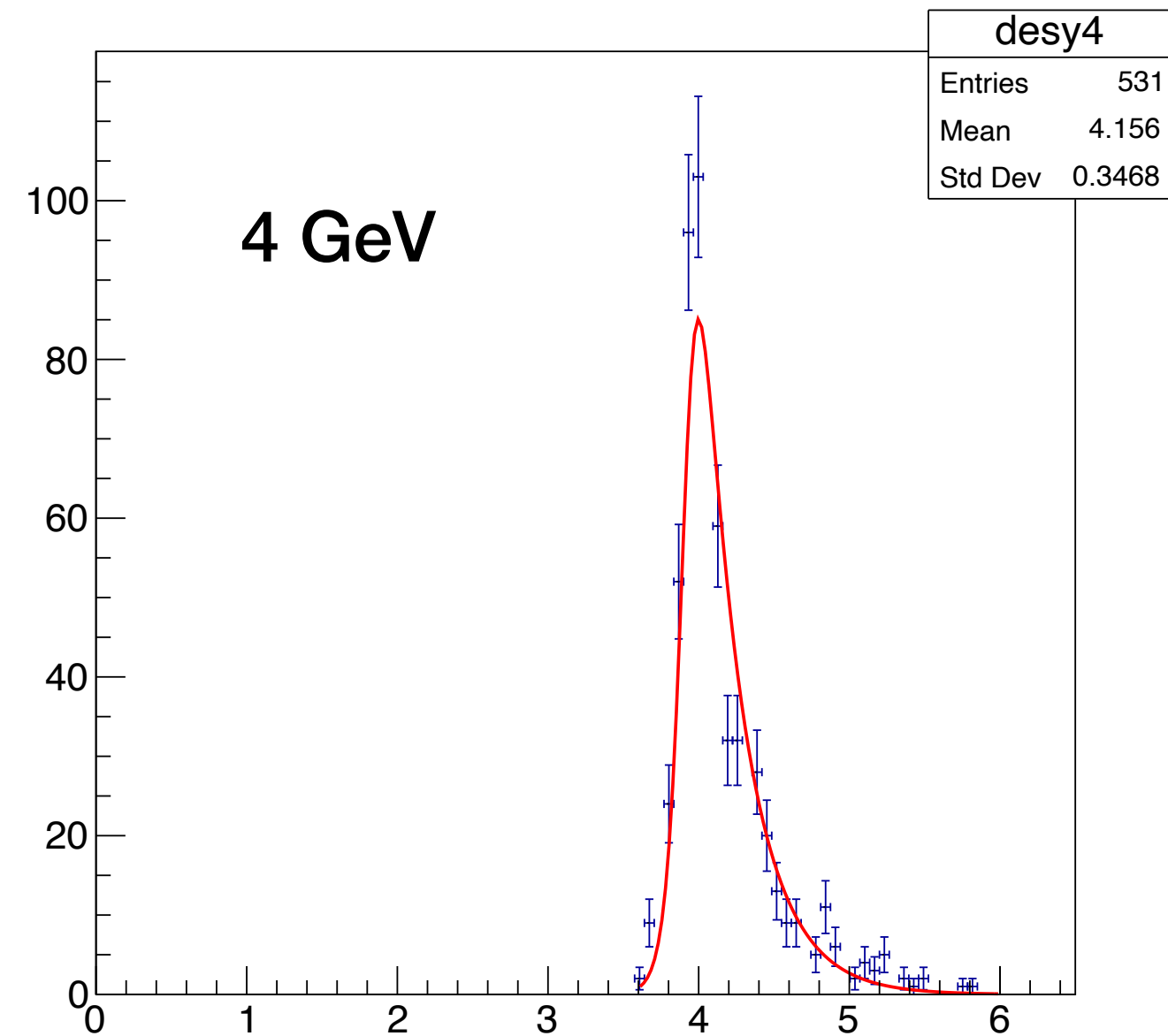
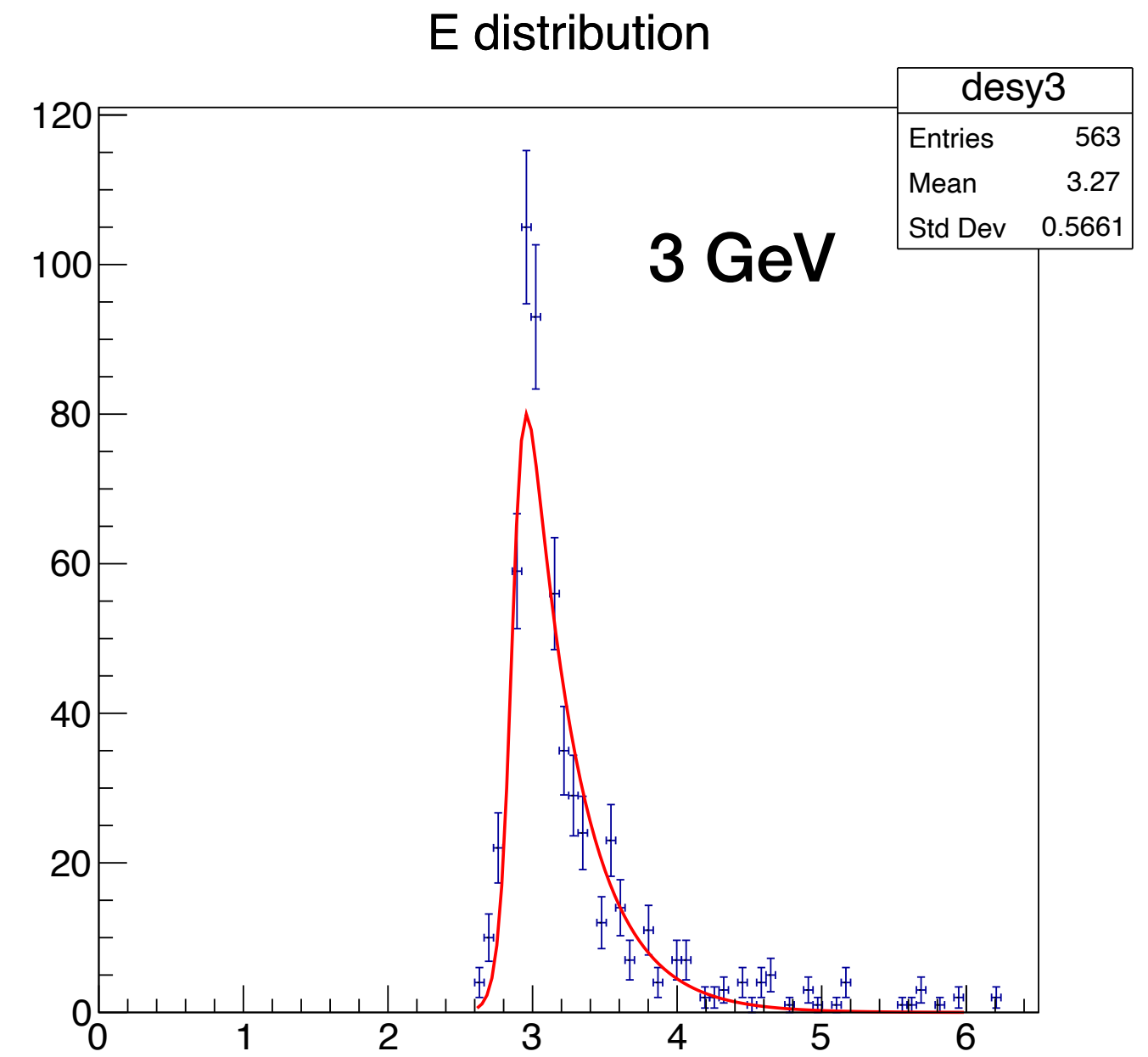
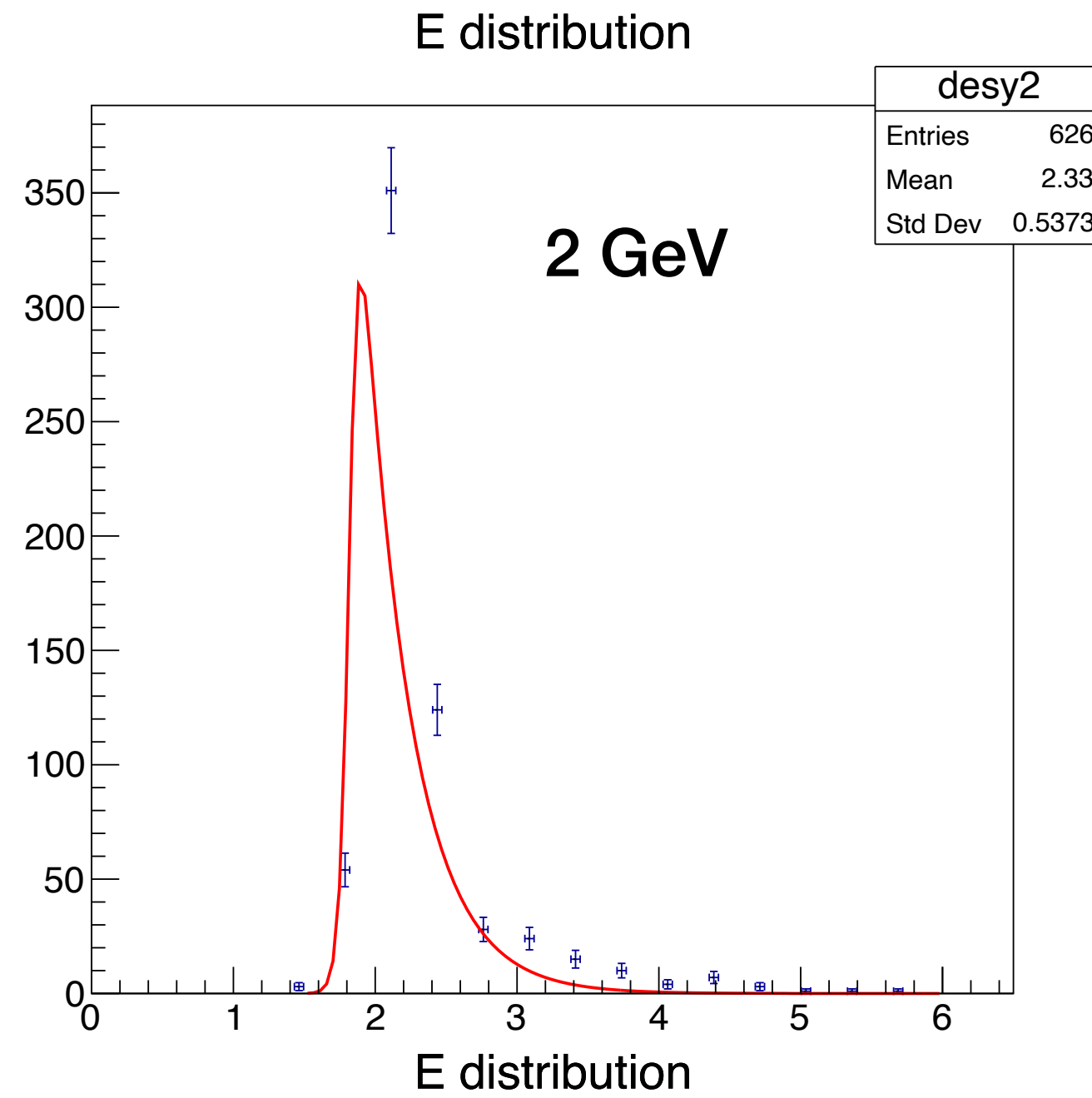
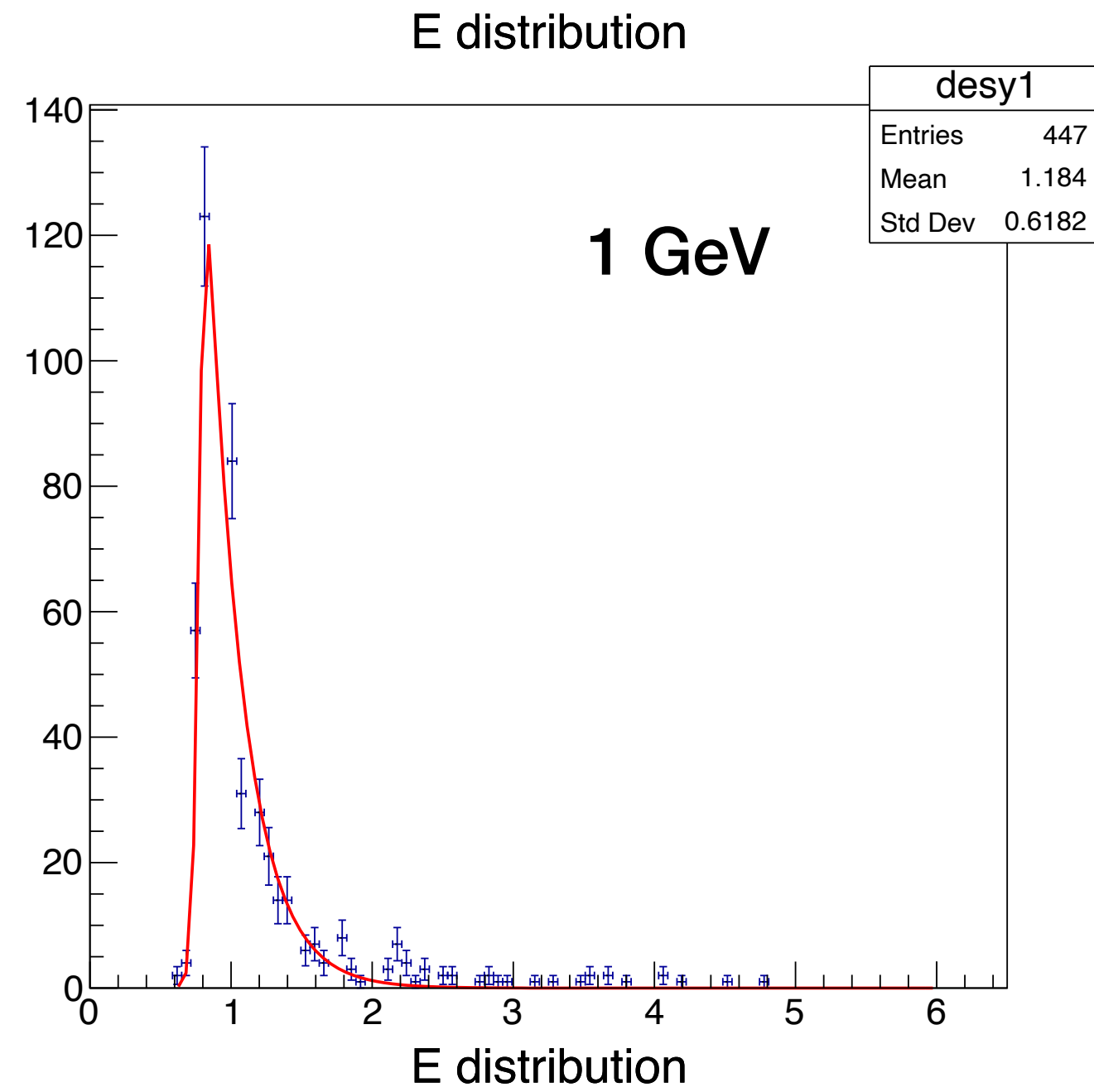
fit parameters:

$$E_0 = 2.874 \text{ GeV}$$

$$a = 18.10 \text{ GeV}^{-1}$$

$$b = 3.178 \text{ GeV}^{-1}$$

DESY test beam simulation



- constrained fit to all 5 energies
 - less weight to 2 GeV data
 - strongest tail at low energy ~ reproduced
 - extrapolated result for 5.8 GeV look also reasonable

DESY test beam simulation

