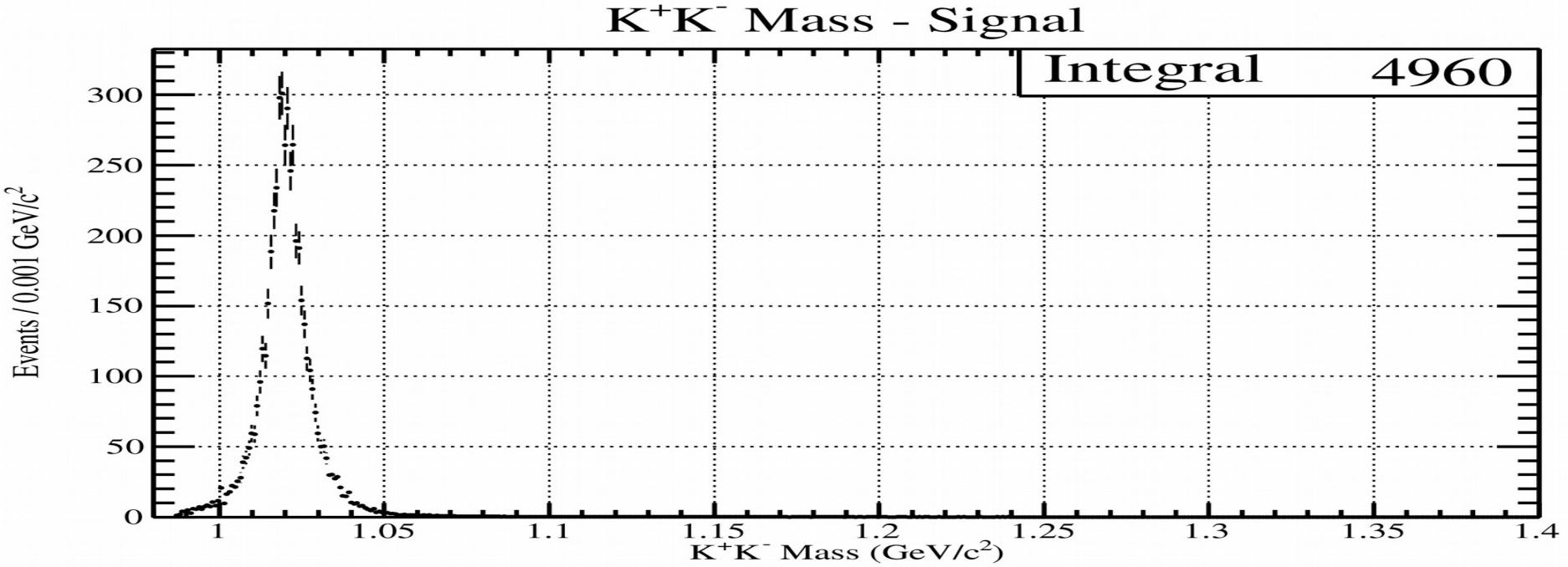
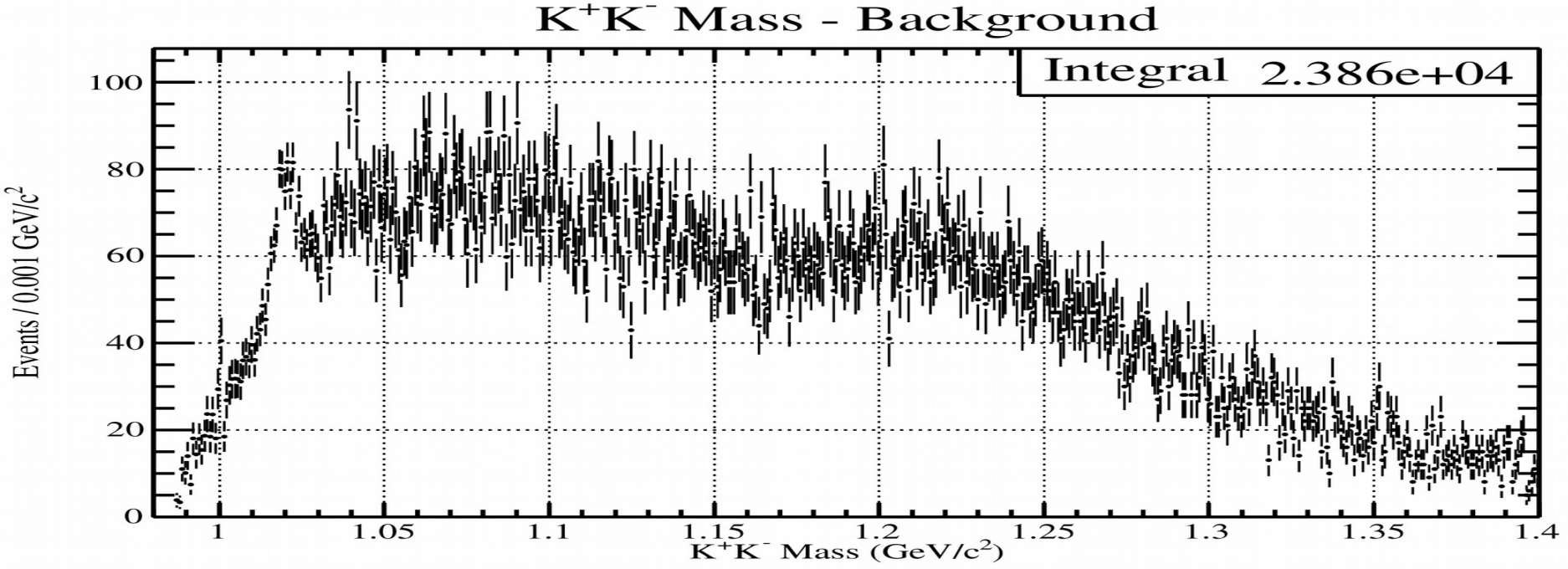
List of things this talk will discuss:

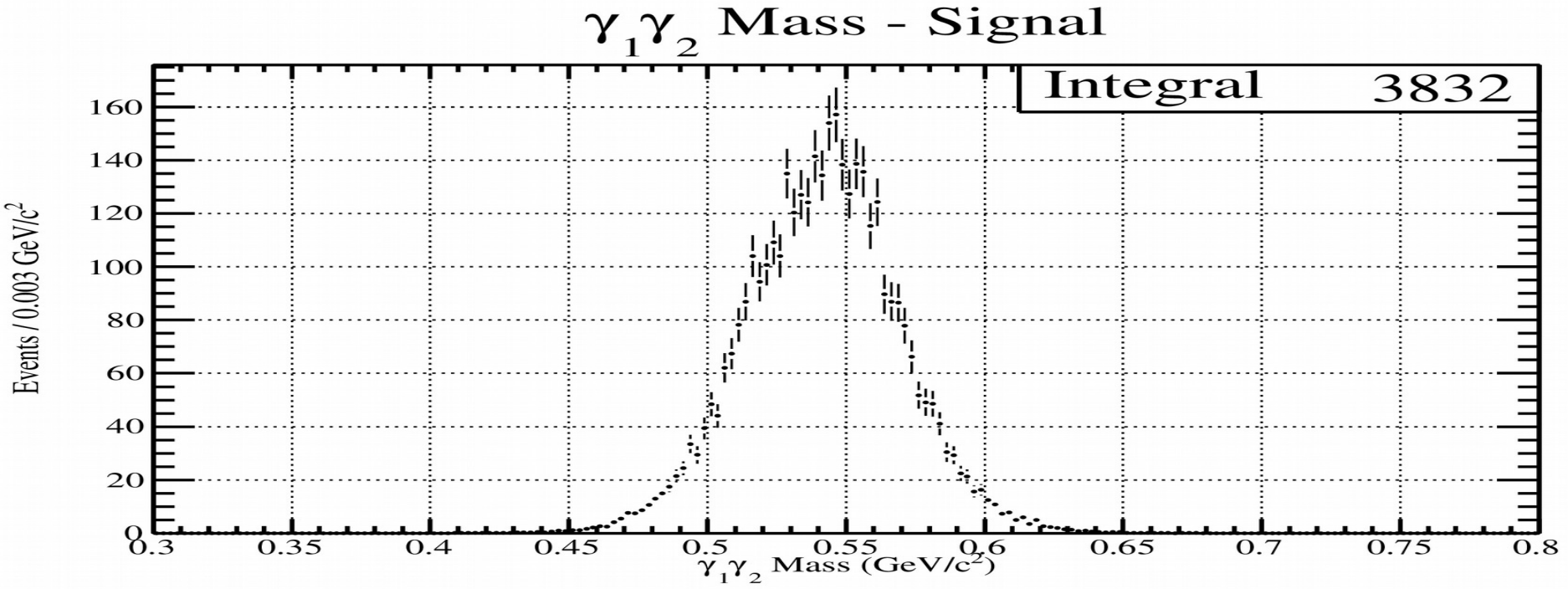
- Why was signal ‘leaking’ into background plots?
- New Qvalue study with different KK mass limits

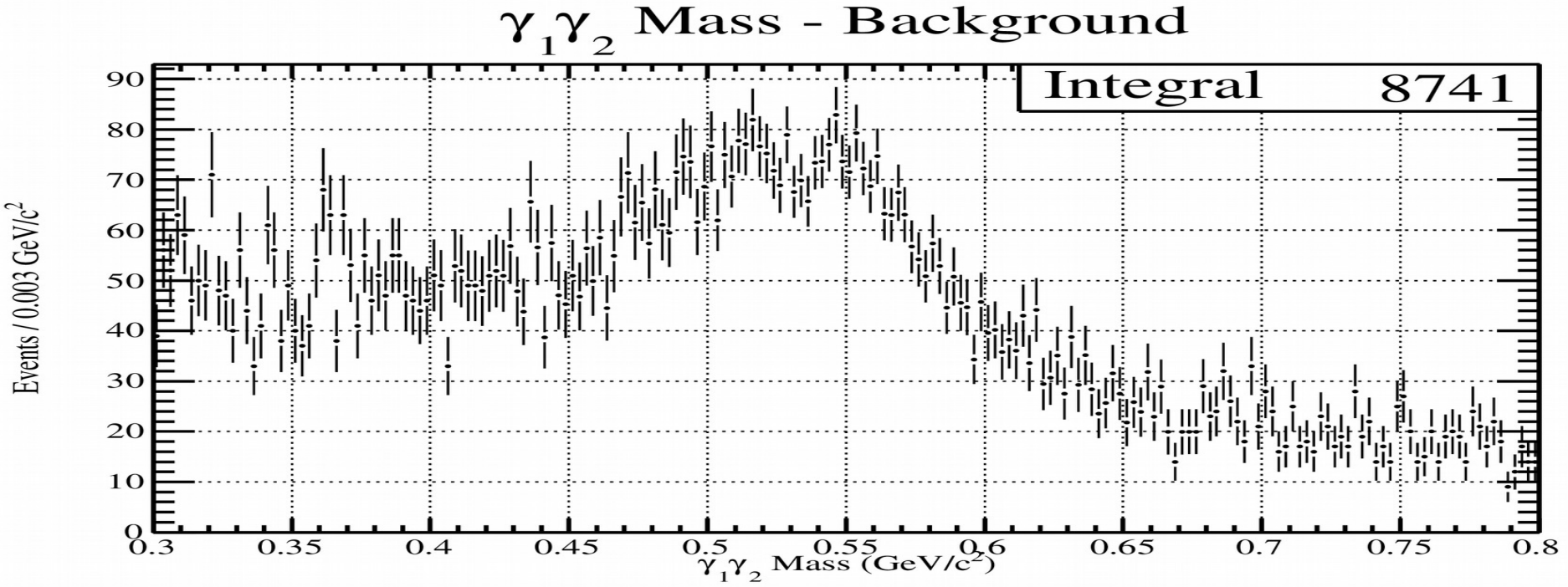
OLD Phi: Qvalue Data



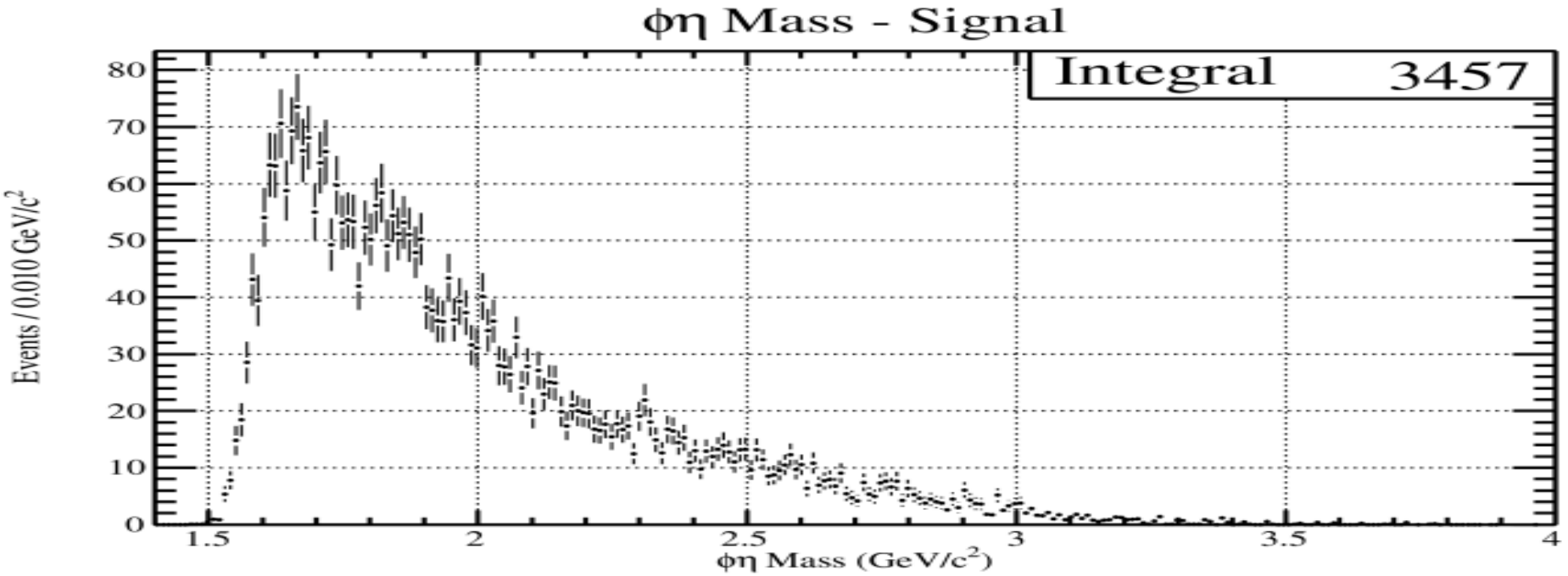


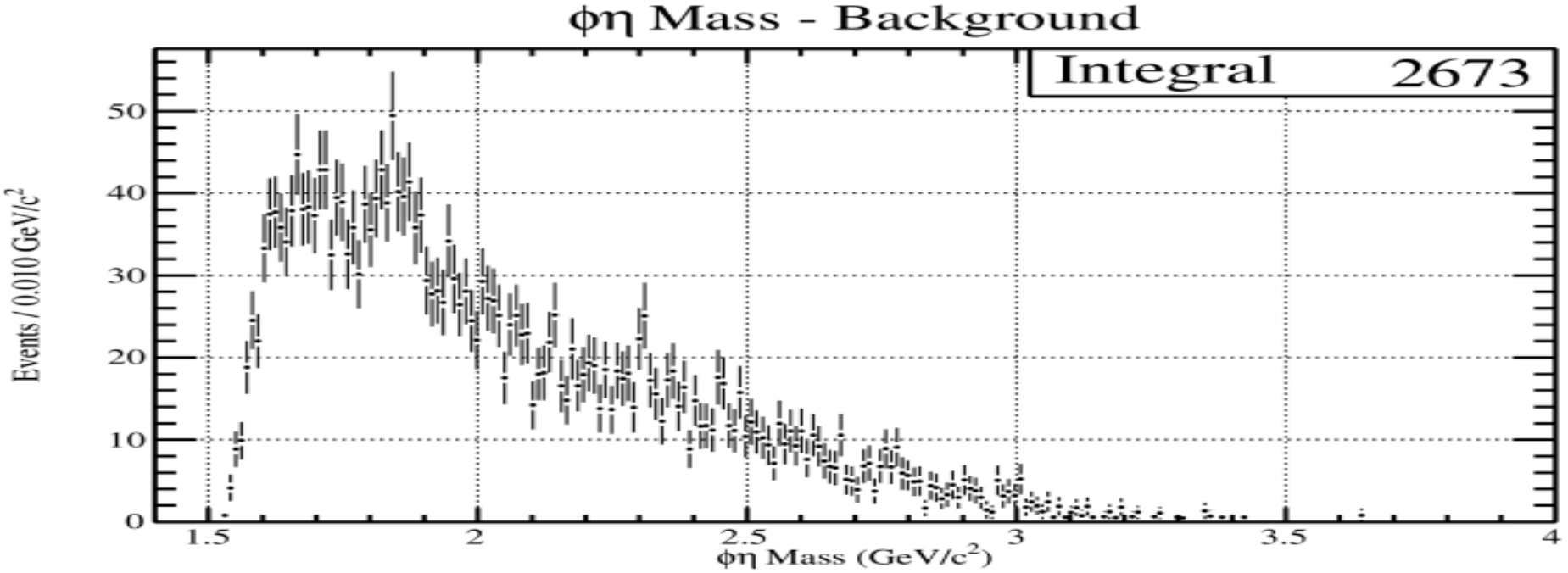
OLD Eta: Qvalue Data





OLD PhiEta: Qvalue Data

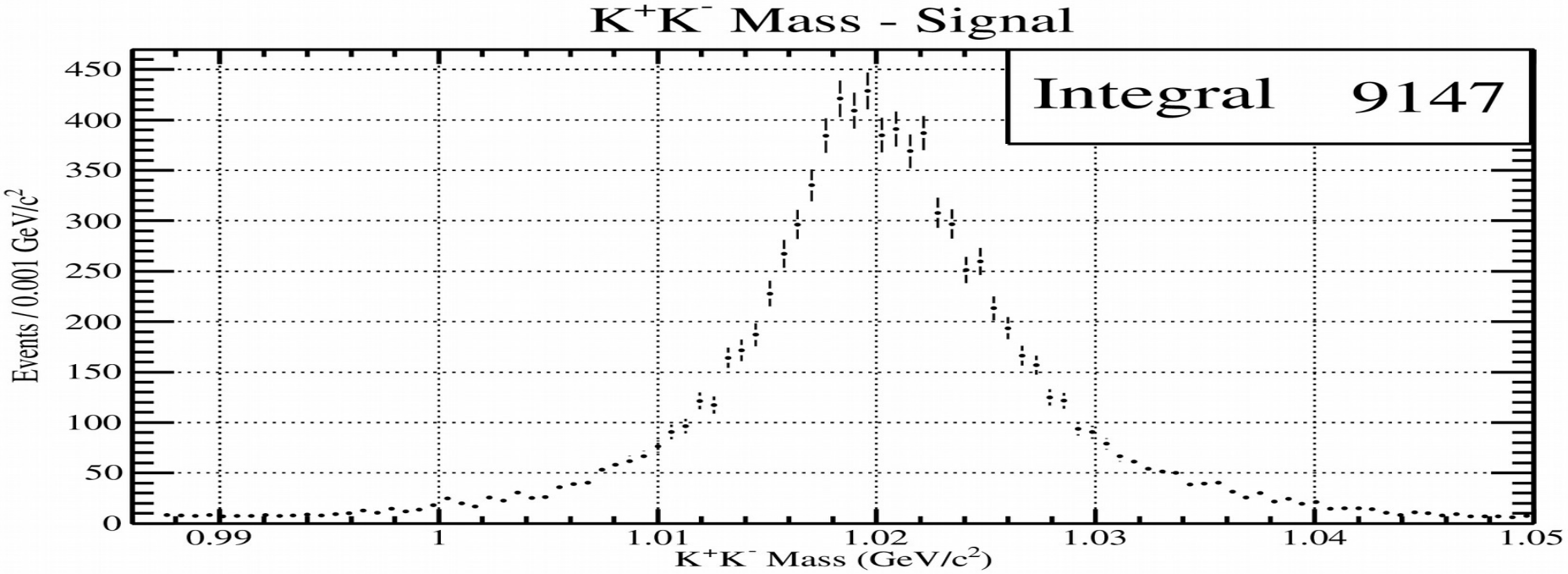


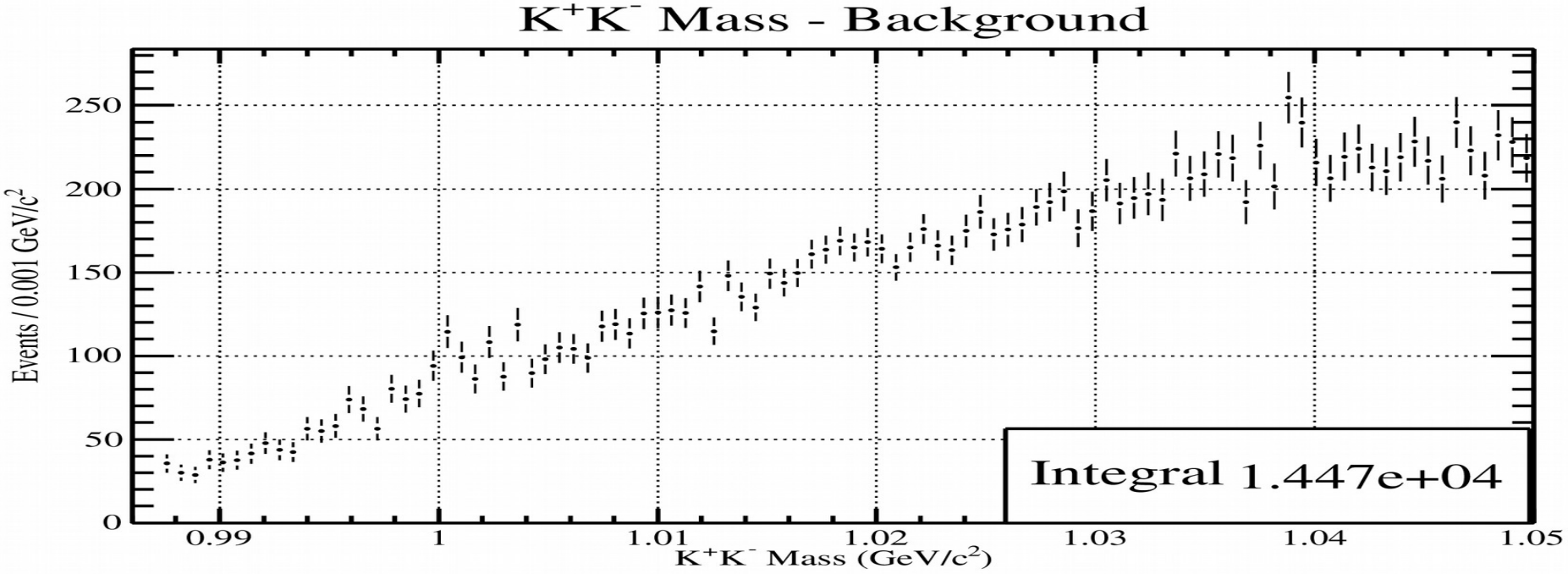


The issue with the old Qvalue Method:

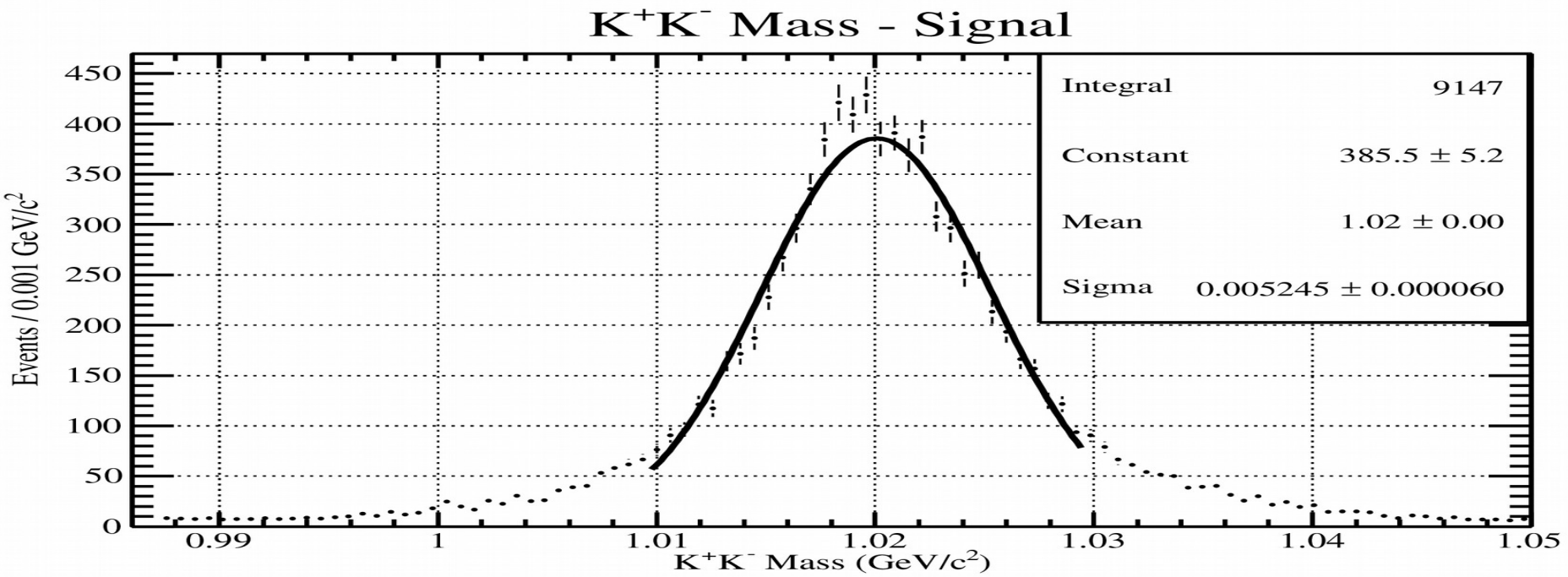
- Why was signal ‘leaking’ into background plots?
  - After studying these events, it was found that many of them shared nearest neighbors with high KK mass events.
  - The large amount of extra background events increased the probability of a ‘good’ event sharing similar kinematics to background events.
  - This surplus of extra background caused a noticeable amount of signal to be leaked into the background plots.
- Solution: Reduce the KKGG phase space, such that there is still plenty of background not so many events
  - Instead of looking at KK events between 0.98-1.4, we now only consider the range 0.98-1.05

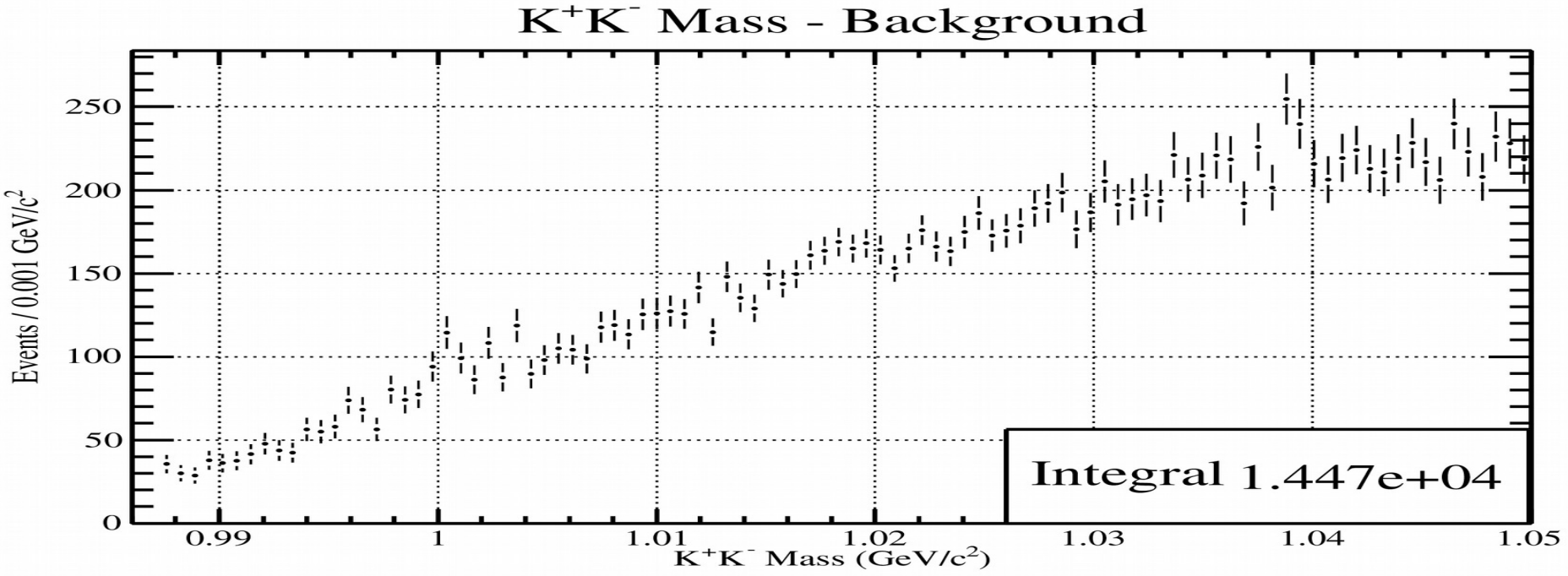
NEW Phi: Qvalue



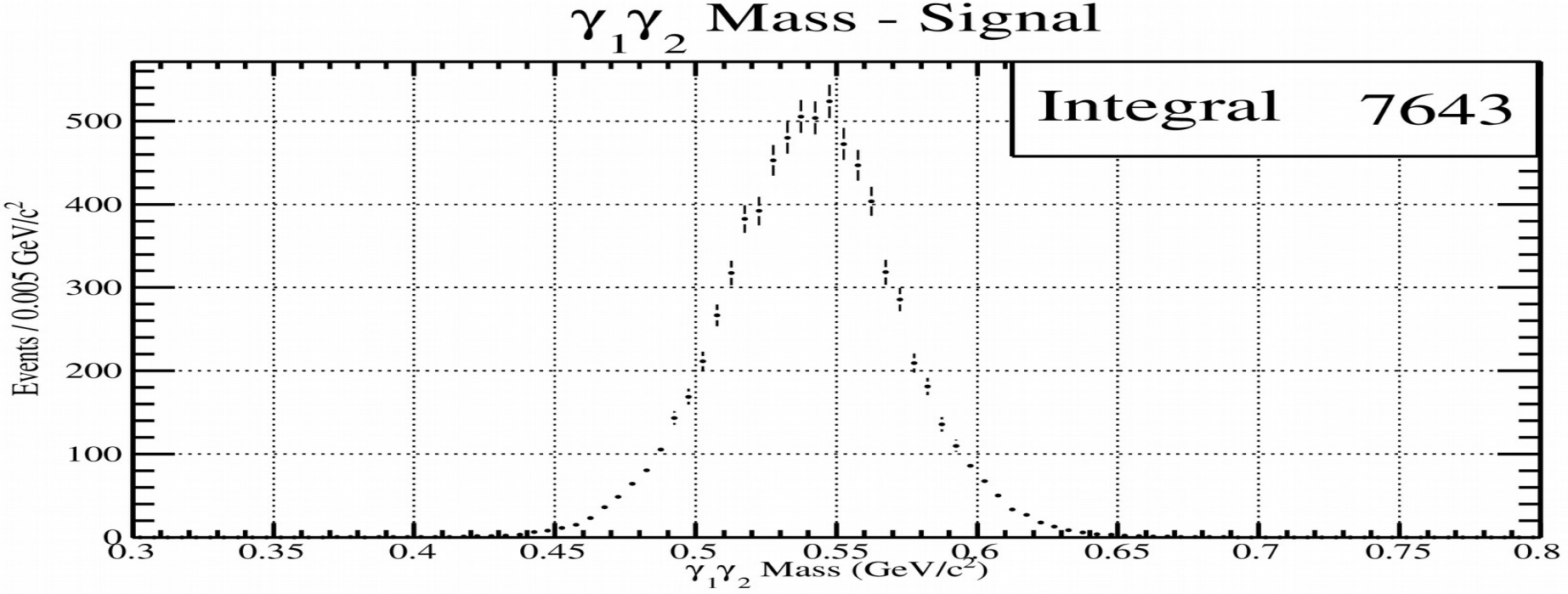


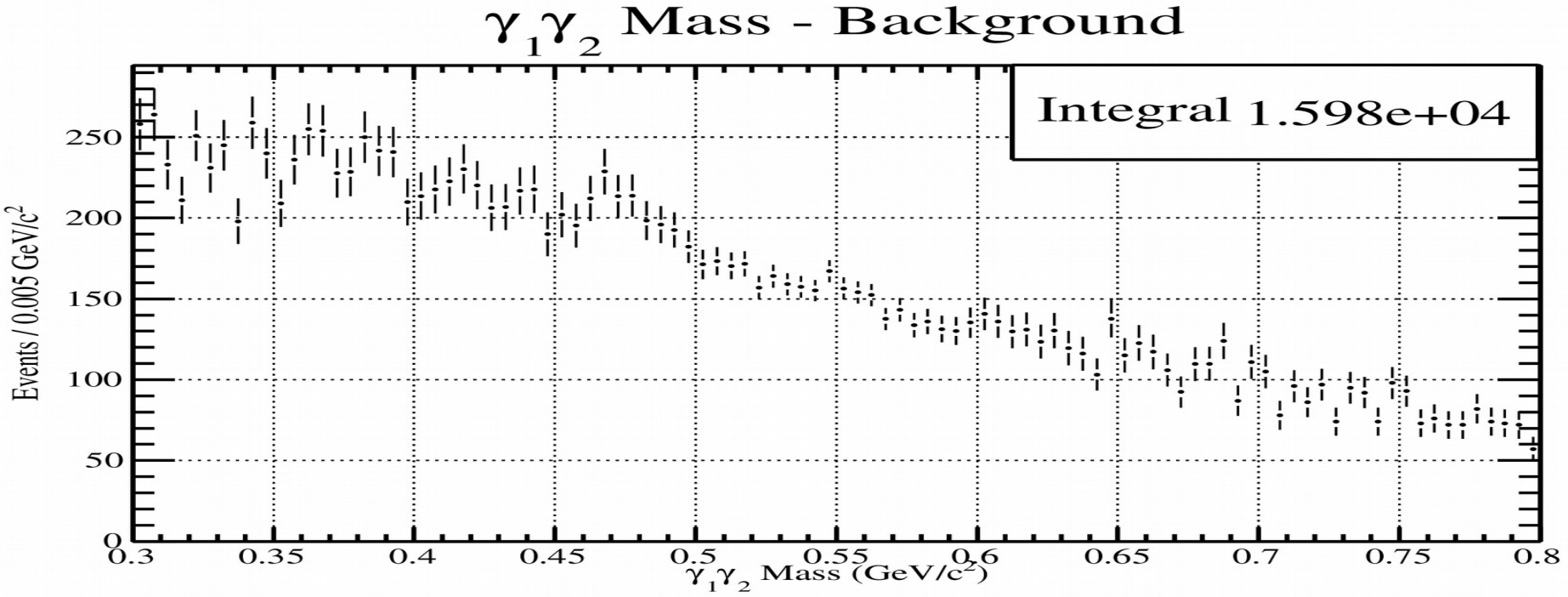
New Phi Fit: Qvalue



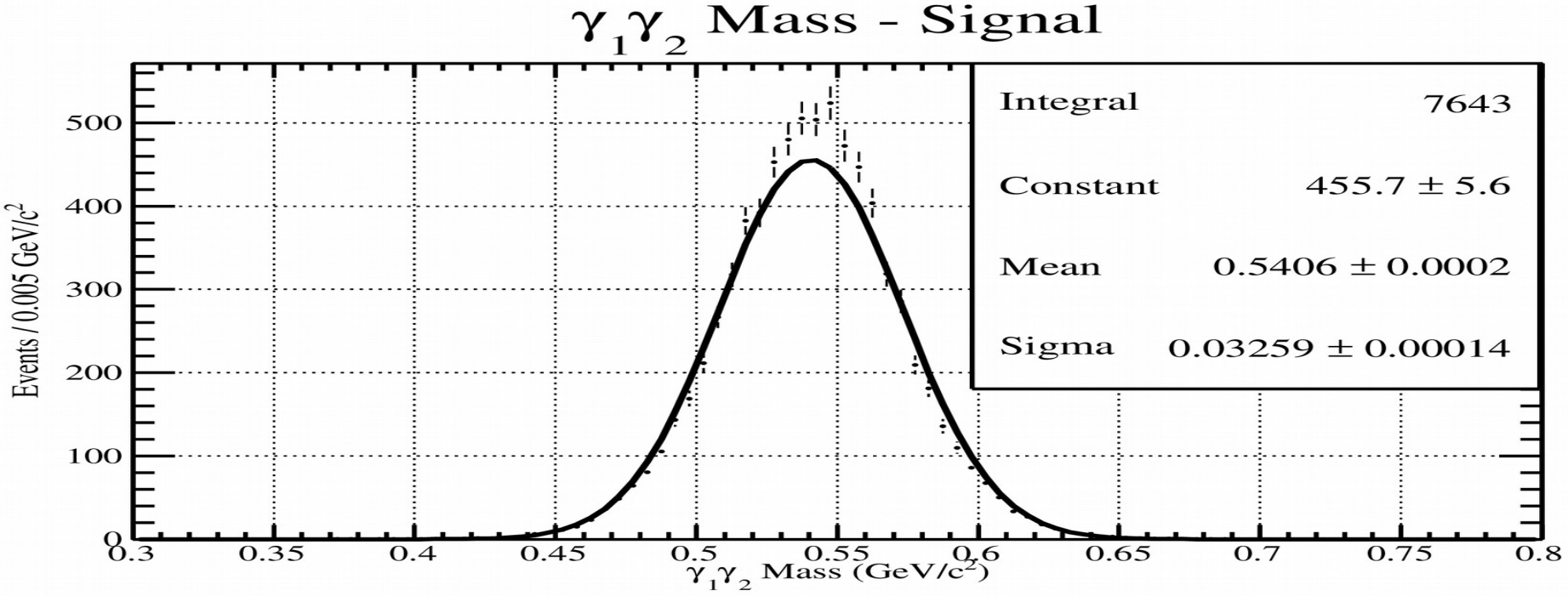


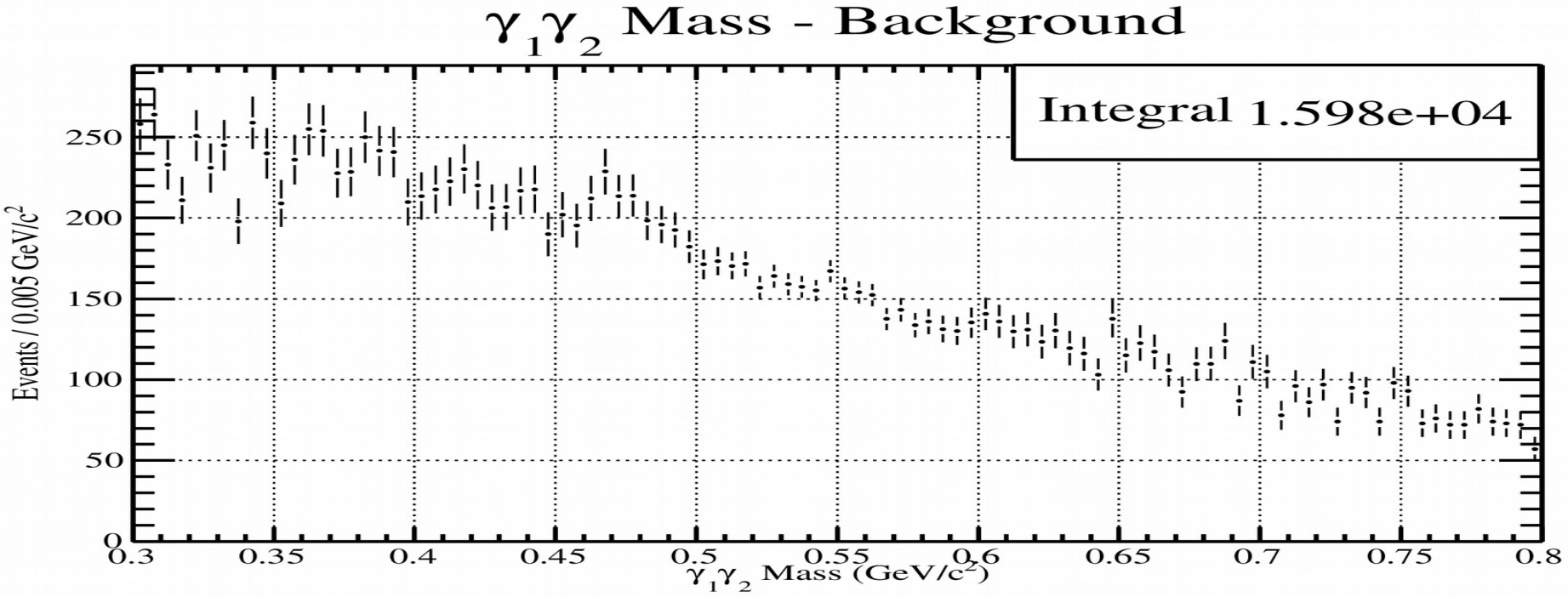
New Eta: Qvalue



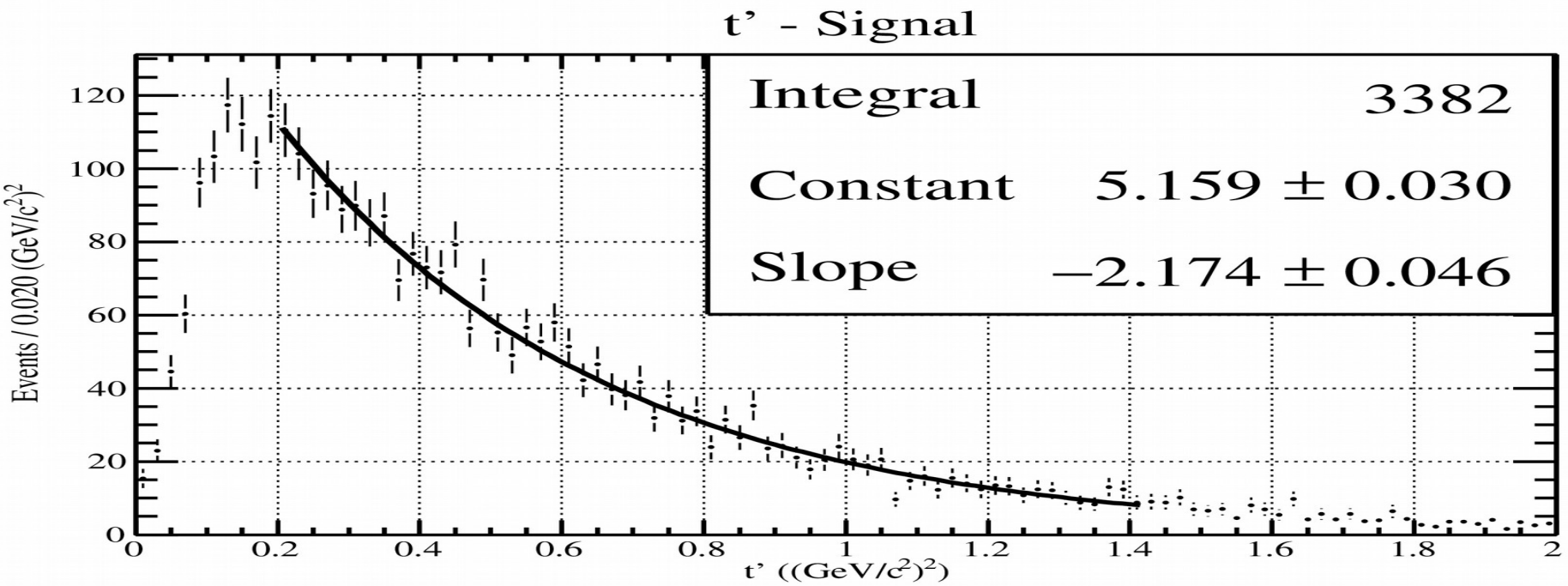


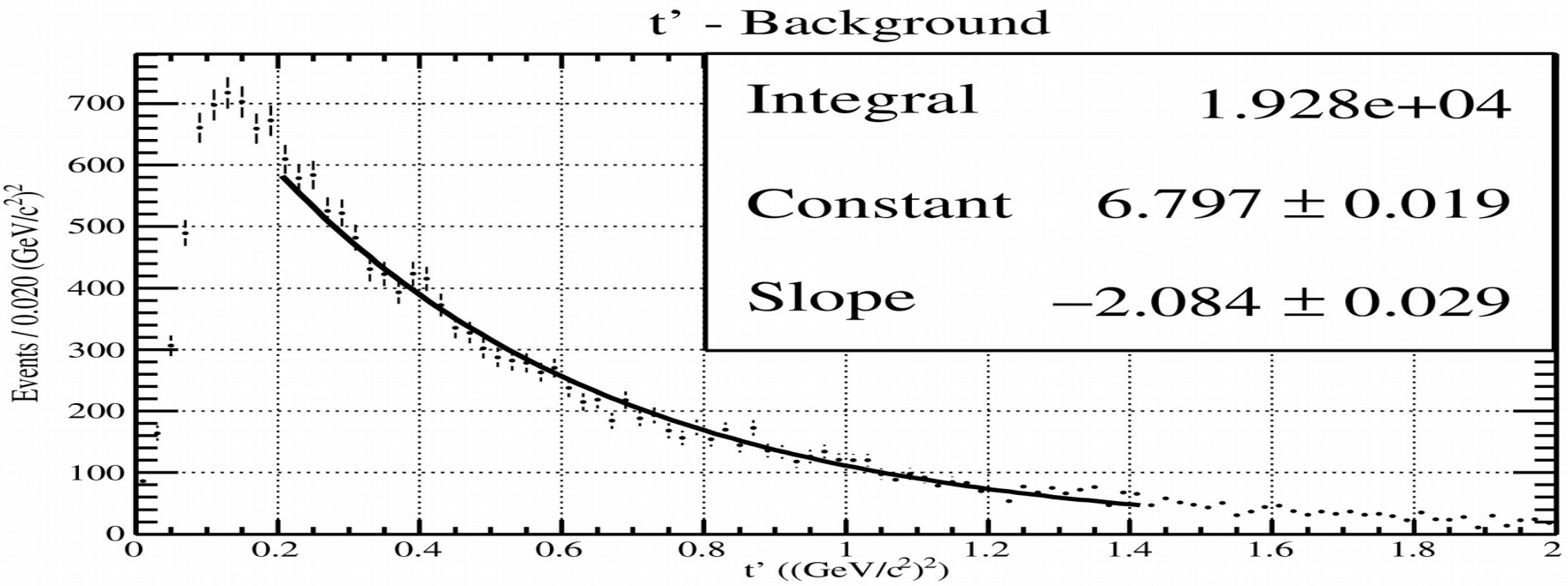
New Eta Fit: Qvalue



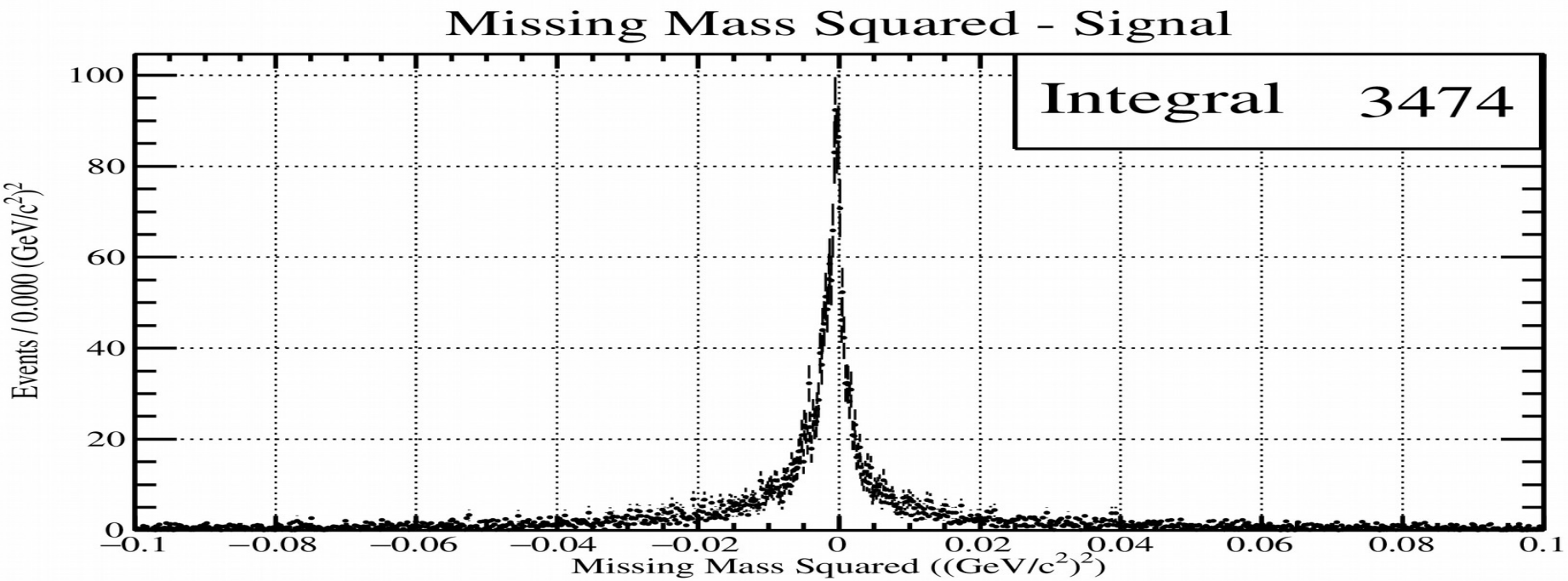


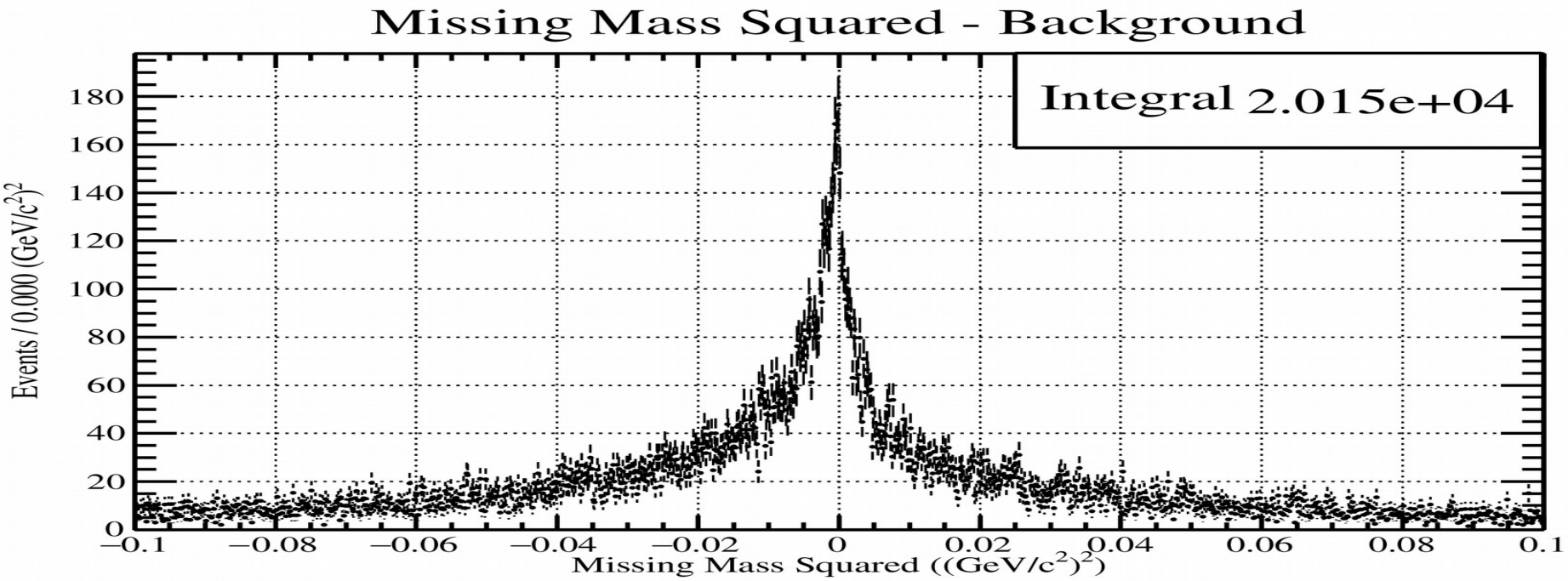
New t: Qvalue


t' - Signal
Integral 3382
Constant 5.159 ± 0.030
Slope −2.174 ± 0.046
Events / 0.020 (GeV/c²)²
t' ((GeV/c²)²)

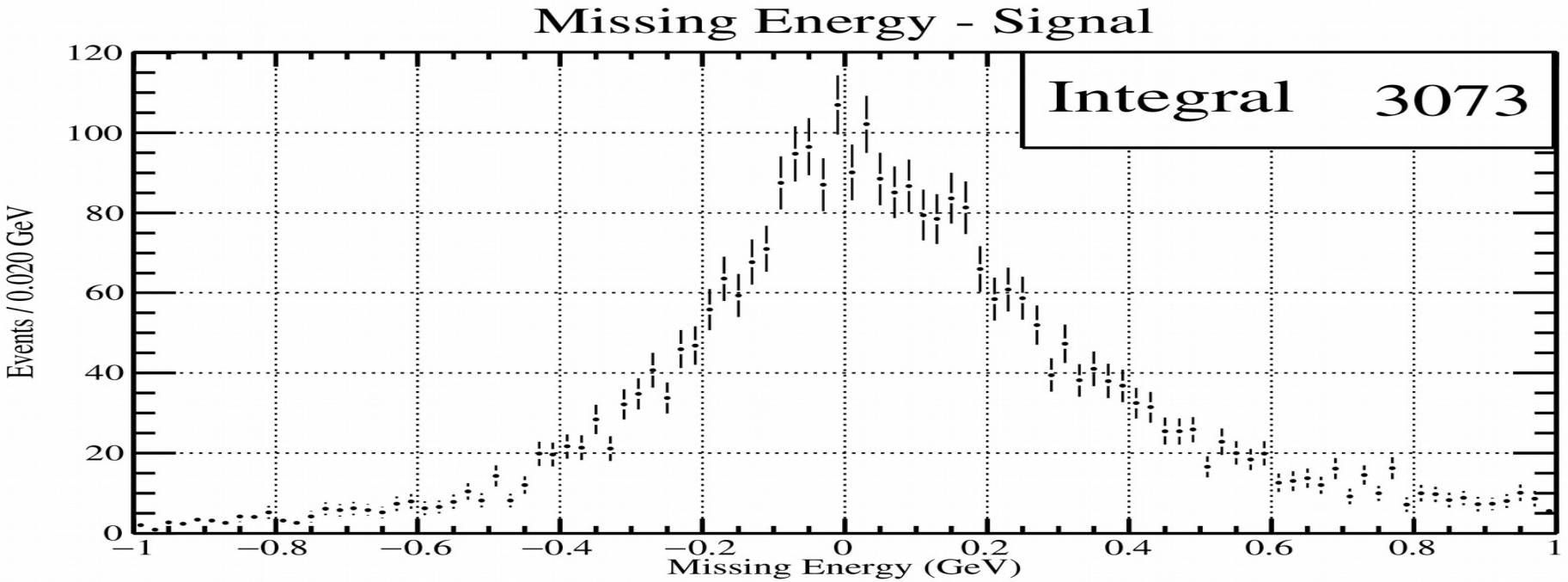

t' - Background
Integral 1.928e+04
Constant 6.797 ± 0.019
Slope −2.084 ± 0.029
Events / 0.020 (GeV/c²)²
t' ((GeV/c²)²)

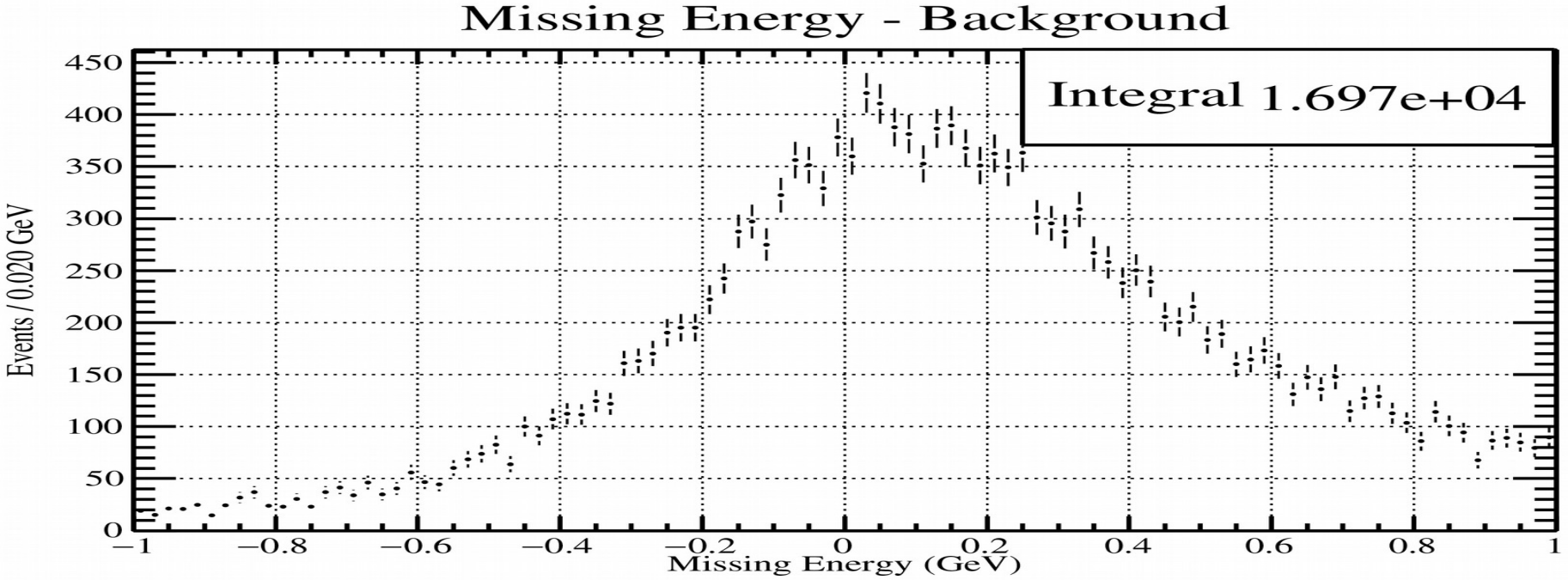
New Missing Mass Squared: Qvalue



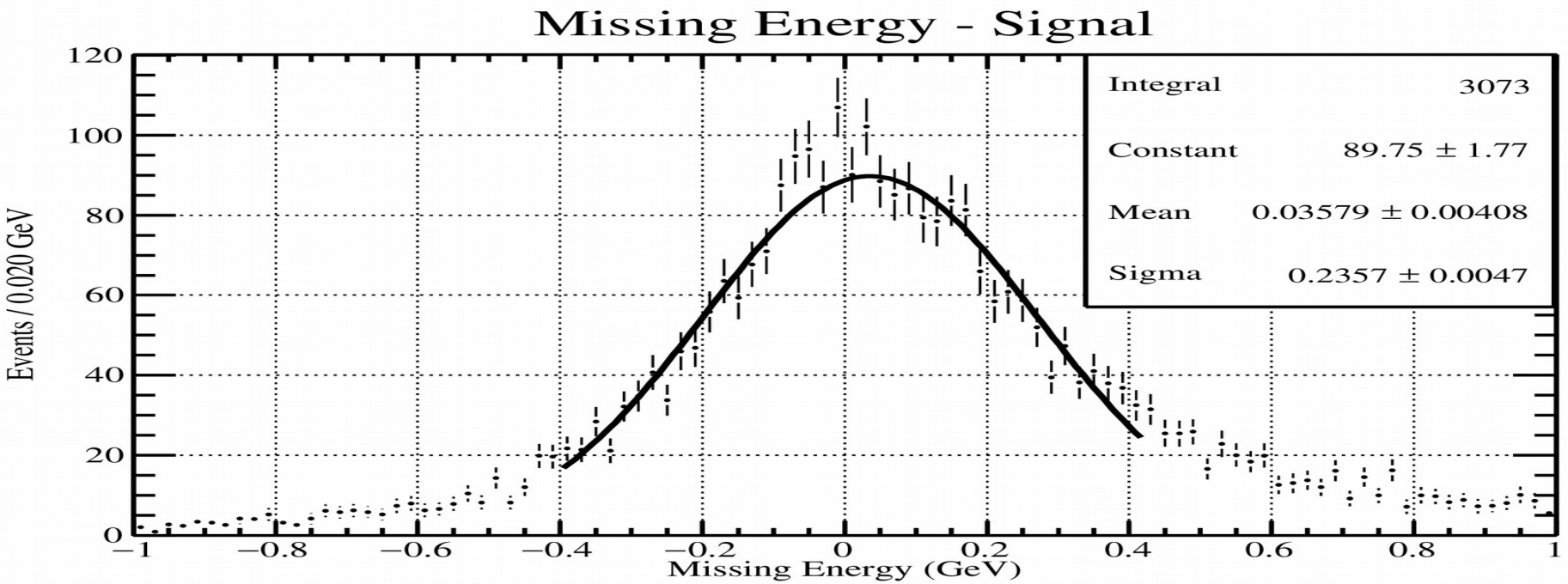


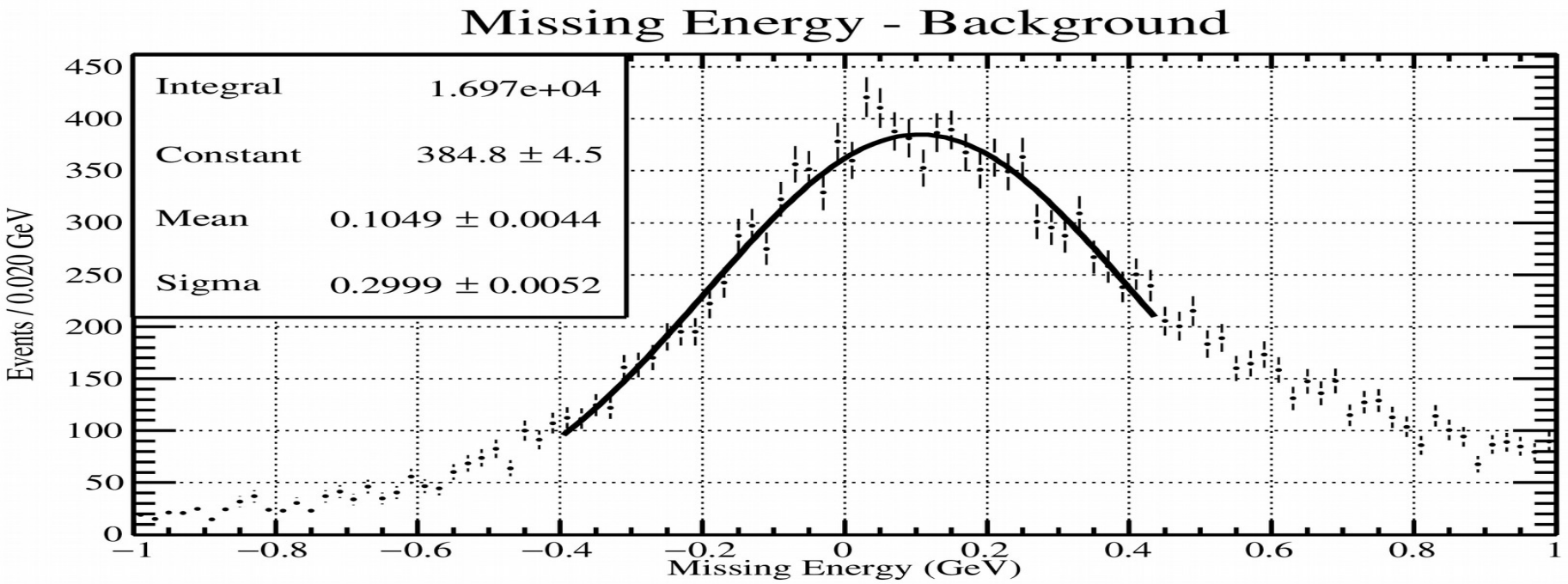
New Missing Energy: Qvalue



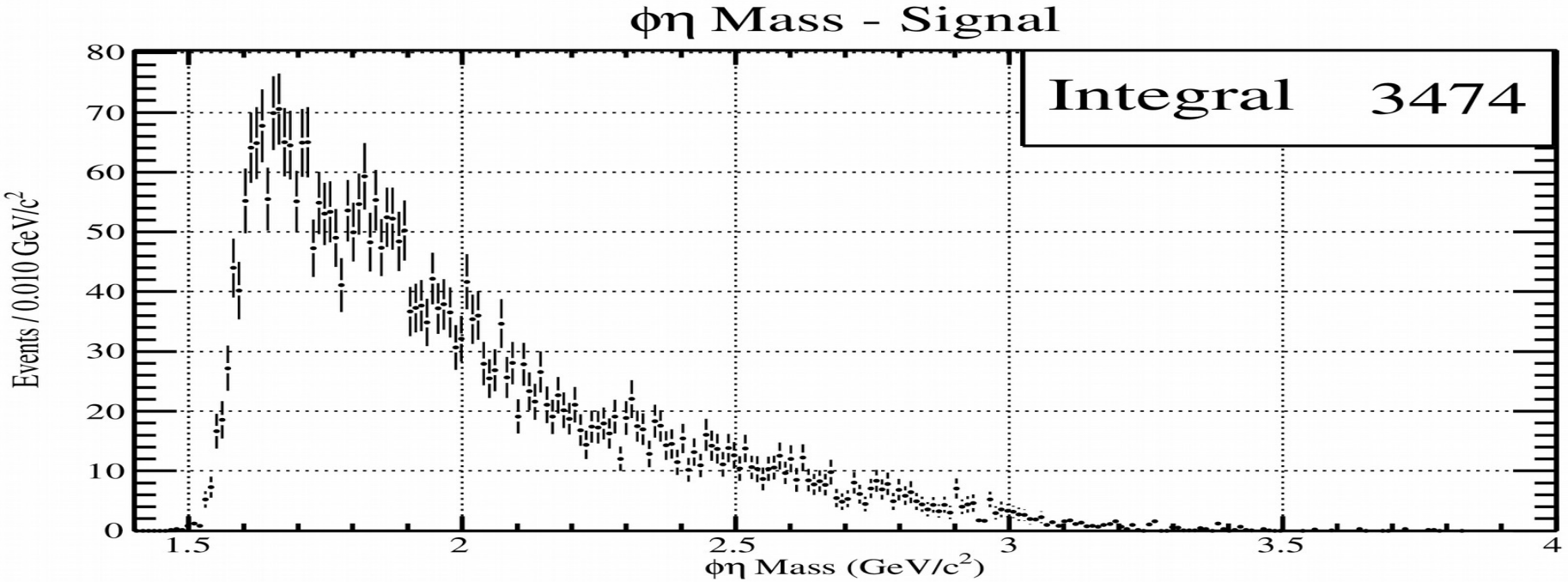


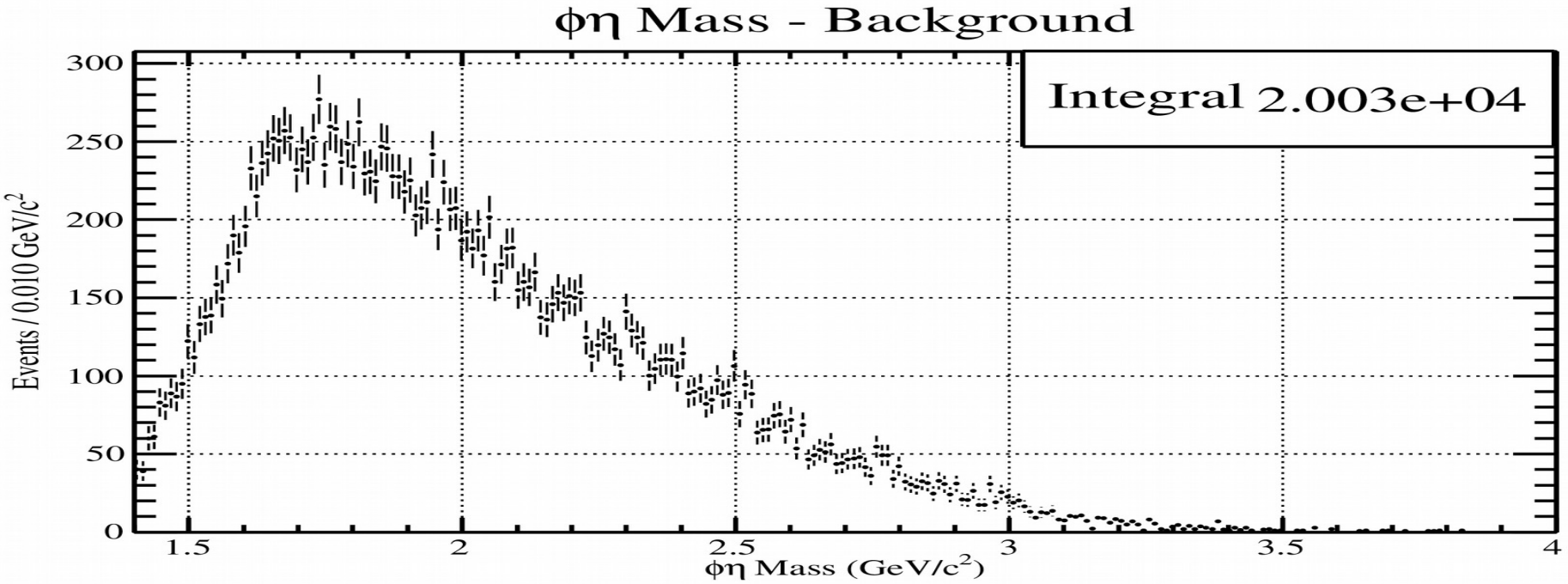
New Missing Energy Fit: Qvalue



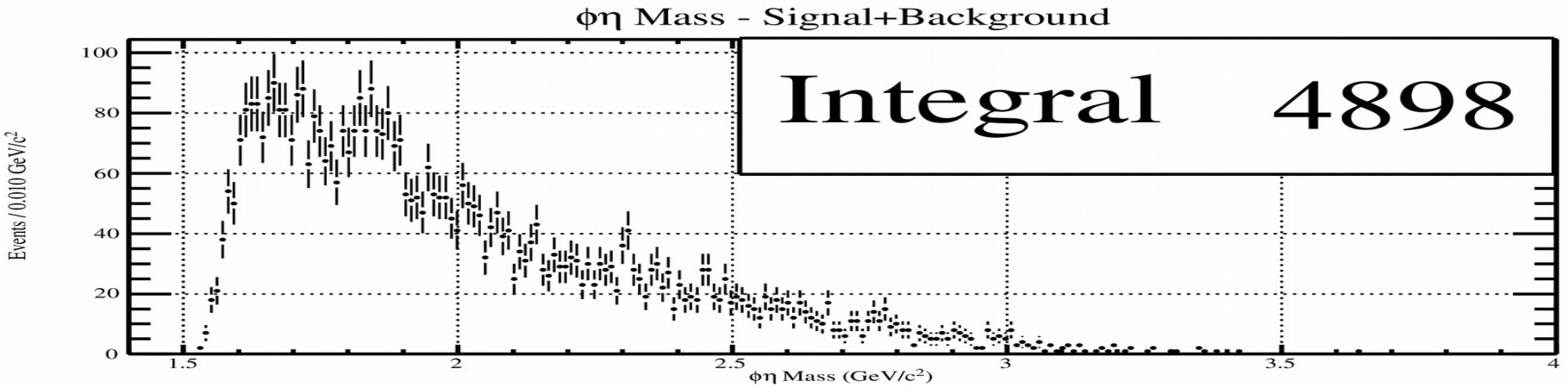


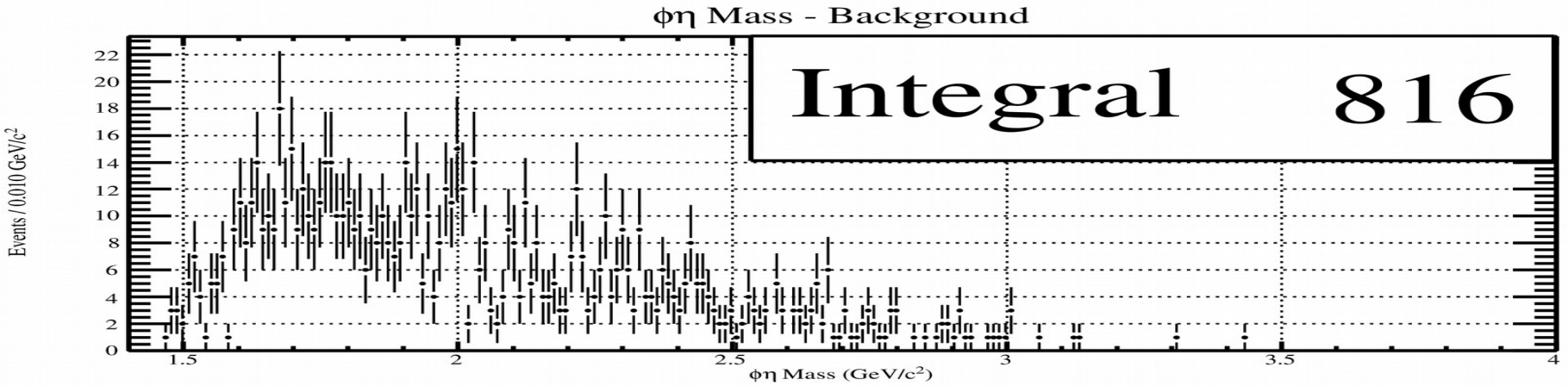
New PhiEta: Qvalue

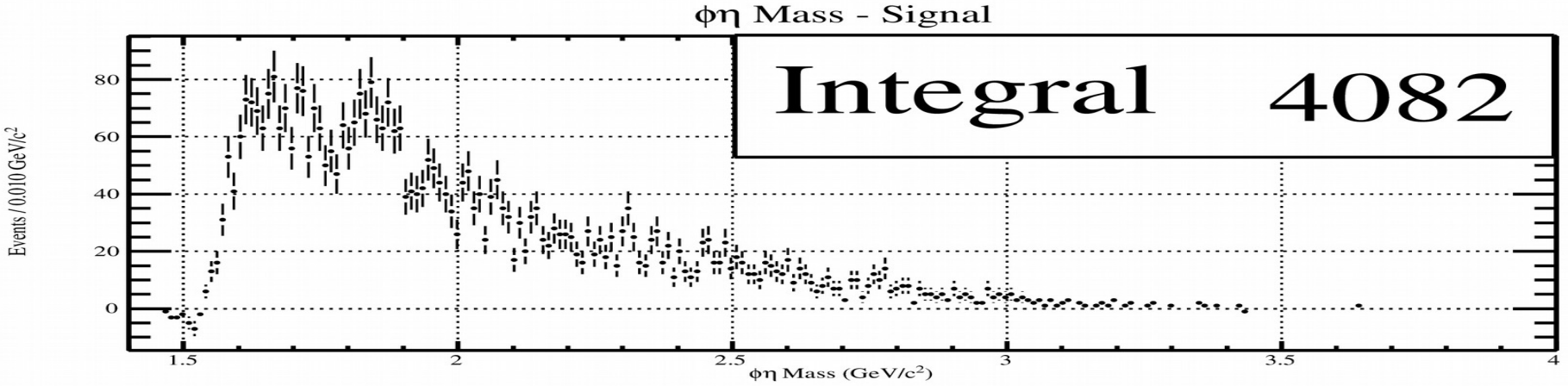




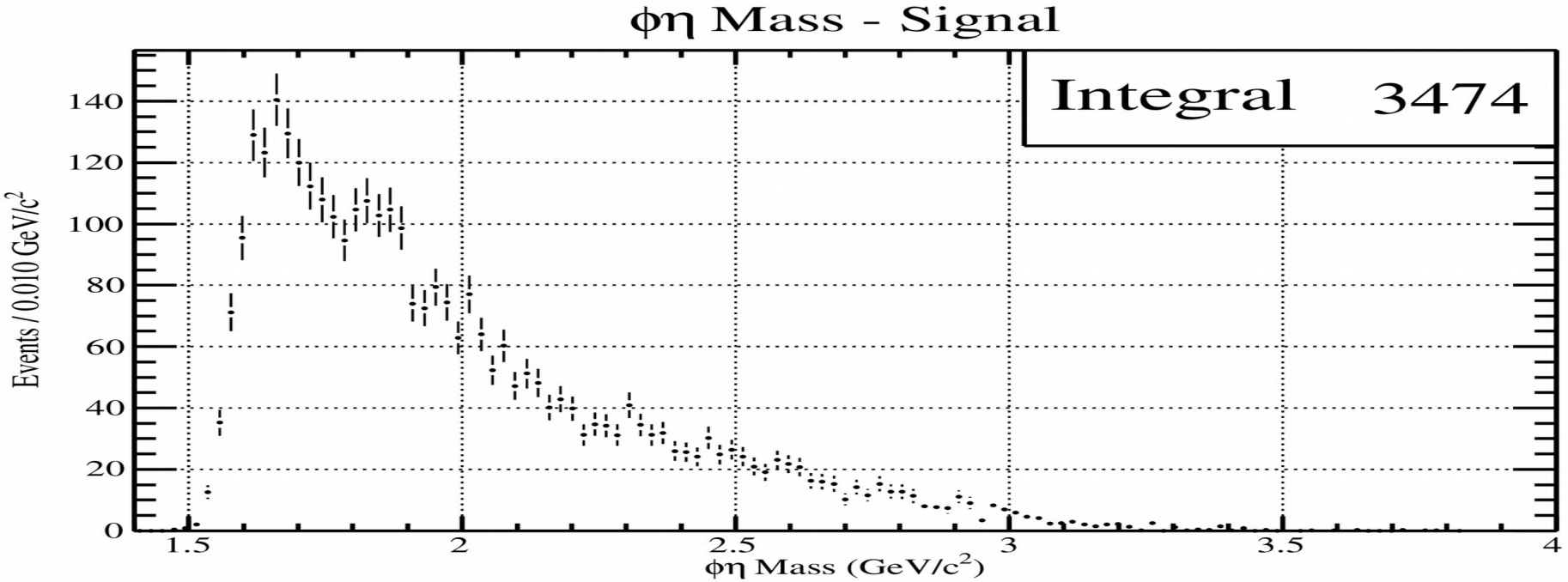
New PhiEta: Elliptical Sub

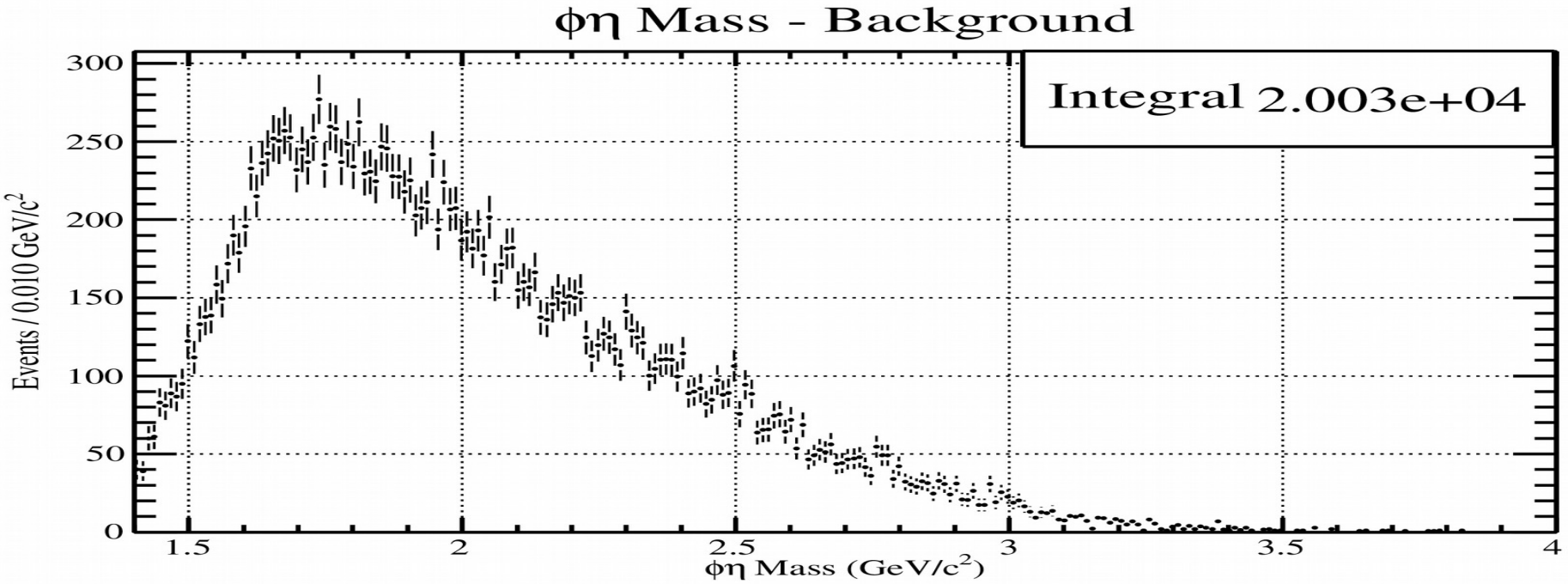






New PhiEta, Bigger Bins: Qvalue





New PhiEta, Bigger Bins: Elliptical Sub