nnΛ Analysis Meeting

November 4, 2021

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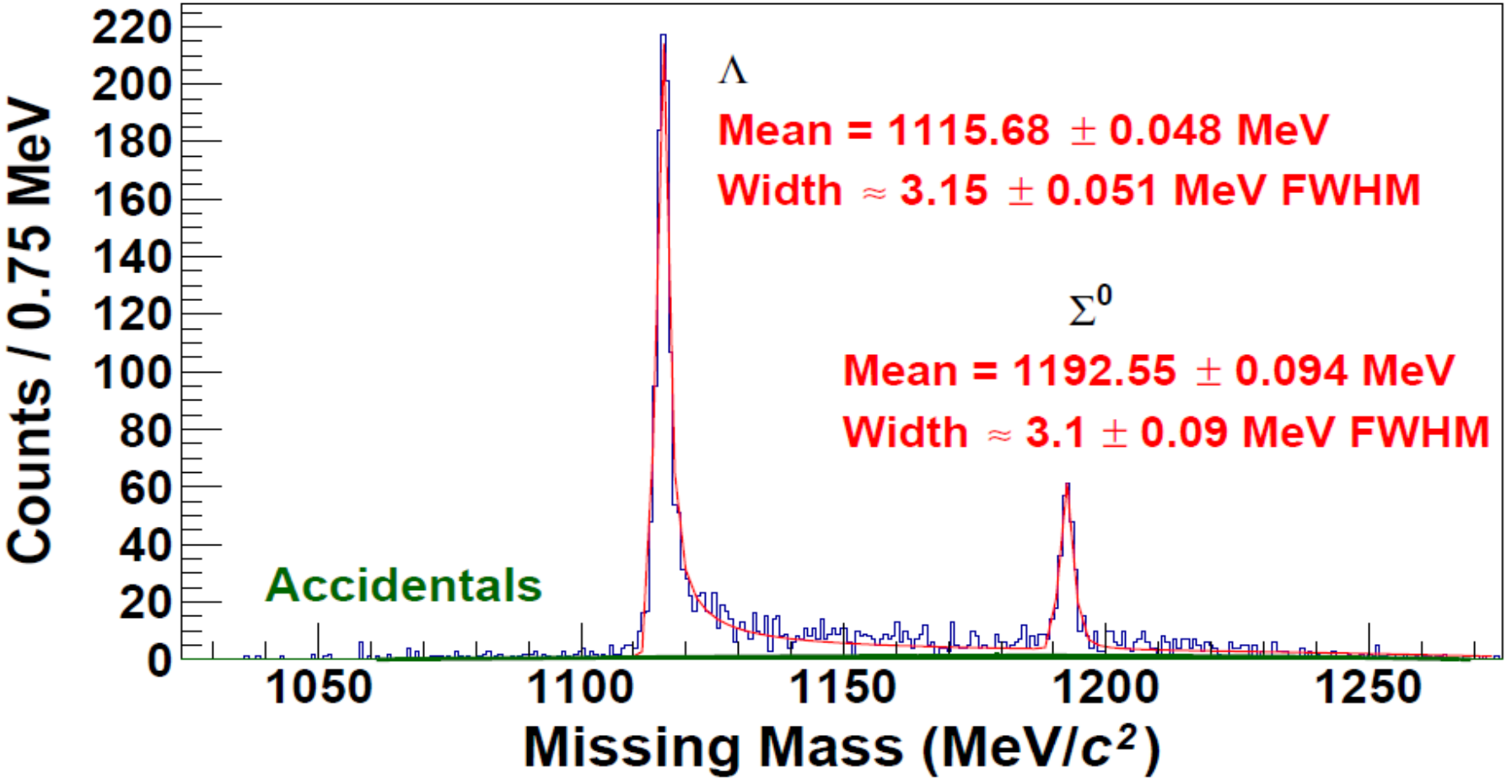
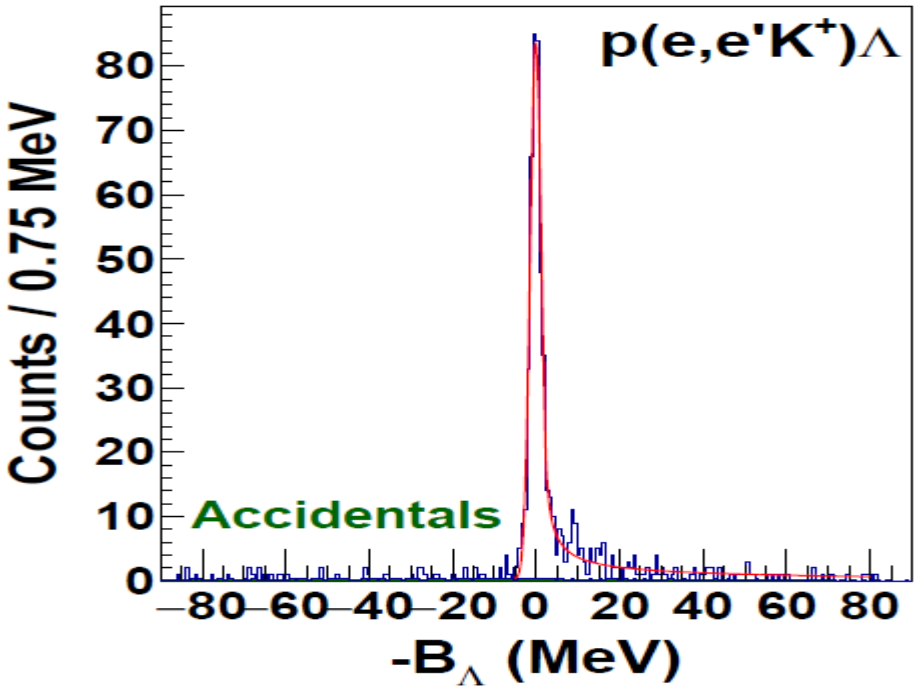
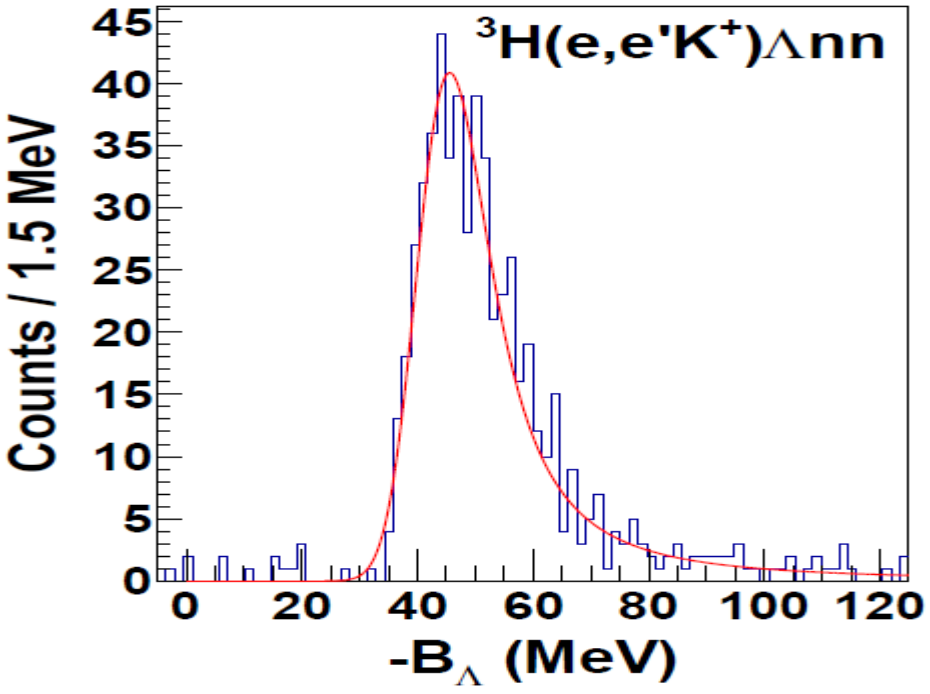
H data in the H kinematics



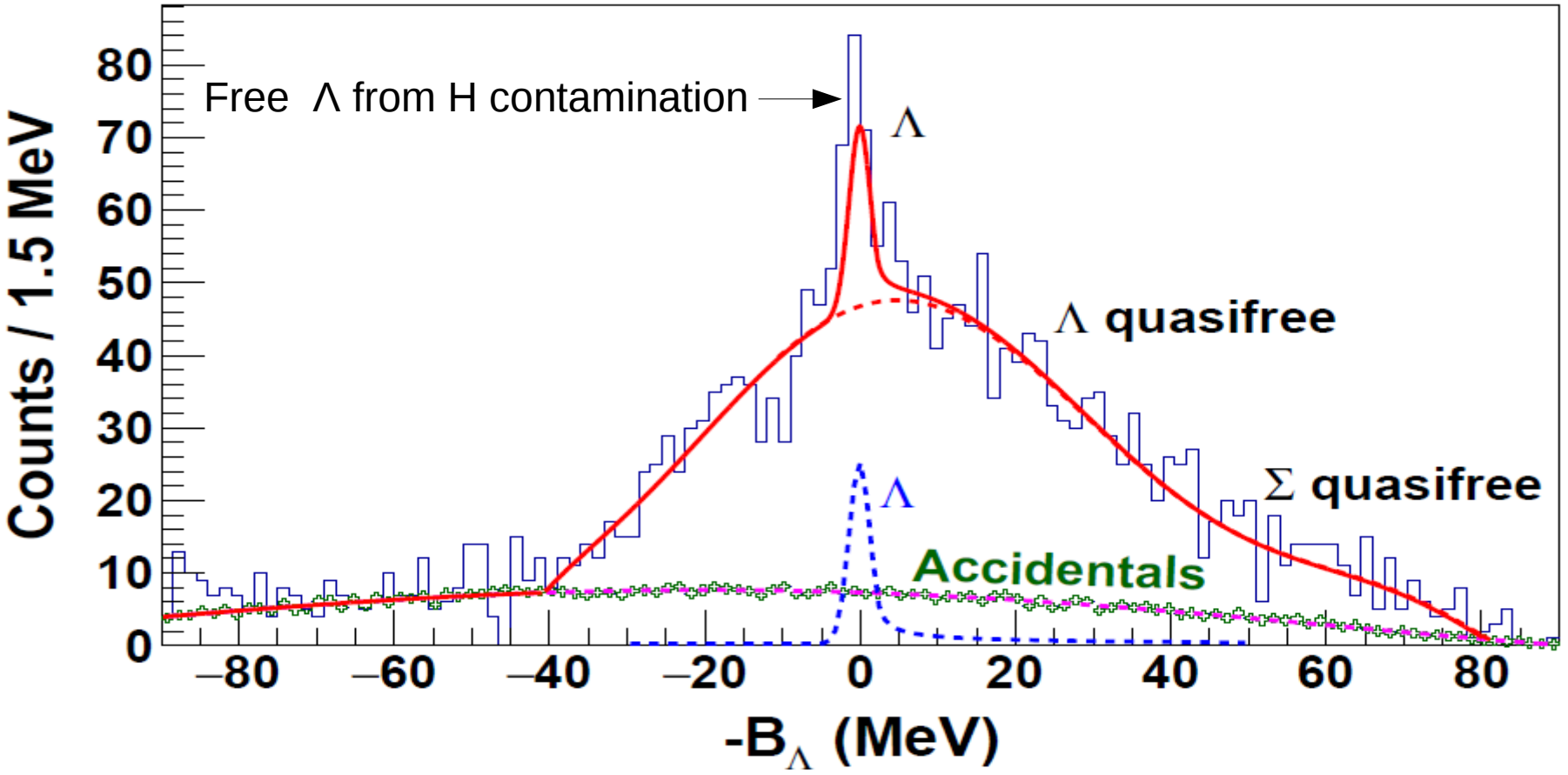
H data in the T kinematics





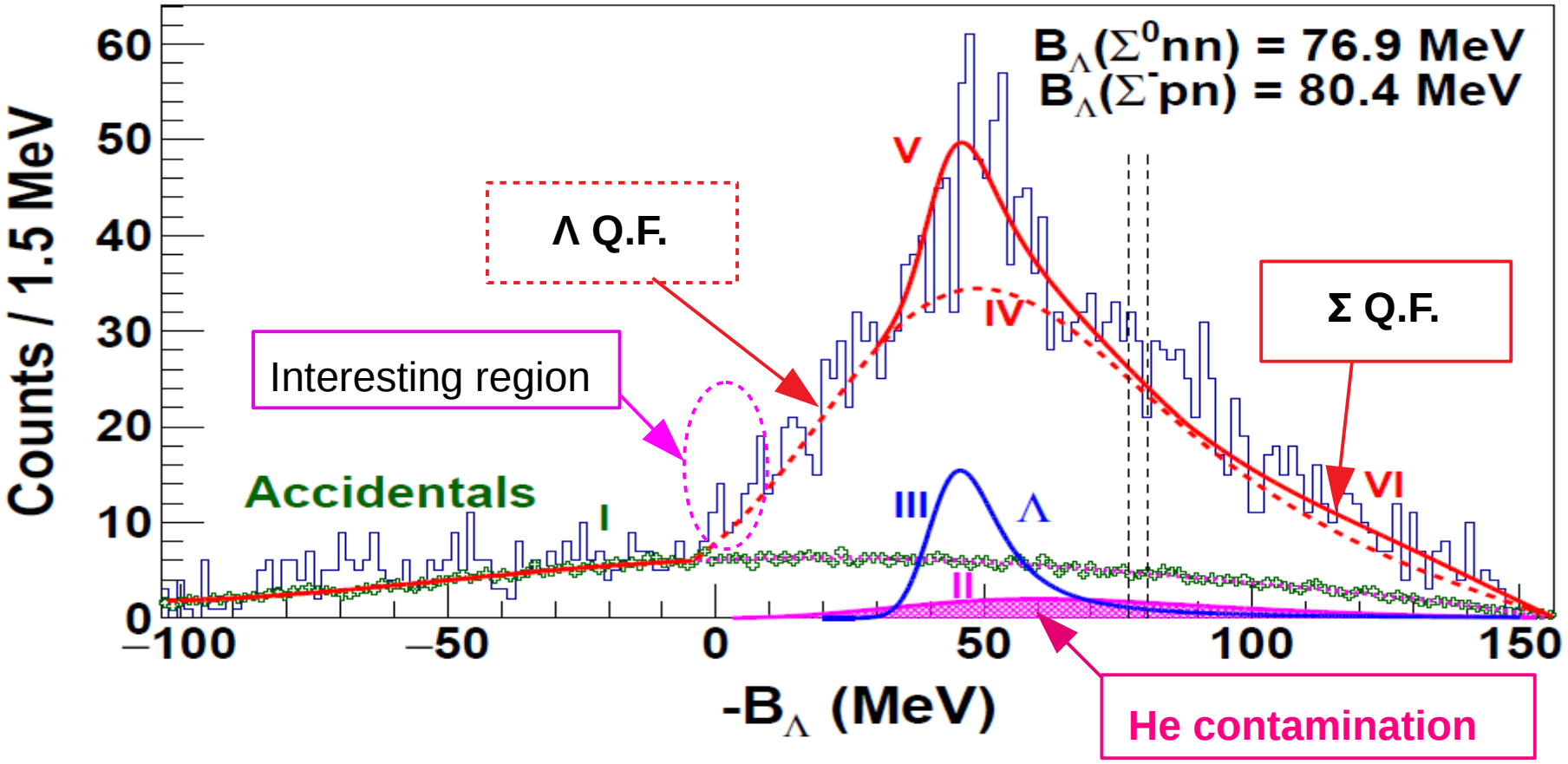
- The first spectrum is analyzed by considering H kinematics and the second one is analyzed considering tritium kinematics.
- The broadening of the second peak is because of the wrong kinematics.

Tritium data in the H kinematics



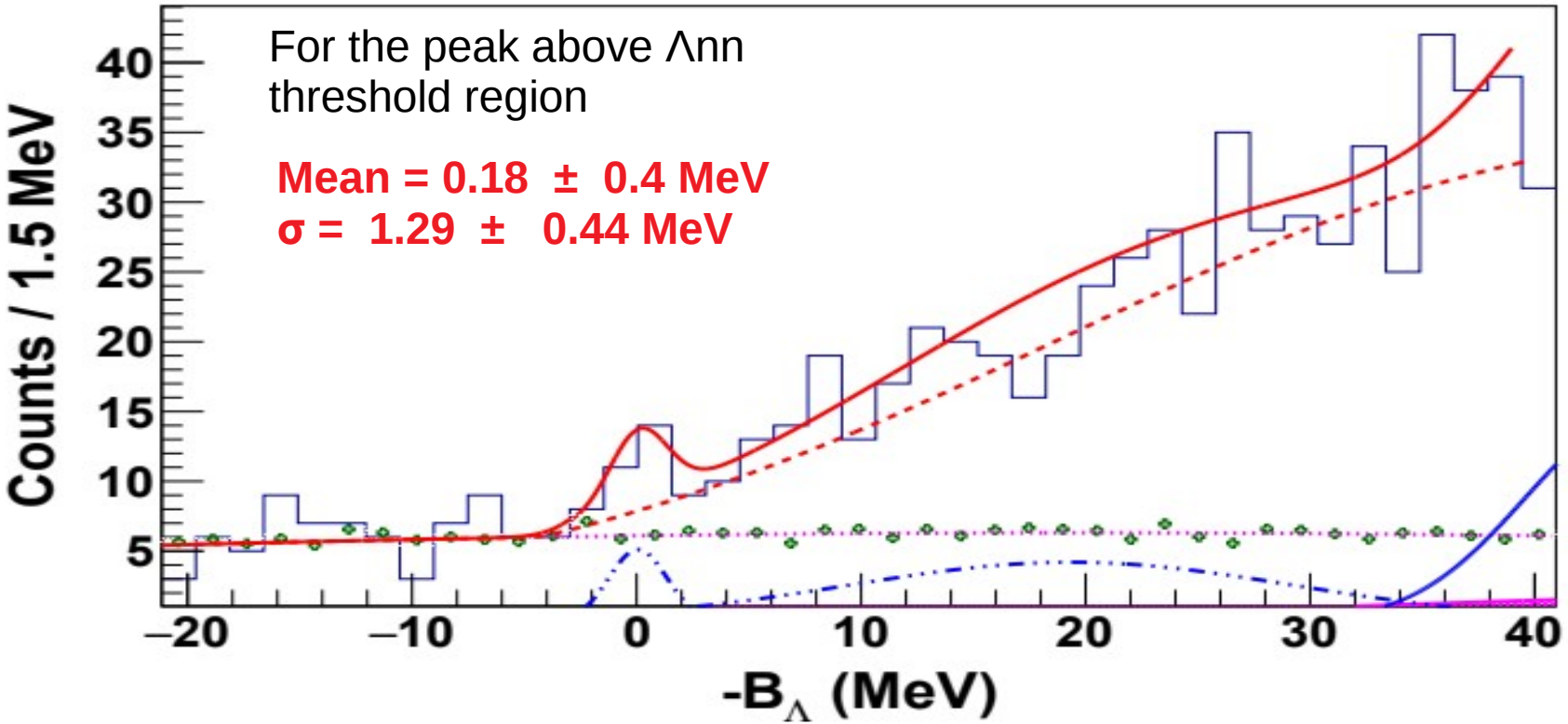
- The tritium data is analyzed by considering the H kinematics.
- The peak shows the presence of H in the tritium gas.

Λnn Spectrum



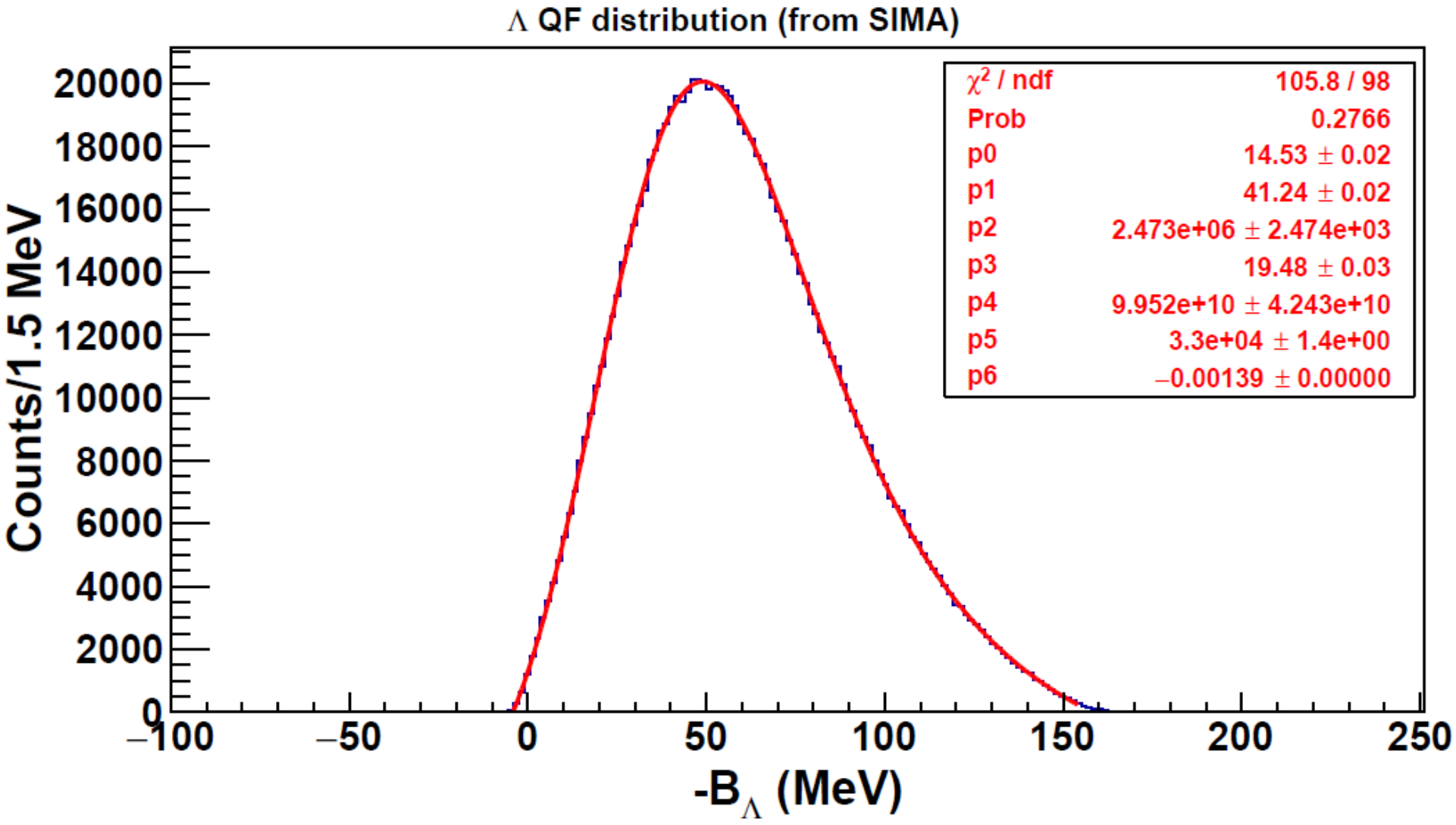
- The Λ/Σ QF shape is obtained by fitting the SIM A simulated data.
- The free Λ curve is obtained by fitting the H data in T kinematics but considering Tritium as target and Λnn as threshold mass.

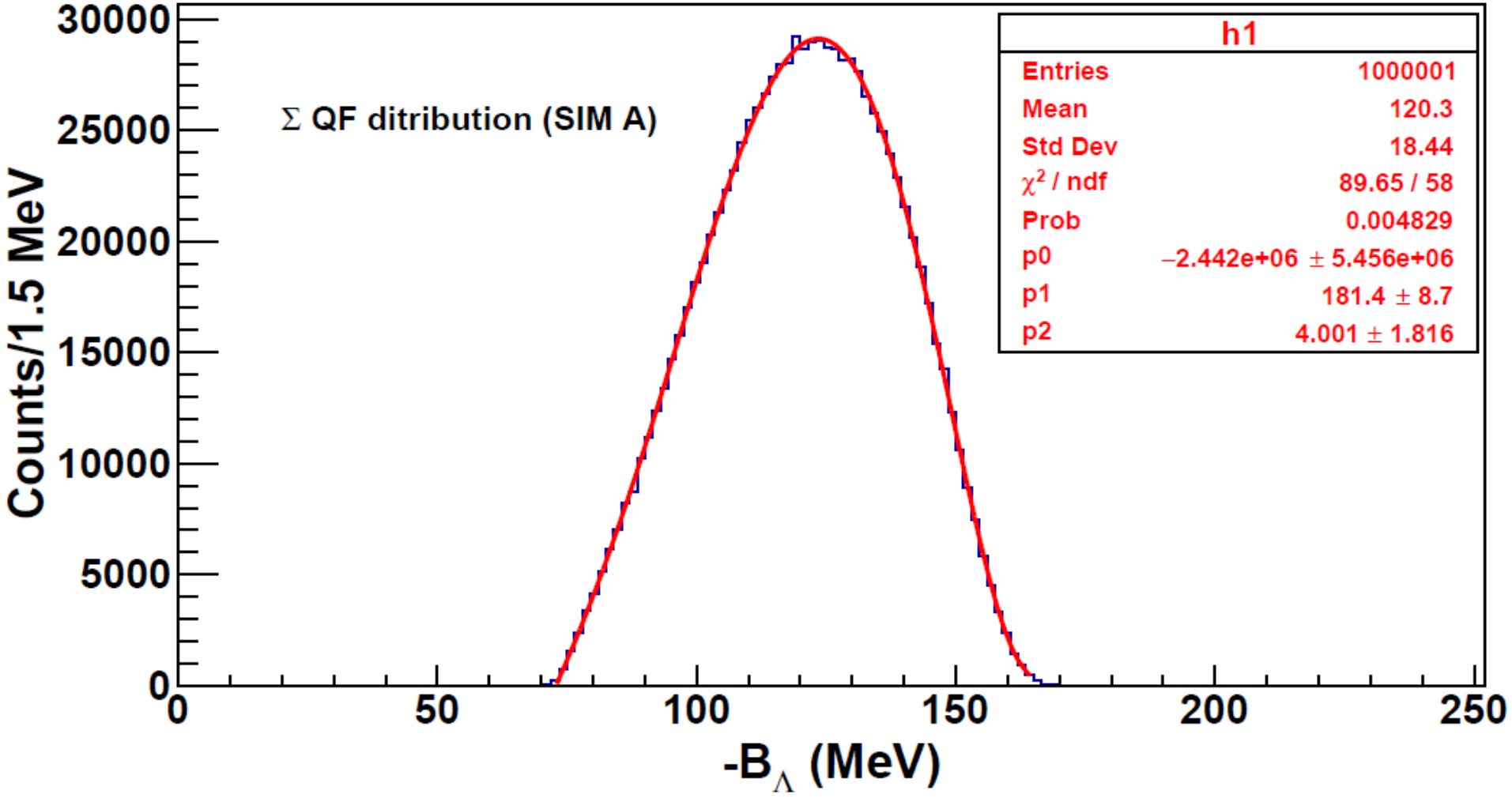
Closer view of Λnn Spectrum

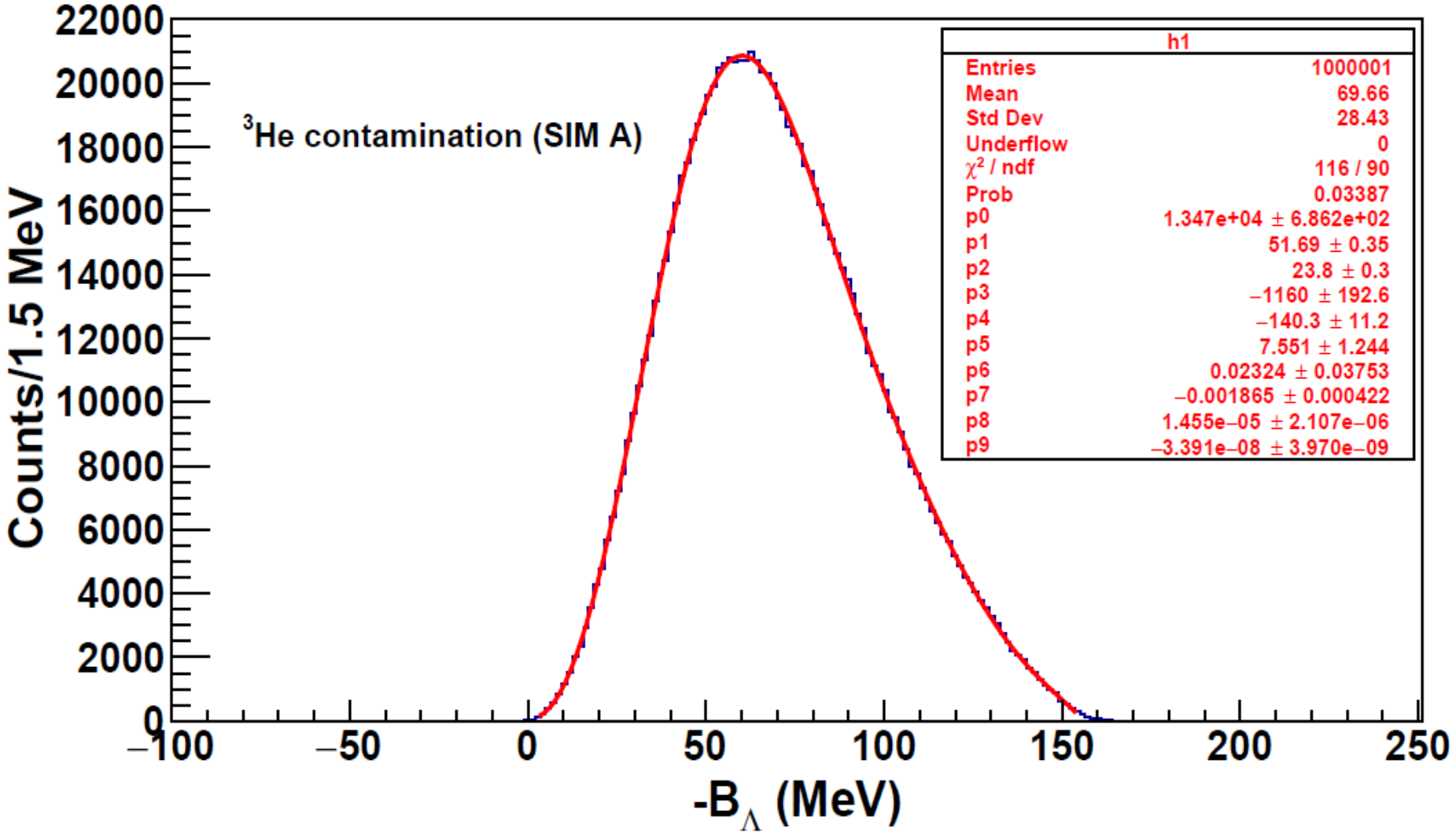
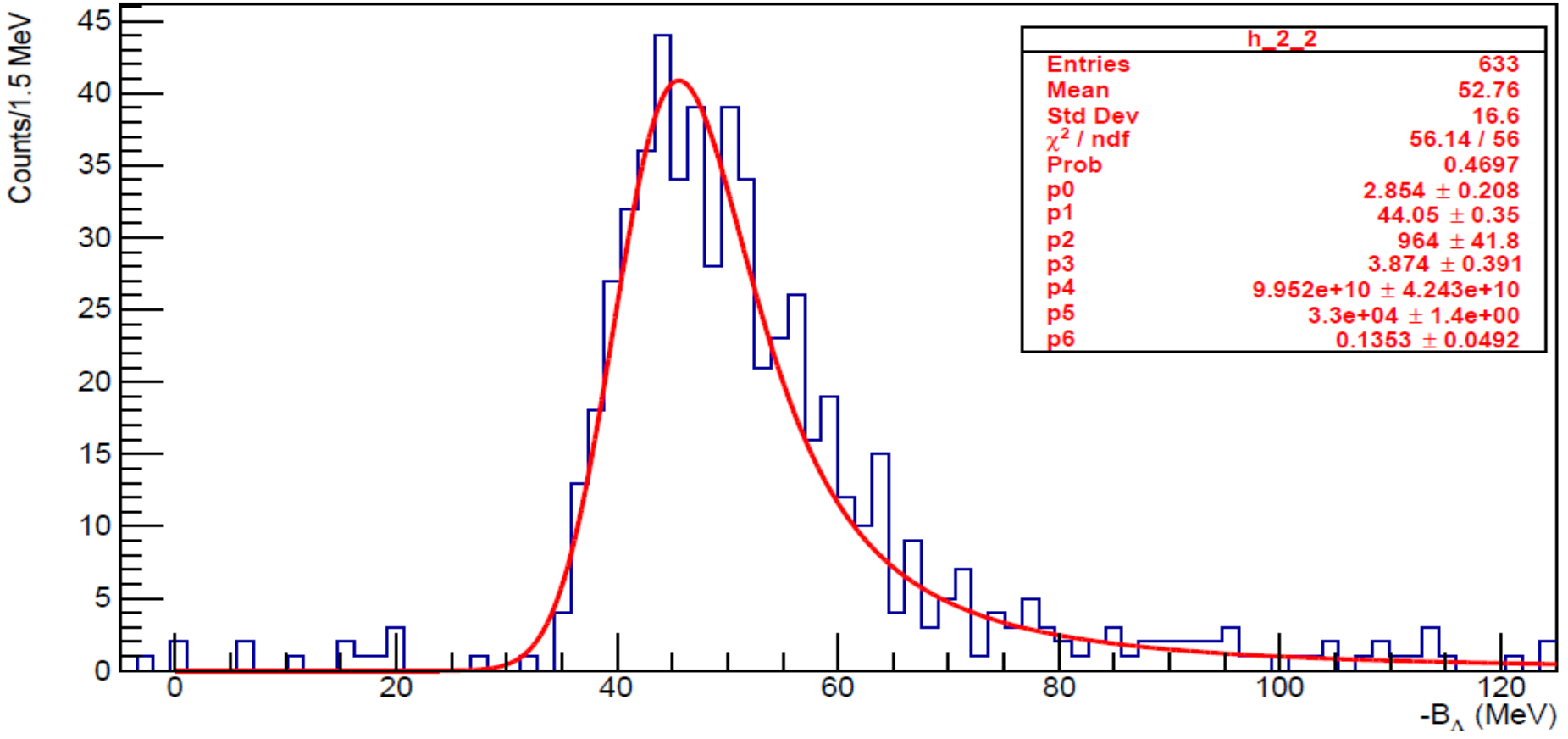


- To make the clear view of the Lnn spectrum, the spectrum is plotted from -20 to 40 MeV.
- The statistical significance of the peak is found about 1.9.

Backup Slide


Λ QF distribution (from SIMA)
Counts/1.5 MeV
-B_Λ (MeV)
χ² / ndf 105.8 / 98
Prob 0.2766
p0 14.53 ± 0.02
p1 41.24 ± 0.02
p2 2.473e+06 ± 2.474e+03
p3 19.48 ± 0.03
p4 9.952e+10 ± 4.243e+10
p5 3.3e+04 ± 1.4e+00
p6 −0.00139 ± 0.00000


Σ QF ditribution (SIM A)
h1
Entries 1000001
Mean 120.3
Std Dev 18.44
χ² / ndf 89.65 / 58
Prob 0.004829
p0 −2.442e+06 ± 5.456e+06
p1 181.4 ± 8.7
p2 4.001 ± 1.816
Counts/1.5 MeV
-B_Λ (MeV)
0
5000
10000
15000
20000
25000
30000
0
50
100
150
200
250


^{3}He contamination (SIM A)
Counts/1.5 MeV
-B$_\Lambda$ (MeV)
h1
Entries 1000001
Mean 69.66
Std Dev 28.43
Underflow 0
χ^2 / ndf 116 / 90
Prob 0.03387
p0 1.347e+04 ± 6.862e+02
p1 51.69 ± 0.35
p2 23.8 ± 0.3
p3 −1160 ± 192.6
p4 −140.3 ± 11.2
p5 7.551 ± 1.244
p6 0.02324 ± 0.03753
p7 −0.001865 ± 0.000422
p8 1.455e−05 ± 2.107e−06
p9 −3.391e−08 ± 3.970e−09

H/T data analyzed by considering the tritium kinematics