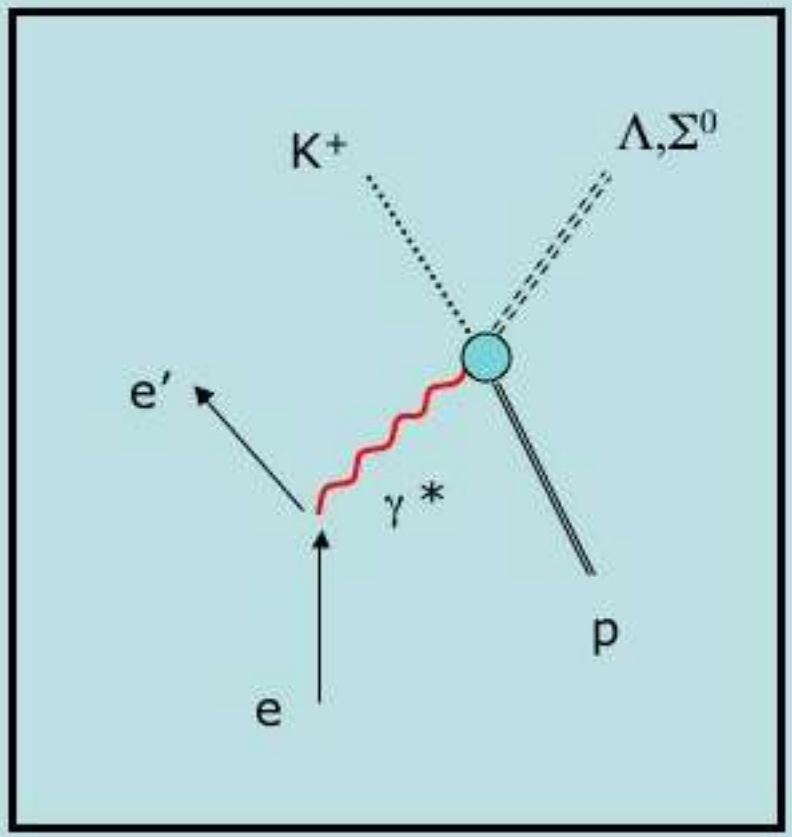
ELECTROPRODUCTION OF HYPERONS AT LOW MOMENTUM TRANSFER

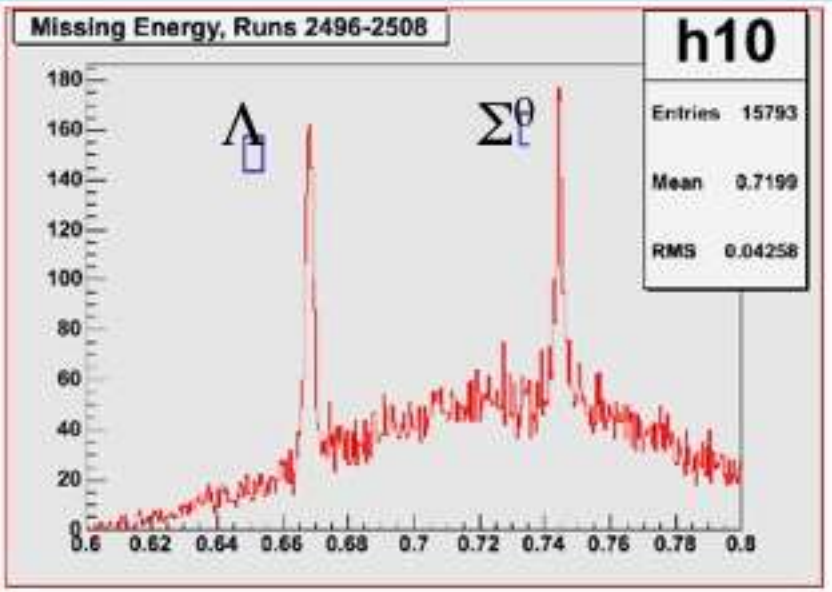


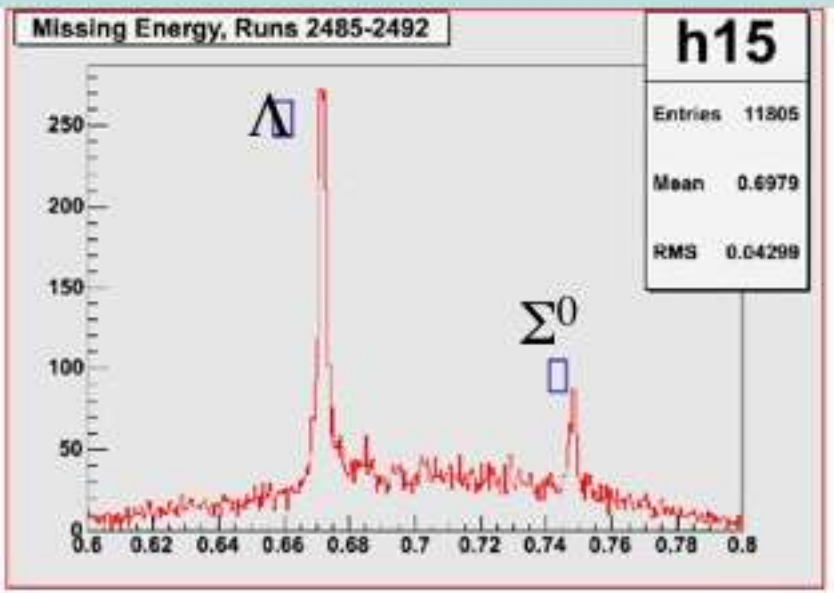
H(e,e'K+)Λ,Σ0 :
The elementary process

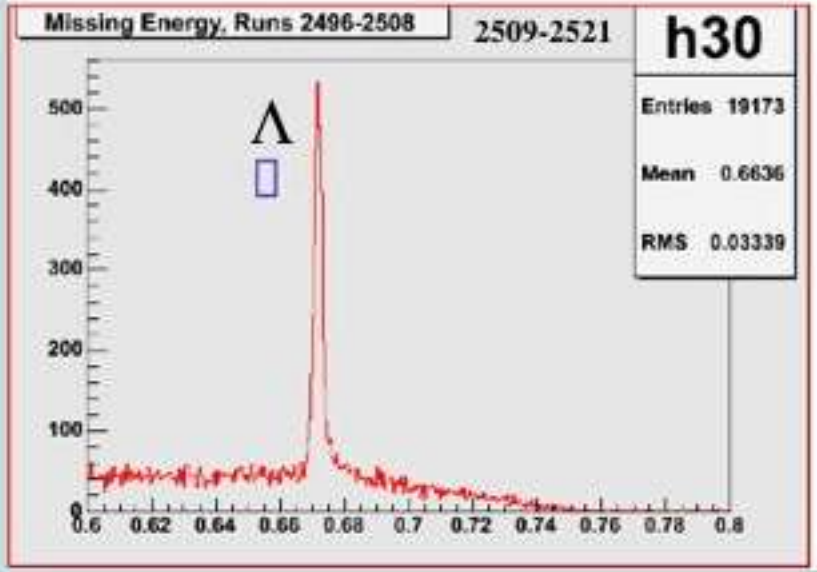
Armando R. Acha

Hall A Collaboration

Jefferson Lab







Yield vs Excitation Energy

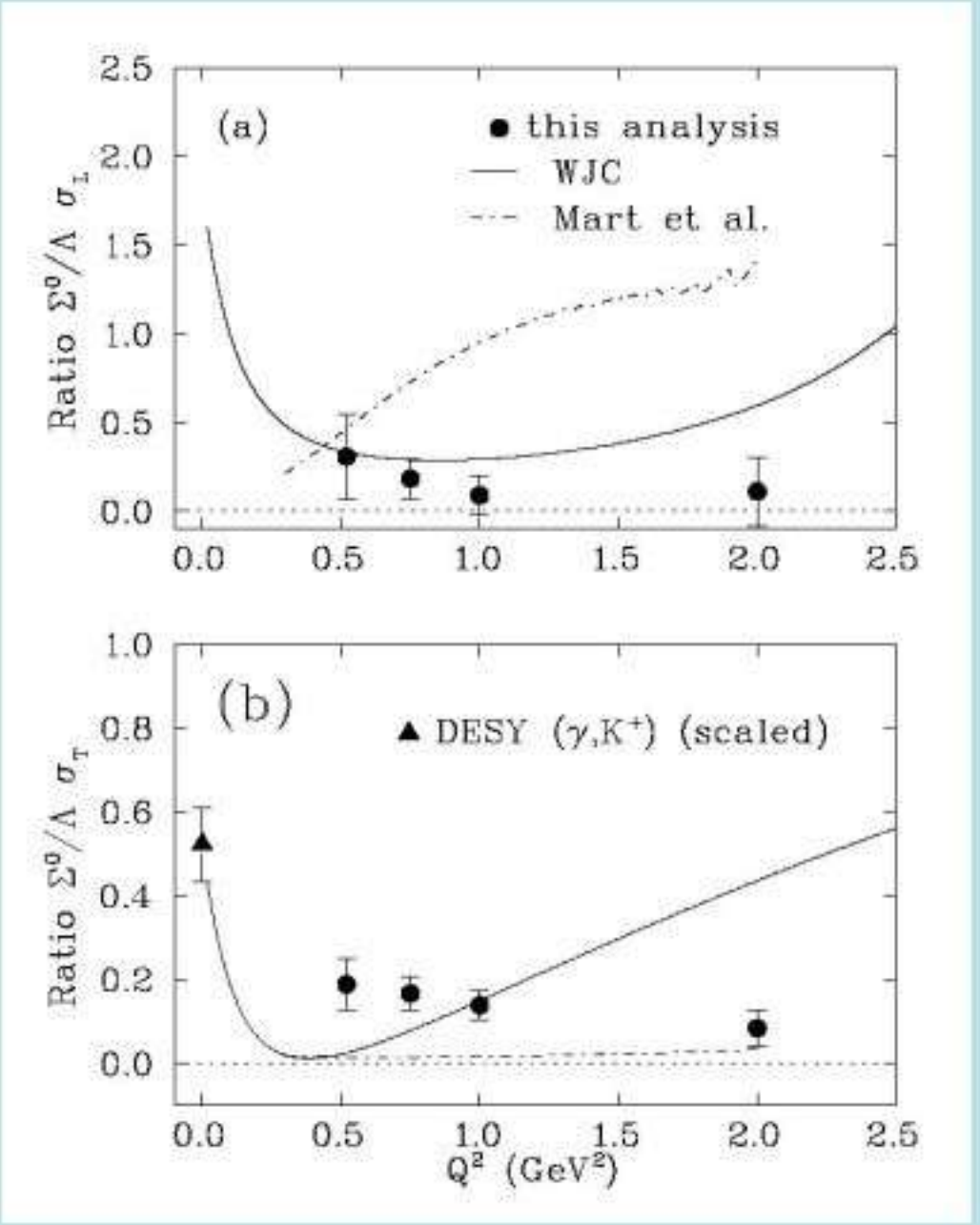
Q^2, W, t constant

Small changes (~5%) in the kaon momentum affect the missing energy acceptance

Presently working on acceptance

Σ^0/Λ ratio dependence on Q^2:

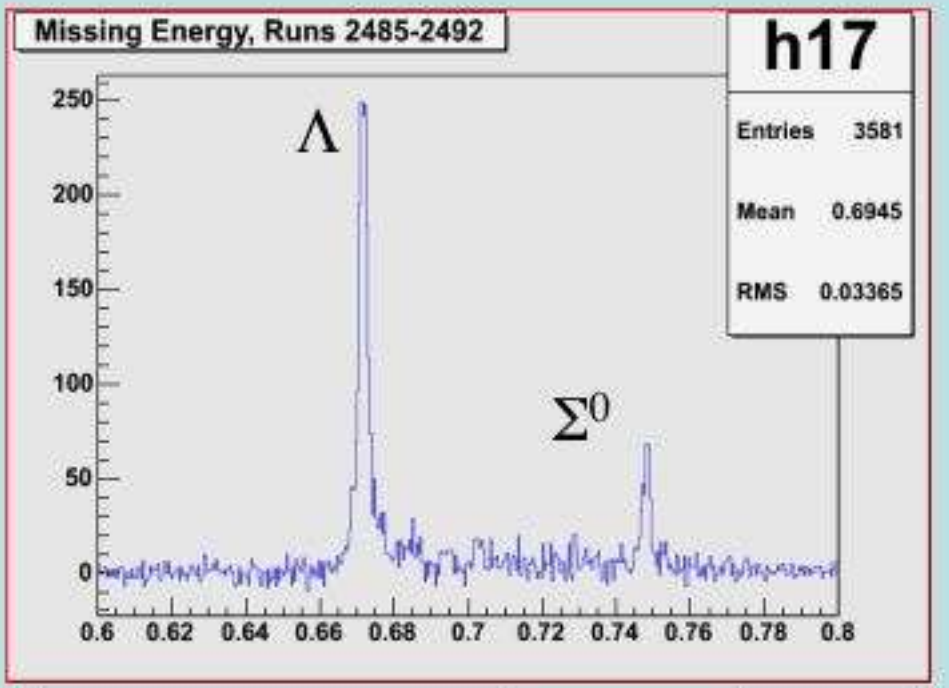
$W \sim 1.8$ GeV
Ratio falls ~1:10 at $Q^2 = 2$

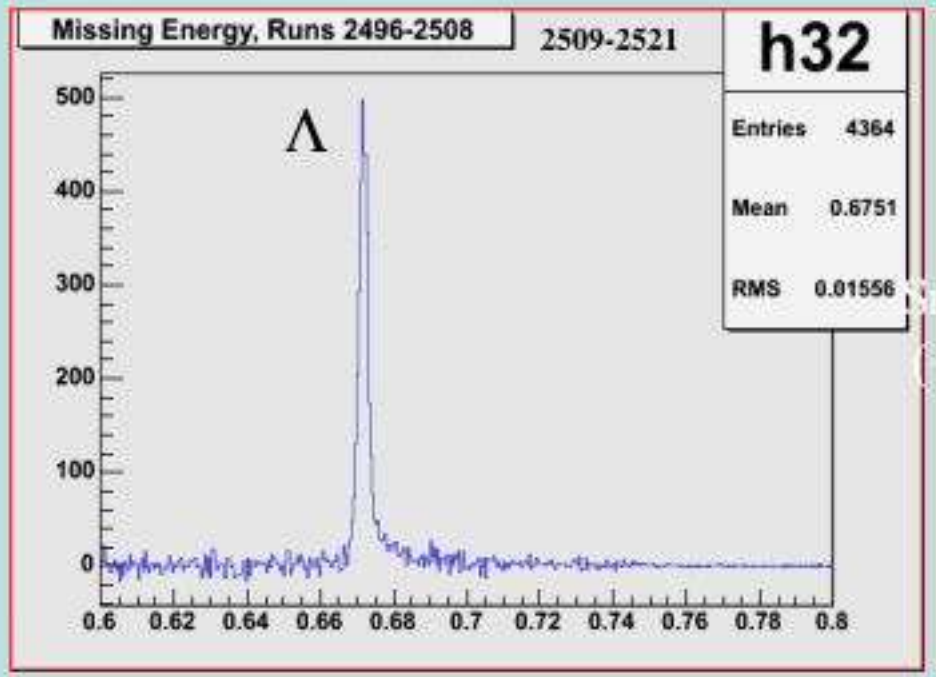


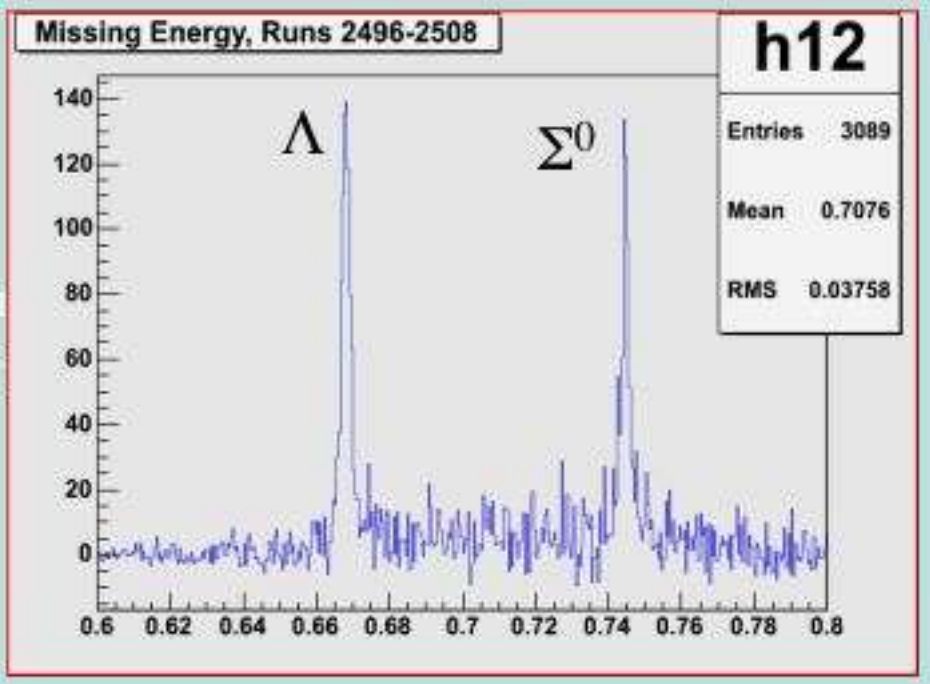
Σ^0/Λ ratio

(background subtracted)

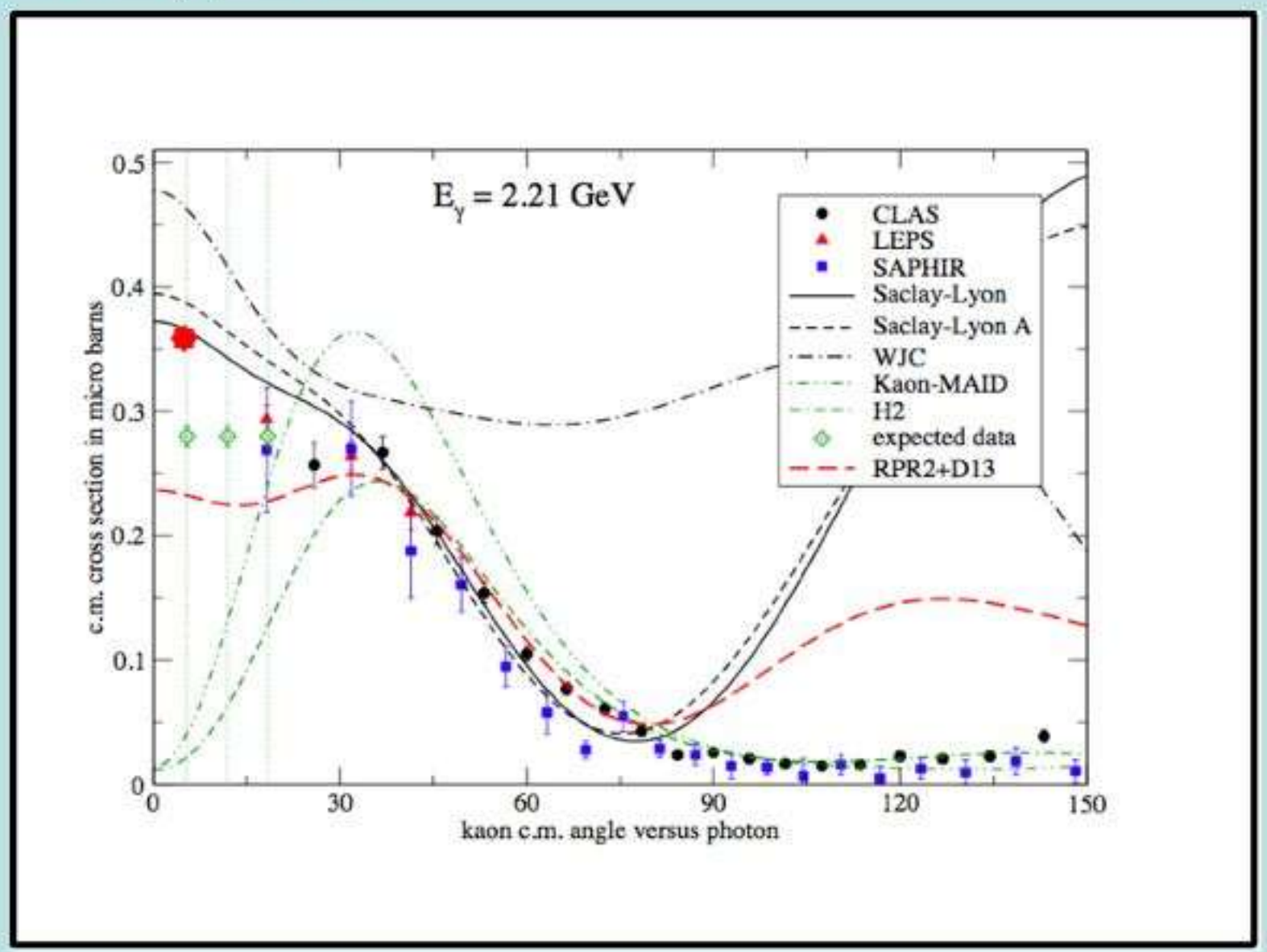
- $Q^2 \sim .07$ (GeV/c)^2
- $W \sim 2.22$ GeV

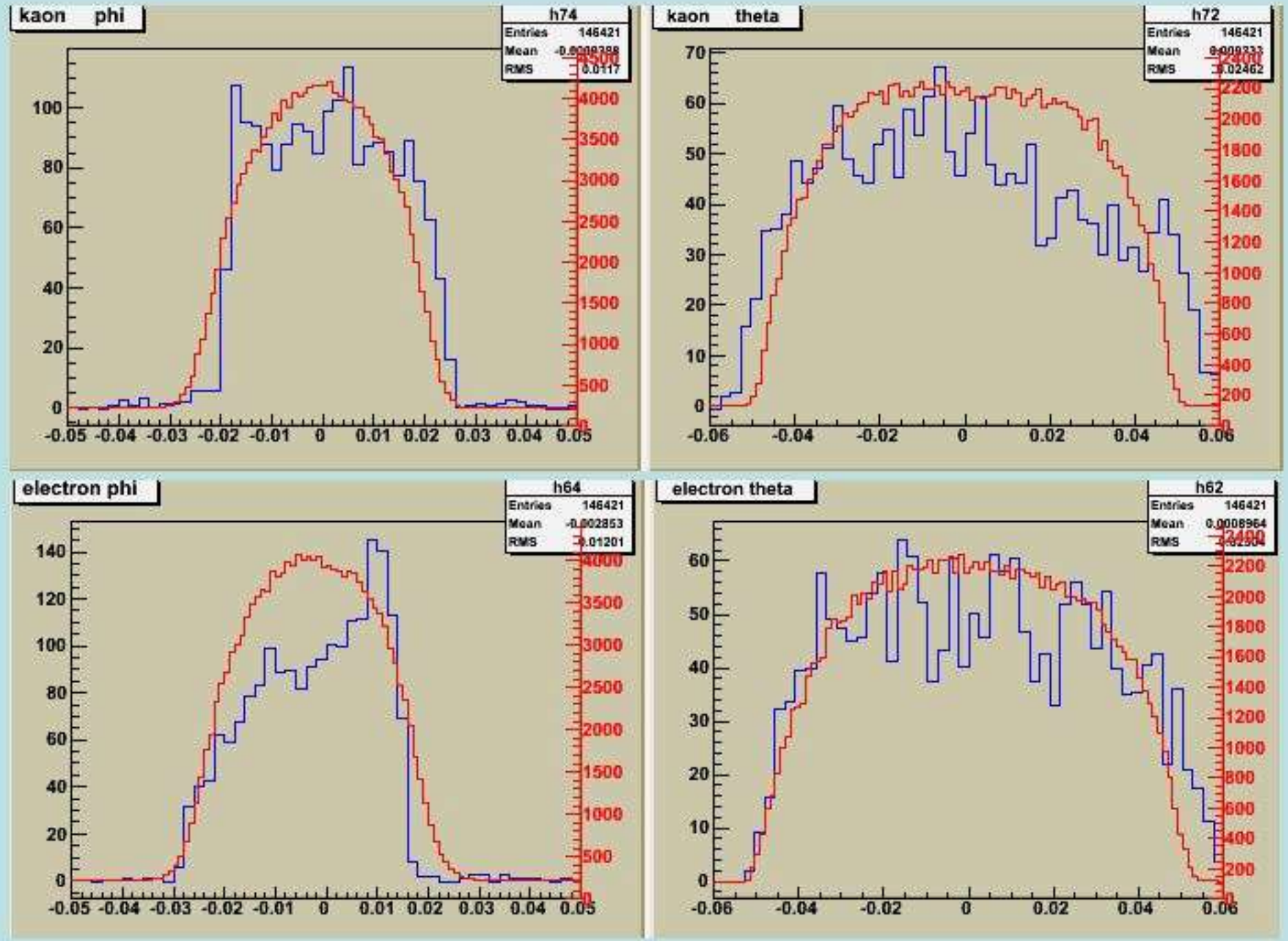


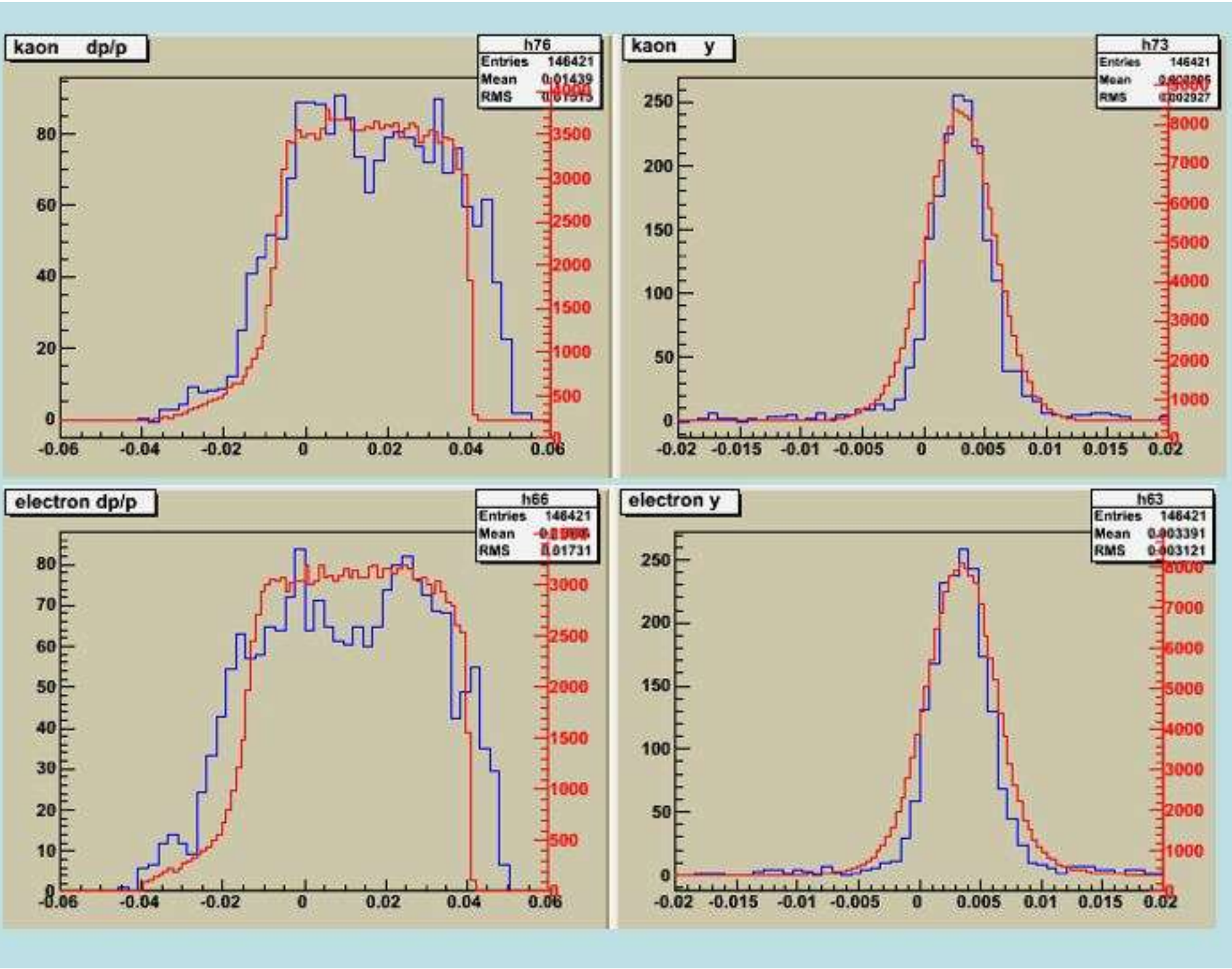


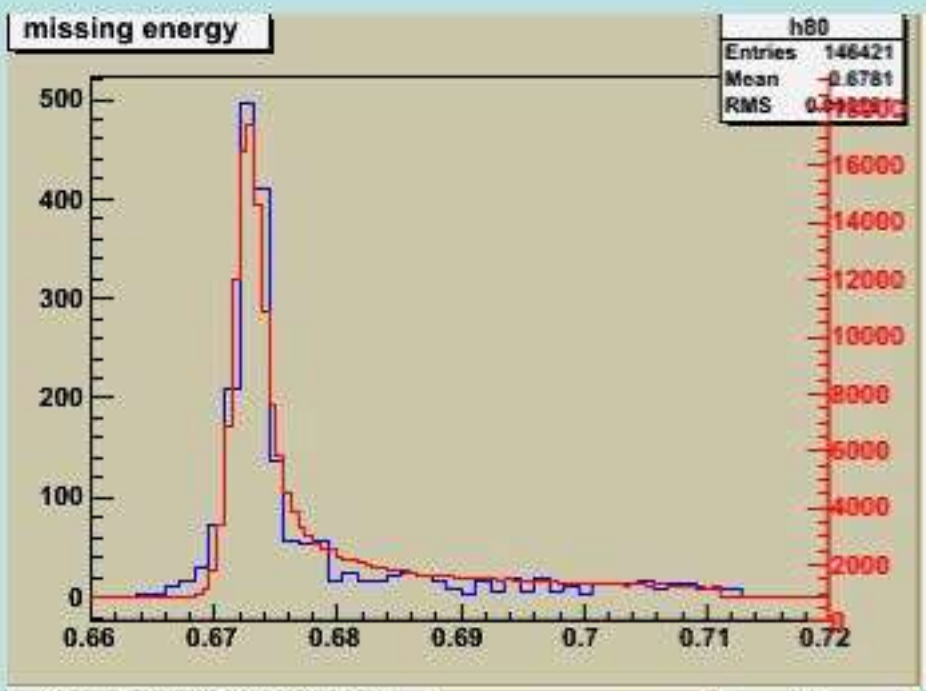


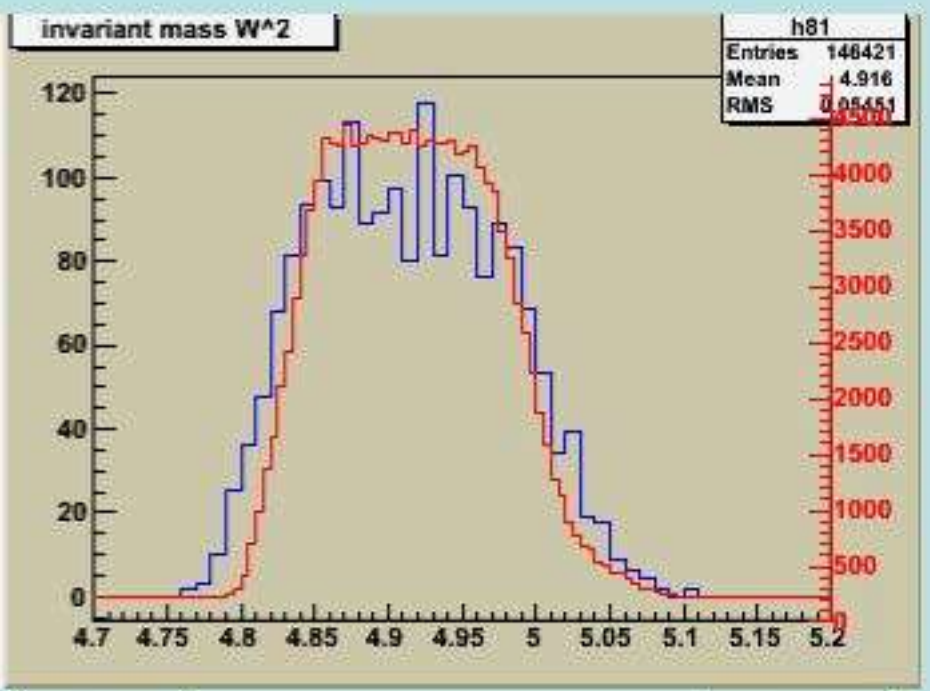
Photoproduction of strangeness at Hall B
Elementary process:

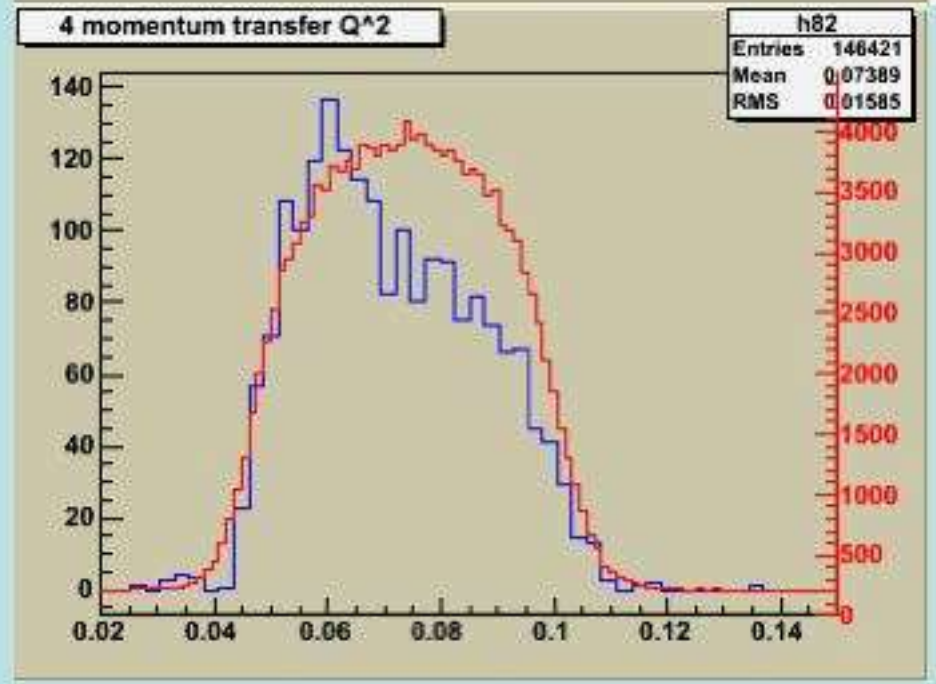


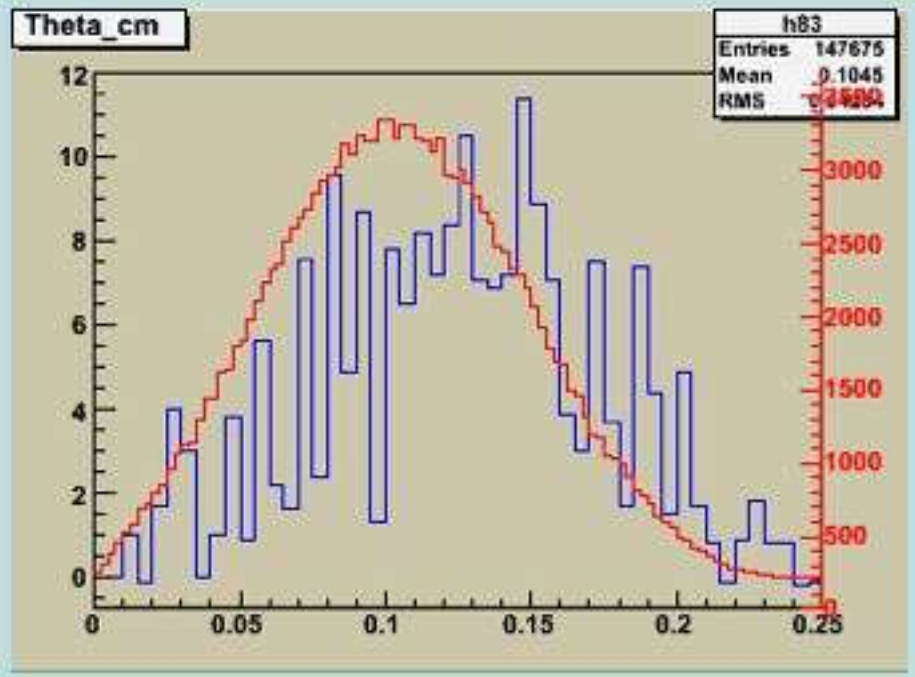

kaon phi
h74
Entries 146421
RMS 0.0117
kaon theta
h72
Entries 146421
RMS 0.02462
electron phi
h64
Entries 146421
RMS 0.01201
electron theta
h62
Entries 146421
Mean 0.0008964

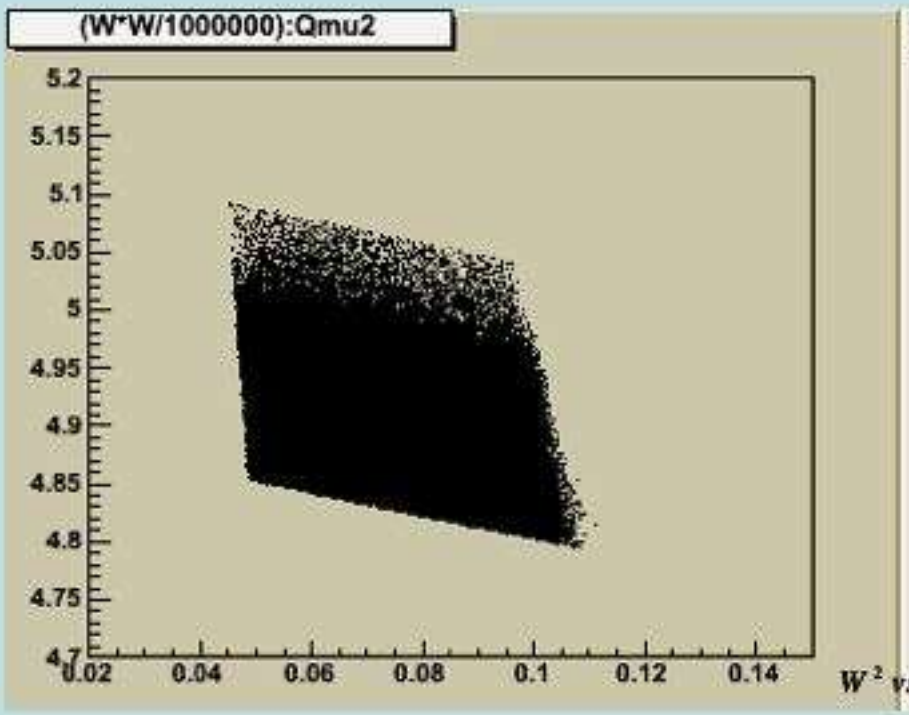

kaon dp/p
h76
Entries 146421
Mean 0.01439
RMS 0.01915
kaon y
h73
Entries 146421
RMS 0.002927
electron dp/p
h66
Entries 146421
RMS 0.01731
electron y
h63
Entries 146421

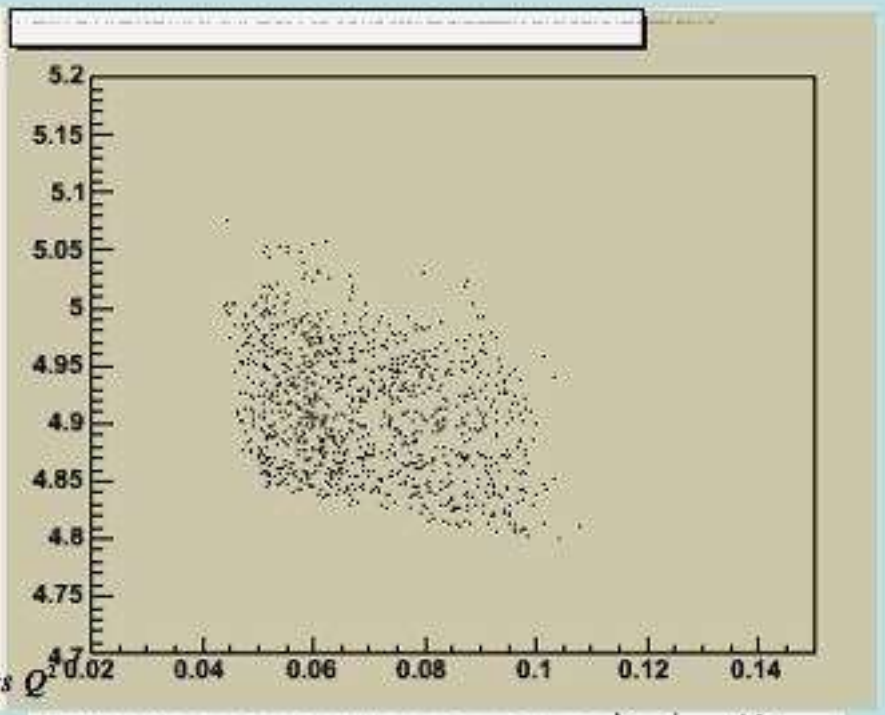

missing energy
h80
Entries 146421
Mean -0.6781
RMS
500
400
300
200
100
0
16000
14000
12000
10000
8000
6000
4000
2000
0.66
0.67
0.68
0.69
0.7
0.71
0.72


invariant mass W^2
h81
Entries 146421
Mean 4.916
RMS 0.05451
120
100
80
60
40
20
0
4000
3500
3000
2500
2000
1500
1000
500
4.7
4.75
4.8
4.85
4.9
4.95
5
5.05
5.1
5.15
5.2


4 momentum transfer Q^2
h82
Entries 146421
Mean 0.07389
RMS 0.01585
140
120
100
80
60
40
20
0
4000
3500
3000
2500
2000
1500
1000
500
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14


Theta_cm
h83
Entries 147675
Mean 0.1045
RMS
12
10
8
6
4
2
0
3000
2500
2000
1500
1000
500
0
0.05
0.1
0.15
0.2
0.25

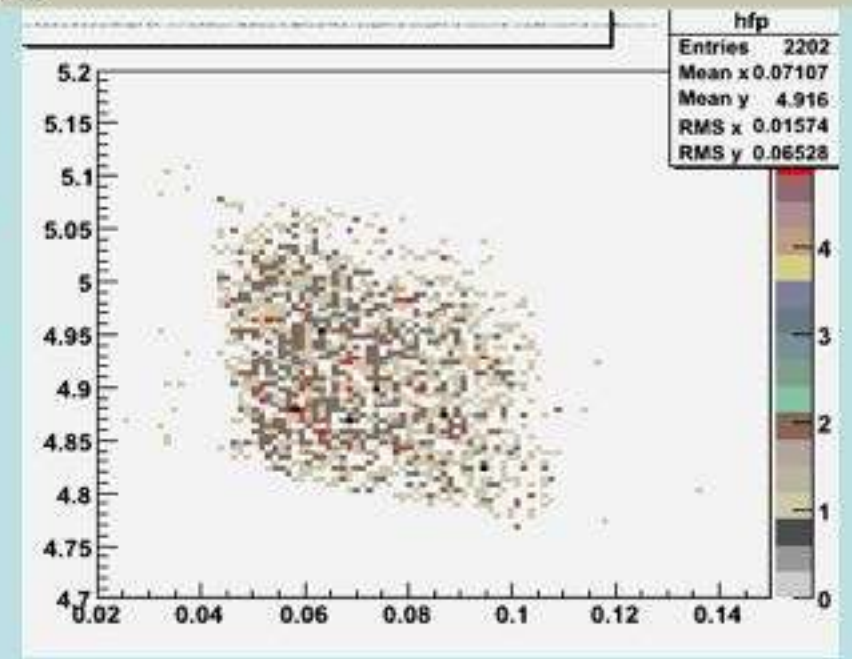




W^2 vs Q^2

Montecarlo simulation

D
A
T
A



W^2 vs Q^2

Summary:

- From this data Σ^0/Λ ratio at low Q^2 enhance the knowledge of this dependence and also allows studies on its dependence on the acceptance.

- The cross section of the elementary process of kaon production adds at very forward angle an important point in the plot shown from hall B. This way theoretical models can be discriminated. The next run of the hypernuclear experiment will allow two more points at other intermedia angles.

- The results from these studies can be used to calibrate results obtained for the oxygen target when waterfall target is used by comparing the hydrogen portion with the results obtained using only hydrogen. This constitute an important tool in the hypernuclear analyses.