K0sK0s channel – 2018 data

sample t40 job#2

mass distribution via Kalman fitter

t2 = TB/BT

t200, t201, t210, t211, t220, t221, t230, t231

t4 = TT/BB

t40, t41, t42, t43

General information :

Number of triggers = 183,158,900
Number of those events with exactly one valid proton in each direction = 111,720,000

Number of those events with exactly 4 tracks = 10,040,600
Number of events with exactly 4 tracks 1 vertex = 8,000,000
Number of events with exactly 4 tracks with Q=0 = 6,532,200
Number of events with exactly 4 tracks 1 vertex fiducial Q=0 = not in the code

Numbers that balance in px and py between central system and forward portions
All: dpy = 111,717,600
dpx = 111,717,600
fiducialRegion:
dpy = 4,492,144
dpx = 4,491,144
peak cut integral:
dpy = 485,500
dpx = 774,400

general cuts:

total charge: Q=0

fiducial xy

etaCut < 2.5

ptCut = 0.0

pair charge: $Q(\pi^+\pi^-)=0$

balance cuts :

CTpycut : $\Delta py < 0.06$

CTpxcut : $\Delta px < 0.15$

pixel hits cut:

npixelhits>0

Kalman fitter cut:

tkPtCut=0.0

Kalman algorithm for the V0 producer

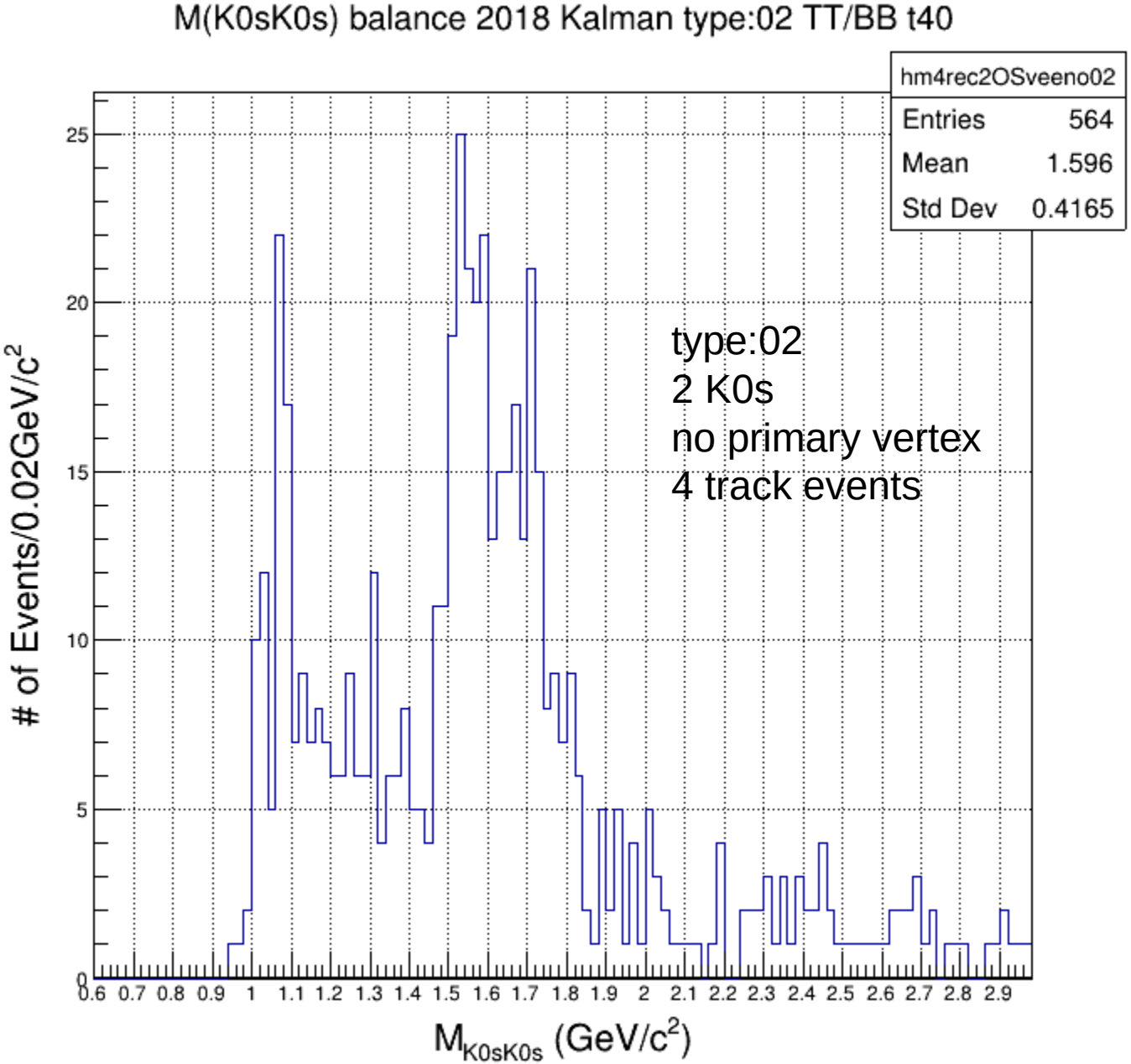
K0sK0s channel cuts:

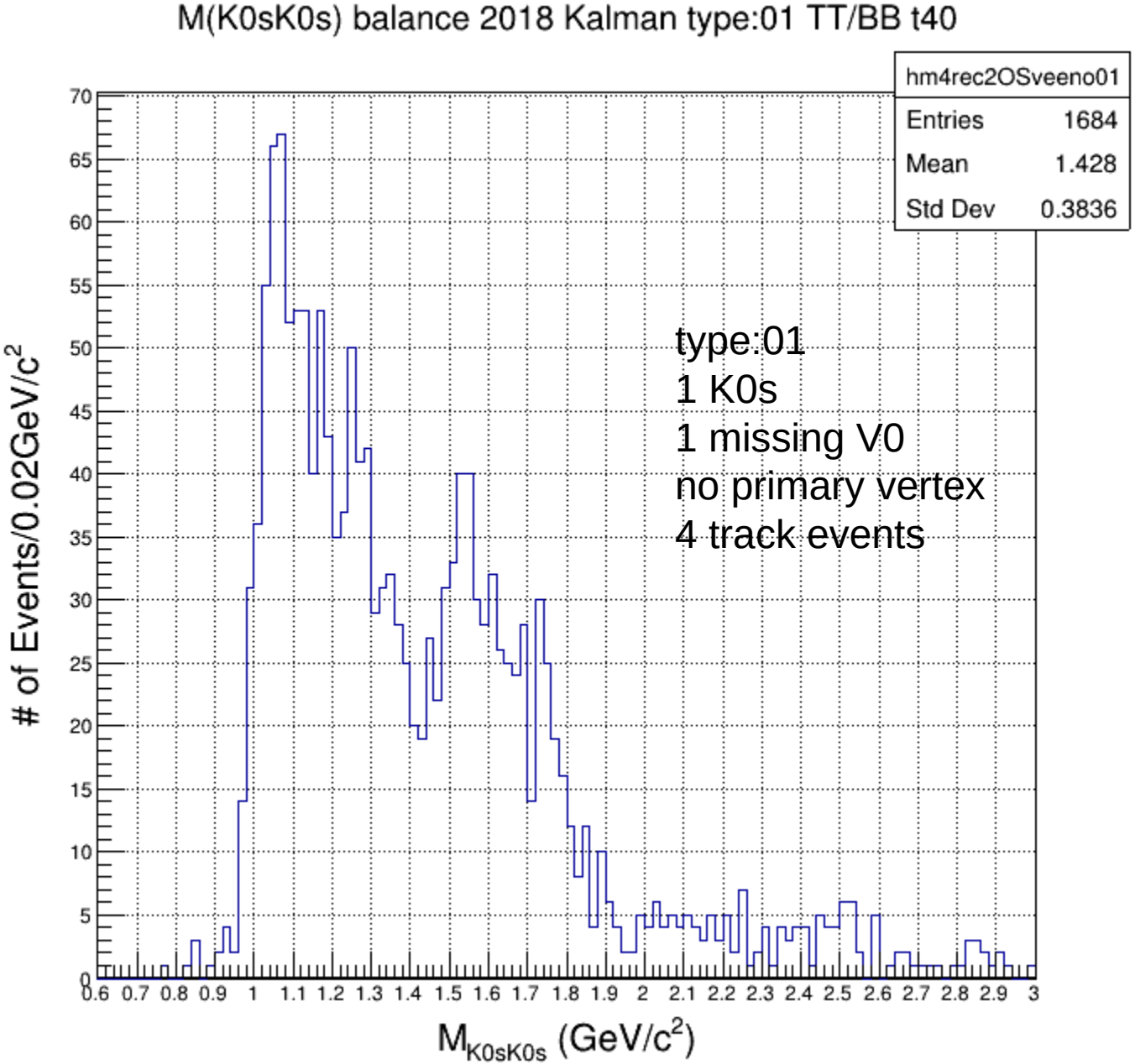
type:02 = 2 fitted V0s, no primary vertex, 4 tracks

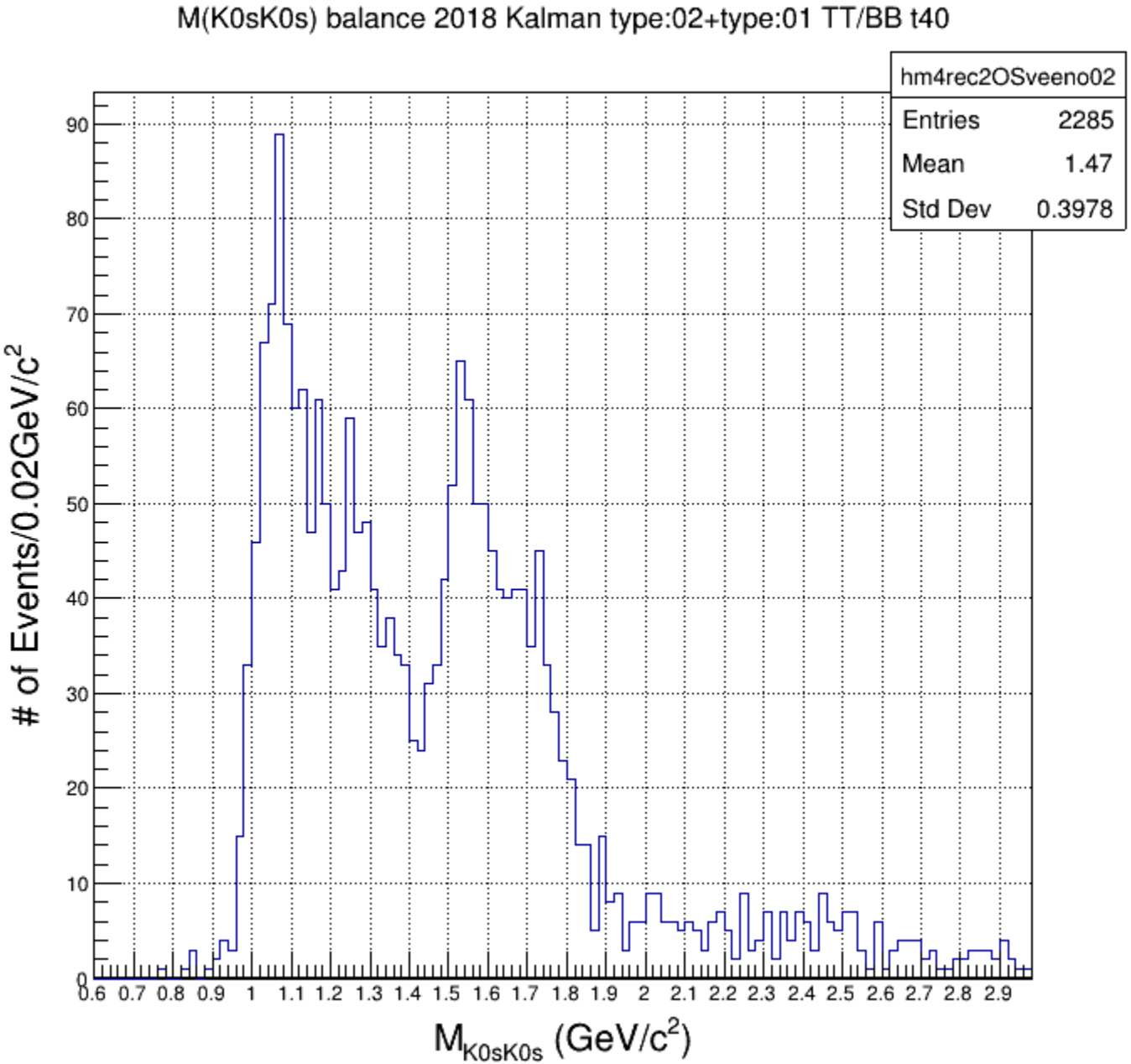
type:01 = 1 fitted V0, no primary vertex, 4 tracks

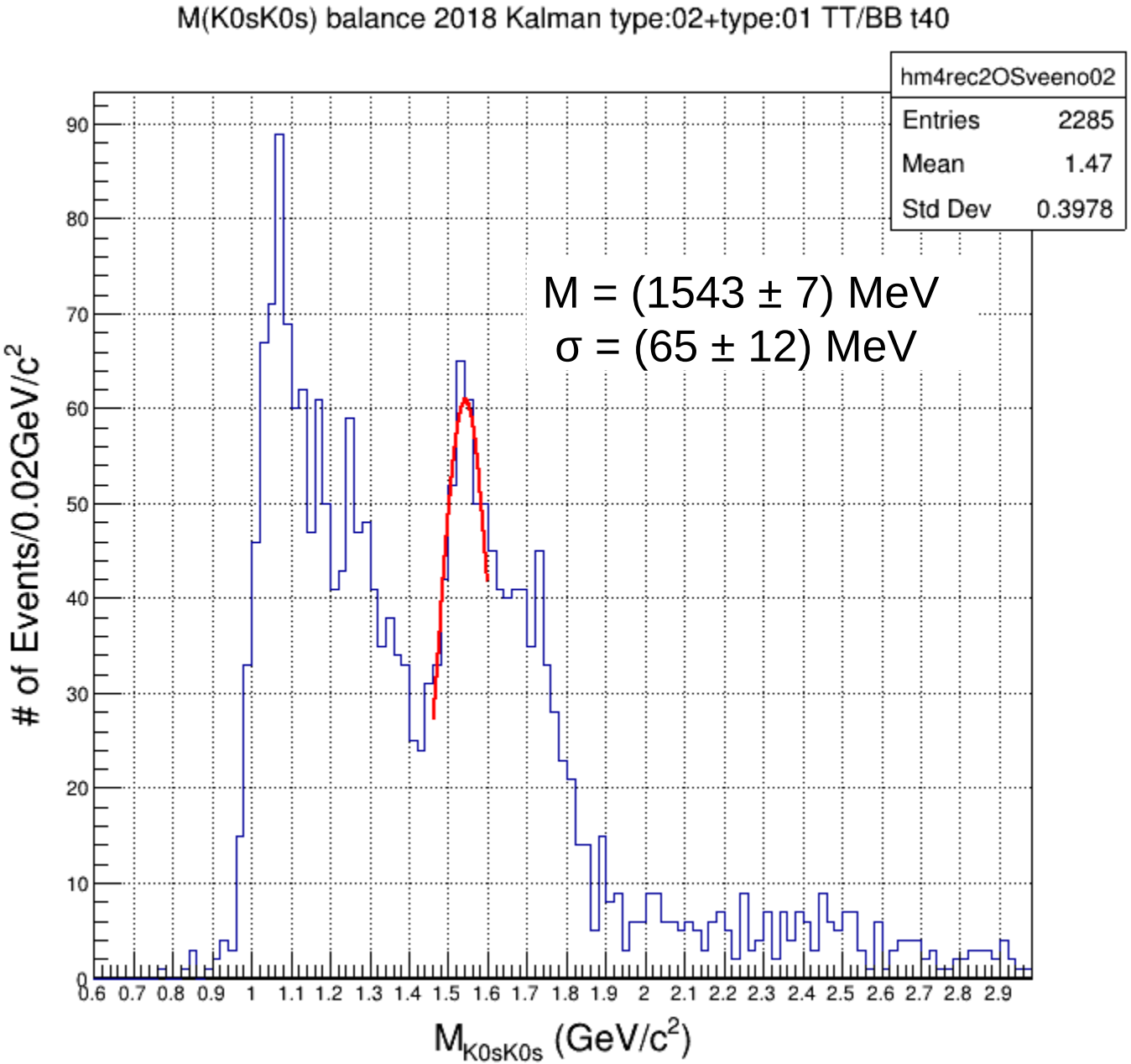
as I see 01:
the Kalman fitter was able to find 1 V0 only
but it is still a good K0sK0s event

we can still improve the fitter, for instance,
using refitted tracks


M(K0sK0s) balance 2018 Kalman type:02 TT/BB t40
hm4rec2OSveeno02
Entries 564
Mean 1.596
Std Dev 0.4165
type:02
2 K0s
no primary vertex
4 track events
# of Events/0.02GeV/c²
M_K0sK0s (GeV/c²)
0 5 10 15 20 25
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9


M(K0sK0s) balance 2018 Kalman type:01 TT/BB t40
hm4rec2OSveeno01
Entries 1684
Mean 1.428
Std Dev 0.3836
type:01
1 K0s
1 missing V0
no primary vertex
4 track events
# of Events/0.02GeV/c²
M_K0sK0s (GeV/c²)


M(K0sK0s) balance 2018 Kalman type:02+type:01 TT/BB t40
hm4rec2OSveeno02
Entries 2285
Mean 1.47
Std Dev 0.3978
# of Events/0.02GeV/c^2
M_{K0sK0s} (GeV/c^2)


M(K0sK0s) balance 2018 Kalman type:02+type:01 TT/BB t40
hm4rec2OSveeno02
Entries 2285
Mean 1.47
Std Dev 0.3978
M = (1543 ± 7) MeV
σ = (65 ± 12) MeV
# of Events/0.02GeV/c²
M_K0sK0s (GeV/c²)