$$J/\psi \rightarrow \gamma K_S K_S K_S K_S$$

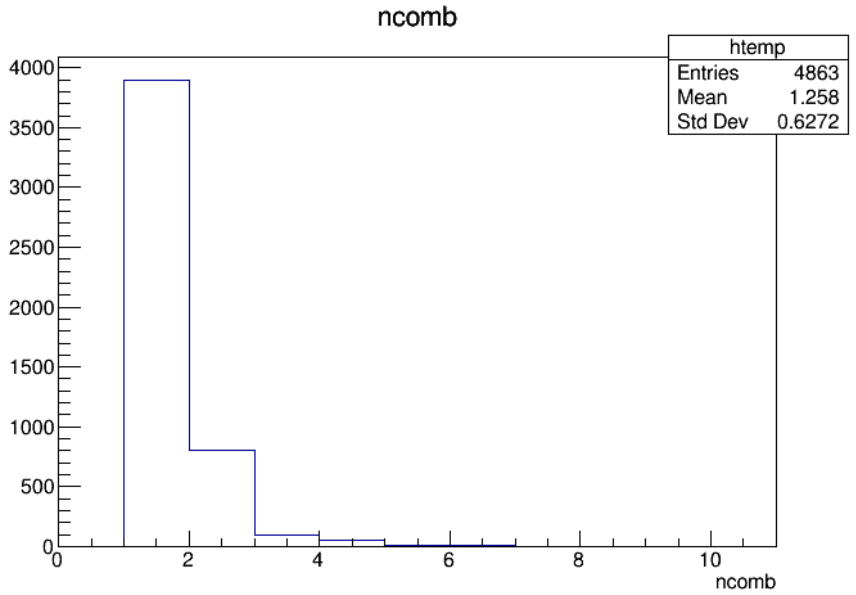
事例挑选

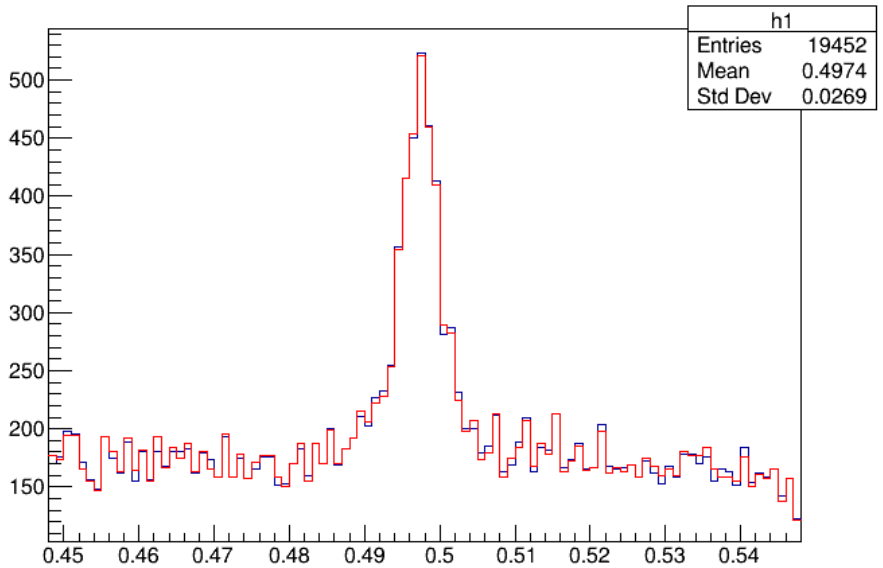
- 带电径迹
  - $R_{vxy} < 10cm, R_{vz} < 20cm, |cos\theta| < 0.93$
  - $nGoodp \geq 4 \;\&\&\; nGoodm \geq 4$
- 光子
  - $|cos\theta| < 0.8 \&\& E > 0.025GeV$
  - $0.86 < |\cos\theta| < 0.92 \&\& \mathrm{E} > 0.05\mathrm{GeV}$
  - $0 \leq t_{TDC} \leq 14(50ns)$
  - $ngamma \geq 1$
- 顶点和次级顶点拟合
  - 任意两条带电径迹做顶点拟合和次级顶点拟合，拟合成功并要求$\left|m_{\pi^+\pi^-} - m_{K_S}\right| < 0.05GeV$，保留这种$\pi^+\pi^-$组合
  - 对拟合成功的$\pi^+\pi^-$组合再组合成4个K_S（称为$4K_S$组合），每种$4K_S$组合时带电径迹不能重复，要求至少存在一种$4K_S$组合
- 4C运动学拟合
  - 对所有的$4K_S$组合做运动学拟合，至少有一组成功，并挑选χ^2最小的$4K_S$组合
- 8C运动学拟合
  - 用4C最优的$4K_S$组合和相应的光子做8C，要求拟合成功

事例挑选

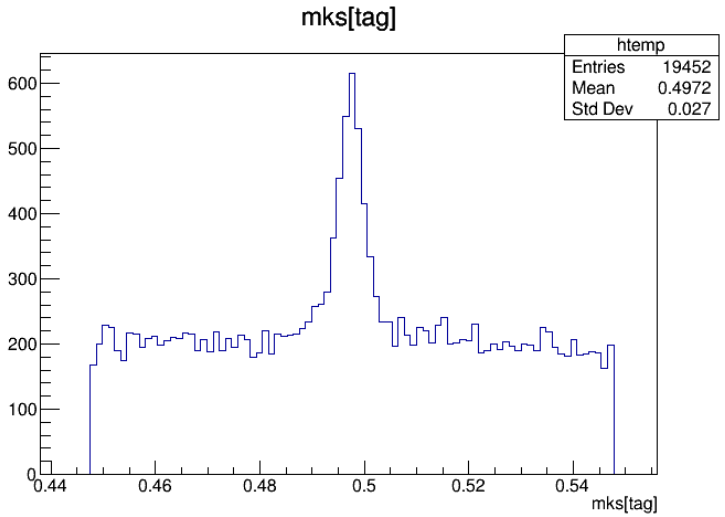
对比两种挑选方法

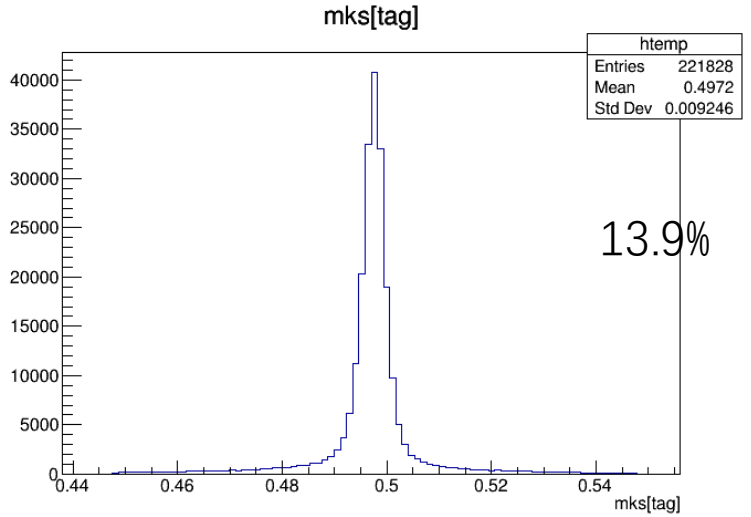
90%的$4K_S$组合是相同的





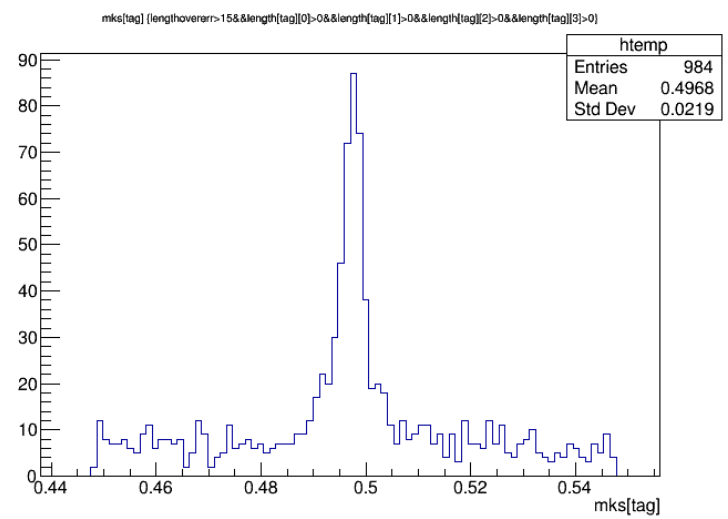
事例挑选

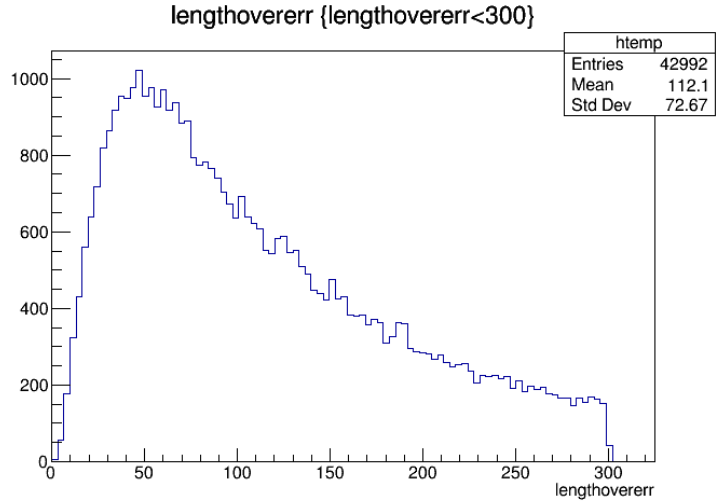




13.9%

$$\frac{L}{\sigma_L} > 0 \&\& \sqrt{\Sigma\left(\frac{L}{\sigma_L}\right)^2} > 15$$



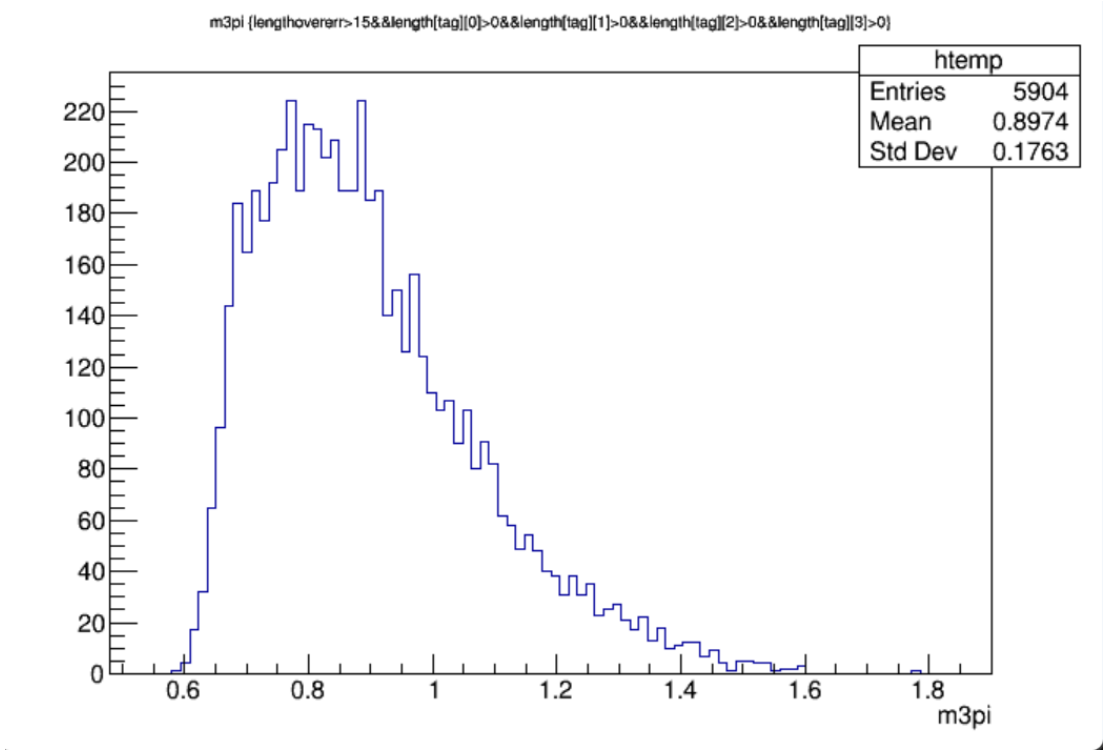


9.2%

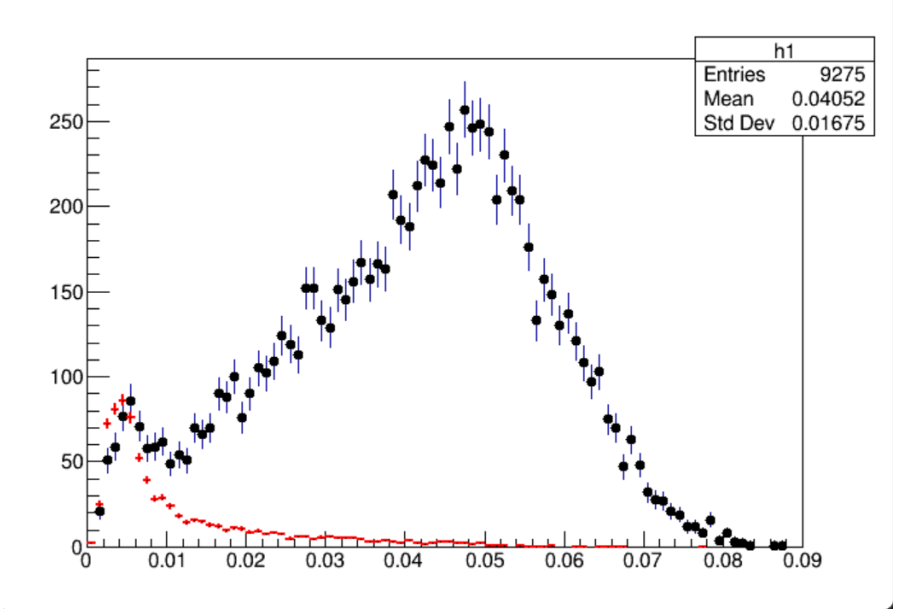
事例挑选

rowNo	decay tree (decay initial-final states)	iDcyTr	iDcyIFSts	nEtr	nCEtr
1	$J/\psi \to \pi^+\pi^- K^{*+}K^{*-}, K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, K^0 \to K^0_S, \bar{K}^0 \to K^0_S, K^0_S \to \pi^+\pi^-,$ $K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	8	0	45	45
2	$J/\psi \to \rho^0 K^{*+}K^{*-}, \rho^0 \to \pi^+\pi^-, K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, K^0 \to K^0_S, \bar{K}^0 \to K^0_S,$ $K^0_S \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	0	0	24	69
3	$J/\psi \to \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-$ $(J/\psi \dashrightarrow \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	1	1	18	87
4	$J/\psi \to \omega K^{*+}K^{*-}, \omega \to \pi^0\pi^+\pi^-, K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, K^0 \to K^0_S, \bar{K}^0 \to K^0_S,$ $K^0_S \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	5	1	11	98
5	$J/\psi \to K^{*+}K^{*-}h_1(1170), K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, h_1(1170) \to \pi^0\rho^0, K^0 \to K^0_S, \bar{K}^0 \to K^0_S,$ $\rho^0 \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	4	1	10	108
6	$J/\psi \to K^{*+}K^{*-}h_1(1170), K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, h_1(1170) \to \pi^+\rho^-, K^0 \to K^0_S, \bar{K}^0 \to K^0_S,$ $\rho^- \to \pi^0\pi^-, K^0_S \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	14	1	10	118
7	$J/\psi \to K^{*+}K^{*-}h_1(1170), K^{*+} \to \pi^+ K^0, K^{*-} \to \pi^- \bar{K}^0, h_1(1170) \to \pi^-\rho^+, K^0 \to K^0_S, \bar{K}^0 \to K^0_S,$ $\rho^+ \to \pi^0\pi^+, K^0_S \to \pi^+\pi^-, K^0_S \to \pi^+\pi^-$ $(J/\psi \dashrightarrow \pi^0\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-)$	12	1	7	125

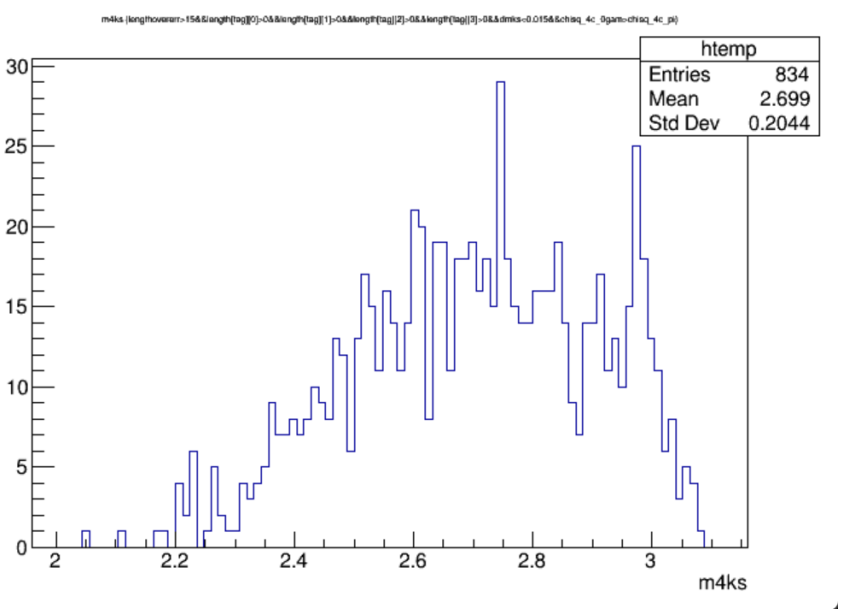
事例挑选


m3pi {lengthovererr>15&&length[tag][0]>0&&length[tag][1]>0&&length[tag][2]>0&&length[tag][3]>0}
htemp
Entries 5904
Mean 0.8974
Std Dev 0.1763
220
200
180
160
140
120
100
80
60
40
20
0
0.6
0.8
1
1.2
1.4
1.6
1.8
m3pi

事例挑选



$$\sqrt{\Sigma\left(m_{rec}-m_{K_S}\right)^2}$$



$$\frac{L}{\sigma_L}>0\&\&\sqrt{\Sigma\left(\frac{L}{\sigma_L}\right)^2}>15$$

$$\sqrt{\Sigma\left(m_{rec}-m_{K_S}\right)^2}<0.015$$

$$\chi^2_{0\gamma}>\chi^2_{4c}$$

$$\chi^2_{4c}<100$$