

Table 1: Decay trees and their respective initial-final states.

rowNo	decay tree (decay initial-final states)	iDcyTr	iDcyIFSts	nEtr	nCEtr
1	$J/\psi \rightarrow \Xi^+\Xi^-, \Xi^+ \rightarrow \pi^+\bar{\Lambda}, \Xi^- \rightarrow \pi^-\Lambda, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	2	2	31009	31009
2	$J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-$ )	20	18	7290	38299
3	$J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	14	13	6859	45158
4	$J/\psi \rightarrow \pi^+\pi^-\Lambda\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	56	2	2796	47954
5	$J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-\omega, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	39	13	1712	49666
6	$J/\psi \rightarrow \pi^-\eta b_1^+, \eta \rightarrow \pi^0\pi^+\pi^-, b_1^+ \rightarrow \pi^+\omega, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^-\pi^-\pi^-$ )	191	15	826	50492
7	$J/\psi \rightarrow \pi^+\pi^- b_1^+ b_1^-, b_1^+ \rightarrow \pi^+\omega, b_1^- \rightarrow \pi^-\omega, \omega \rightarrow \pi^0\pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	264	27	805	51297
8	$J/\psi \rightarrow \pi^+\eta b_1^-, \eta \rightarrow \pi^0\pi^+\pi^-, b_1^- \rightarrow \pi^-\omega, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	95	15	715	52012
9	$J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^-\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^-\pi^-$ )	114	30	676	52688
10	$J/\psi \rightarrow \pi^-\eta' b_1^+, \eta' \rightarrow \pi^+\pi^-\eta, b_1^+ \rightarrow \pi^+\omega, \eta \rightarrow \pi^0\pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	135	27	651	53339
11	$J/\psi \rightarrow \bar{K}^* K^{*+} b_1^-, \bar{K}^* \rightarrow \pi^+ K^-, K^{*+} \rightarrow \pi^+ K^0, b_1^- \rightarrow \pi^-\omega, K^0 \rightarrow K_S^0, \omega \rightarrow \pi^0\pi^+\pi^-, K_S^0 \rightarrow \pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^- K^-$ )	48	36	640	53979
12	$J/\psi \rightarrow \bar{K}^* K^{*+} b_1^-, \bar{K}^* \rightarrow \pi^+ K^-, K^{*+} \rightarrow \pi^+ K^0, b_1^- \rightarrow \pi^-\omega, K^0 \rightarrow K_L^0, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0 K_L^0 \pi^+\pi^+\pi^+\pi^-\pi^-\pi^- K^-$ )	60	46	623	54602
13	$J/\psi \rightarrow \pi^0\pi^0\pi^- b_1^+, b_1^+ \rightarrow \pi^+\omega, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^0\pi^+\pi^+\pi^-\pi^-$ )	52	5	603	55205
14	$J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^- K^+ K^-$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^- K^+ K^-$ )	245	19	578	55783
15	$J/\psi \rightarrow \eta' \gamma, \eta' \rightarrow \pi^+\pi^-\eta, \eta \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^-\pi^-\pi^- \gamma$ )	139	89	553	56336
16	$J/\psi \rightarrow \pi^-\eta' b_1^+, \eta' \rightarrow \pi^+\pi^-\gamma^F, b_1^+ \rightarrow \pi^+\omega, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^- \gamma^F$ )	164	7	486	56822
17	$J/\psi \rightarrow \pi^-\eta' b_1^+, \eta' \rightarrow \pi^+\pi^-\eta, b_1^+ \rightarrow \pi^+\omega, \eta \rightarrow \gamma\gamma, \omega \rightarrow \pi^0\pi^+\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^- \gamma\gamma$ )	37	31	485	57307

no PID

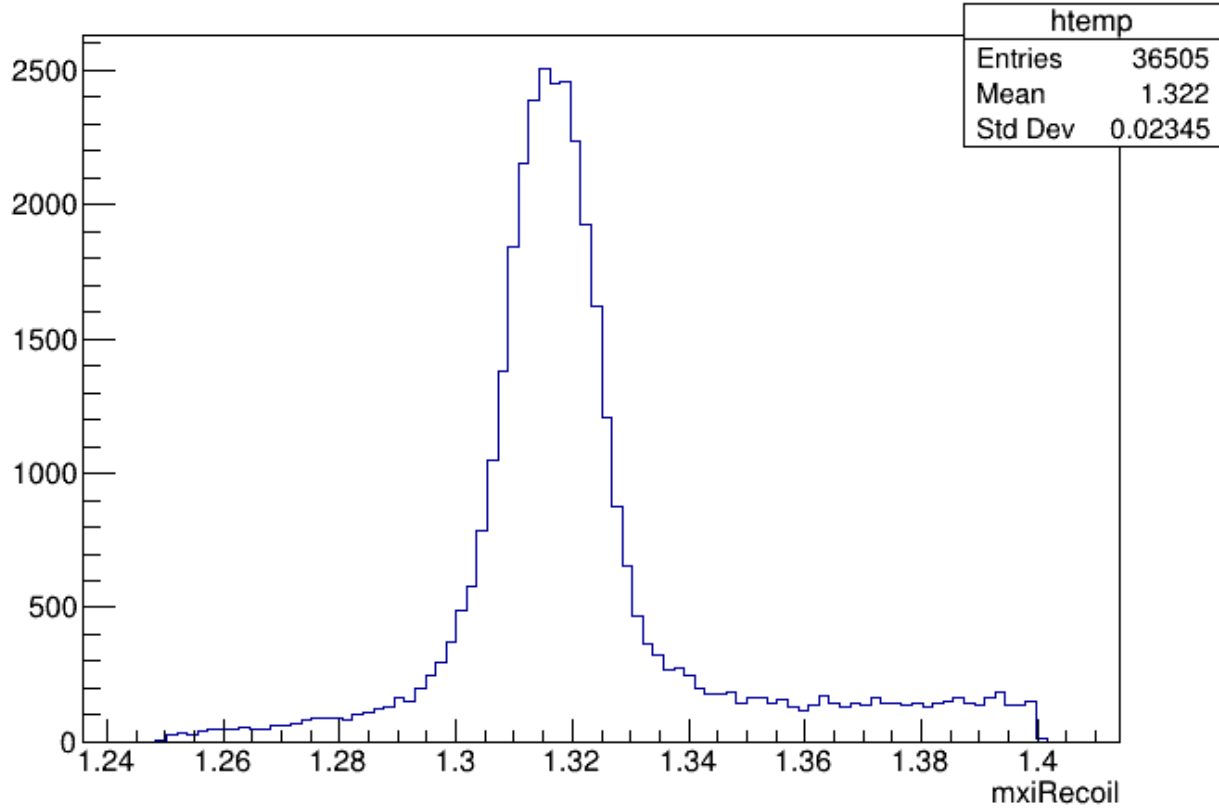
Table 1: Decay trees and their respective initial-final states.

nNo	decay tree (decay initial-final states)	iDcyTr	iDcyIFSts	nEtr	nCEtr
1	$J/\psi \rightarrow \Xi^+\Xi^-, \Xi^+ \rightarrow \pi^+\bar{\Lambda}, \Xi^- \rightarrow \pi^-\Lambda, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	0	0	30501	30501
2	$J/\psi \rightarrow \pi^+\pi^-\Lambda\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	3	0	2650	33151
3	$J/\psi \rightarrow \Sigma^{*+}\Sigma^{*-}, \Sigma^{*+} \rightarrow \pi^+\bar{\Lambda}, \Sigma^{*-} \rightarrow \pi^-\Lambda, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	4	0	430	33581
4	$J/\psi \rightarrow \Sigma^{*+}\Sigma^{*-}, \Sigma^{*+} \rightarrow \pi^+\Lambda, \Sigma^{*-} \rightarrow \pi^-\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	16	0	373	33954
5	$J/\psi \rightarrow \eta_c \gamma, \eta_c \rightarrow \Xi^+\Xi^-, \Xi^+ \rightarrow \pi^+\bar{\Lambda}, \Xi^- \rightarrow \pi^-\Lambda, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}\gamma$ )	9	4	307	34261
6	$J/\psi \rightarrow \pi^+\Sigma^{*-}\bar{\Lambda}, \Sigma^{*-} \rightarrow \pi^-\Lambda, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	10	0	285	34546
7	$J/\psi \rightarrow \pi^-\bar{\Lambda}\Sigma^{*+}, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Sigma^{*+} \rightarrow \pi^+\Lambda, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	7	0	219	34765
8	$J/\psi \rightarrow \pi^+\Lambda\Sigma^{*+}, \Lambda \rightarrow \pi^-p, \Sigma^{*+} \rightarrow \pi^-\bar{\Lambda}, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	8	0	146	34911
9	$J/\psi \rightarrow \Xi^0\Xi^0, \Xi^0 \rightarrow \pi^0\Lambda, \Xi^0 \rightarrow \pi^0\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^-\pi^-p\bar{p}$ )	5	3	108	35019
10	$J/\psi \rightarrow \Lambda\bar{\Lambda}\gamma, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^-\pi^-p\bar{p}\gamma$ )	19	10	79	35098
11	$J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-$ )	38	22	77	35175
12	$J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^+\pi^+\pi^-\pi^-$ )	79	28	47	35222
13	$J/\psi \rightarrow \pi^-\bar{\Sigma}^{*+}\Lambda, \bar{\Sigma}^{*+} \rightarrow \pi^+\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}$ )	15	0	33	35255
14	$J/\psi \rightarrow \Sigma^{*0}\Sigma^{*0}, \Sigma^{*0} \rightarrow \pi^0\Lambda, \bar{\Sigma}^{*0} \rightarrow \pi^0\bar{\Lambda}, \Lambda \rightarrow \pi^-p, \bar{\Lambda} \rightarrow \pi^+\bar{p}$ ( $J/\psi \rightarrow \pi^0\pi^0\pi^+\pi^-\pi^-p\bar{p}$ )	28	3	30	35285
15	$J/\psi \rightarrow \pi^+\pi^-\pi^-p\bar{p}$ ( $J/\psi \rightarrow \pi^+\pi^-\pi^-p\bar{p}$ )	34	20	29	35314
16	$J/\psi \rightarrow \pi^0\Delta^{*+}\bar{\Delta}^{*+}, \Delta^{*+} \rightarrow \pi^+p, \bar{\Delta}^{*+} \rightarrow \pi^-\bar{p}$ ( $J/\psi \rightarrow \pi^0\pi^+\pi^-\pi^-p\bar{p}$ )	41	15	26	35340
17	$J/\psi \rightarrow \Sigma^{*+}\bar{\Sigma}^{*+}, \Sigma^{*+} \rightarrow \pi^+\Sigma^0, \bar{\Sigma}^{*+} \rightarrow \pi^-\bar{\Lambda}, \Sigma^0 \rightarrow \Lambda\gamma, \bar{\Lambda} \rightarrow \pi^+\bar{p}, \Lambda \rightarrow \pi^-p$ ( $J/\psi \rightarrow \pi^+\pi^+\pi^-\pi^-p\bar{p}\gamma$ )	37	4	24	35364

PID

# Topology Analysis for Single Tag

mxiRecoil



mxiRecoil {iDcyTr!=0}

