

Topology Analysis ^{*}

(v1.5)

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^{*}This package is implemented with reference to a program called TOPO, which is developed by Prof. Shuxian Du from Zhengzhou University in China and has been widely used by people in BESIII collaboration. Several years ago, when I was a PhD student working on BESIII experiment, I learned the idea of topology analysis and a lot of programming techniques from the TOPO program. So, I really appreciate Prof. Du's original work very much. To meet my own needs and to practice developing analysis tools with C++, ROOT and LaTeX, I wrote the package from scratch. At that time, the package functioned well but was relatively simple. At the end of last year (2017), my co-supervisor, Prof. Chengping Shen reminded me that it could be a useful tool for Belle II experiment as well. So, I revised and extended it, making it more well-rounded and suitable for Belle II experiment. Here, I would like to thank Prof. Du for his original work, Prof. Shen for his suggestion and encouragement, and Wencheng Yan, Sen Jia, Yubo Li, Suxian Li, Longke Li and Guanda Gong for their efforts in helping me test the program.

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index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
71	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^-K^+D^0\bar{D}^0, \bar{B}^0 \rightarrow K^{*-}D^+, D^0 \rightarrow \rho^+K^{*-}, \bar{D}^0 \rightarrow \rho^0\rho^0,$ $K^{*-} \rightarrow \pi^-\bar{K}^0, D^+ \rightarrow e^+\nu_e\bar{K}^*, \rho^+ \rightarrow \pi^0\pi^+, K^{*-} \rightarrow \pi^-\bar{K}^0, \rho^0 \rightarrow \pi^+\pi^-, \rho^0 \rightarrow \pi^+\pi^-,$ $\bar{K}^0 \rightarrow K_L, \bar{K}^* \rightarrow \pi^+K^-, \bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow e^+\nu_e K_L K_L \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^+K^-K^-\gamma\gamma)$	70	70	1	71
72	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^0\pi^+\rho^+\rho^-D^-, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^+, \rho^+ \rightarrow \pi^0\pi^+, \rho^- \rightarrow \pi^0\pi^-,$ $D^- \rightarrow e^-\bar{\nu}_e\pi^-K^+, D^+ \rightarrow \pi^0\pi^+\pi^+K^-$ $(e^+e^- \rightarrow e^+e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	71	71	1	72
73	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^*n\bar{\Sigma}_c^{*0}, \bar{B}^0 \rightarrow \pi^-D^+, K^* \rightarrow \pi^-K^+, \bar{\Sigma}_c^{*0} \rightarrow \pi^+\bar{\Lambda}_c^-,$ $D^+ \rightarrow \pi^0\pi^+\bar{K}^*, \bar{\Lambda}_c^- \rightarrow \pi^0\pi^-K^+\bar{p}, \bar{K}^* \rightarrow \pi^+K^-$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^+K^+K^+K^-n\bar{p}\gamma\gamma\gamma\gamma)$	72	72	1	73
74	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e D^{*-}, \bar{B}^0 \rightarrow \pi^-\pi^-D^{*+}\bar{n}\Delta^+, D^{*-} \rightarrow \pi^-\bar{D}^0, D^{*+} \rightarrow \pi^+D^0,$ $\Delta^+ \rightarrow \pi^0p, \bar{D}^0 \rightarrow e^-\bar{\nu}_e\pi^+K^0, D^0 \rightarrow K^-a_1^+, K^0 \rightarrow K_L, a_1^+ \rightarrow \pi^+f_0(600)$ $(e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e K_L \pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-\bar{n}pf_0(600)\gamma\gamma)$	73	73	1	74
75	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^{*+}\bar{D}^{*-}D^0, \bar{B}^0 \rightarrow D^{*+}D_{s0}^-, K^{*+} \rightarrow \pi^+K^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $D^0 \rightarrow \pi^0\pi^+K^-, D^{*+} \rightarrow \pi^0D^+, D_{s0}^- \rightarrow \pi^0D_s^-, K^0 \rightarrow K_L, \bar{D}^0 \rightarrow \rho^-K^{*+}, D^+ \rightarrow \mu^+\nu_\mu\pi^+K^-,$ $D_s^- \rightarrow K^*K^-, \rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^0K^+, K^* \rightarrow \pi^0K^0, K^0 \rightarrow K_L$ $(e^+e^- \rightarrow \mu^+\nu_\mu K_L K_L \pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	74	74	1	75
76	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^+\nu_\mu\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\pi^+\pi^-\rho^+\bar{D}^{*-}D^{*0}, \bar{D}^{*-} \rightarrow \pi^0D^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\bar{D}^{*-} \rightarrow \pi^0D^-, D^{*0} \rightarrow \pi^0D^0, D^- \rightarrow K_L\pi^-K^+K^-, D^- \rightarrow \pi^0\pi^-\pi^-K^+, D^0 \rightarrow \pi^0\pi^+K^-$ $(e^+e^- \rightarrow \mu^+\nu_\mu K_L \pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	75	75	1	76
77	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\rho^+\omega\omega D^-, \bar{B}^0 \rightarrow K^-D^{*+}\bar{D}^{*0}, \rho^+ \rightarrow \pi^0\pi^+, \omega \rightarrow \pi^+\pi^-,$ $\omega \rightarrow \pi^0\pi^+\pi^-, D^- \rightarrow \pi^0K_L\pi^-, D^{*+} \rightarrow \pi^0D^+, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D^+ \rightarrow \pi^+\bar{K}_1'^0, \bar{D}^0 \rightarrow \rho^-K^{*+},$ $\bar{K}_1'^0 \rightarrow \pi^+K^{*-}, \rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^+K^0, K^{*-} \rightarrow \pi^-\bar{K}^0, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S,$ $K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow K_L K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	76	76	1	77
78	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow \bar{B}^0\bar{B}^0, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^{*+}, \bar{B}^0 \rightarrow \pi^0\pi^+\pi^-\rho^-\omega K^0 D^{*+}, D^{*+} \rightarrow \pi^+D^0, \rho^- \rightarrow \pi^0\pi^-,$ $\omega \rightarrow \pi^0\pi^+\pi^-, \bar{K}^0 \rightarrow K_S, D^{*+} \rightarrow \pi^+D^0, D^0 \rightarrow \pi^0\eta K_S, D^0 \rightarrow \mu^+\nu_\mu K^{*-}, \eta \rightarrow \gamma\gamma,$ $K_S \rightarrow \pi^+\pi^-, K^{*-} \rightarrow \pi^-\bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K_S\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	77	77	1	78
79	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e\eta D^-, \bar{B}^0 \rightarrow \rho^0\pi^-D^{*+}, \eta \rightarrow \pi^0\pi^+\pi^-, D^- \rightarrow e^-\bar{\nu}_e K_1^0,$ $\rho^0 \rightarrow \pi^+\pi^-, D^{*+} \rightarrow \pi^+D^0, K_1^0 \rightarrow \pi^0\pi^-K^+, D^0 \rightarrow e^+\nu_e K^-$ $(e^+e^- \rightarrow e^+e^+e^-\nu_e\bar{\nu}_e\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma)$	78	78	1	79
80	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\pi^+\pi^-\rho^+\eta\bar{D}^{*-}, \bar{B}^0 \rightarrow \mu^-\bar{\nu}_\mu D^{*+}, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\eta \rightarrow \pi^0\pi^+\pi^-, \eta \rightarrow \pi^0\pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^{*+} \rightarrow \pi^0D^+, \bar{D}^0 \rightarrow \pi^-K^+, D^+ \rightarrow e^+\nu_e\bar{K}^*,$ $\bar{K}^* \rightarrow \pi^+K^-$ $(e^+e^- \rightarrow e^+\nu_e\mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	79	79	1	80

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
91	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^+\pi^-\rho^+D^-, \bar{B}^0 \rightarrow \mu^-\bar{\nu}_\mu D^{*+}, \rho^+ \rightarrow \pi^0\pi^+, D^- \rightarrow \mu^-\bar{\nu}_\mu\pi^-K^+,$ $D^{*+} \rightarrow \pi^0D^+, D^+ \rightarrow \pi^+\pi^+K^-$ $(e^+e^- \rightarrow \mu^-\mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma)$	90	90	1	91
92	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^-K^{*+}J/\psi, \bar{B}^0 \rightarrow \pi^0\pi^+K^-\eta_c(2S), K^{*+} \rightarrow \pi^0K^+, J/\psi \rightarrow e^+e^-,$ $\pi^0 \rightarrow e^+e^-, \eta_c(2S) \rightarrow \eta\Sigma^+\bar{\Sigma}^-, \eta \rightarrow \pi^0\pi^0\pi^0, \Sigma^+ \rightarrow \pi^+n, \bar{\Sigma}^- \rightarrow \pi^0\bar{p}$ $(e^+e^- \rightarrow e^+e^+e^-e^-\pi^+\pi^+\pi^-K^+K^-n\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	91	91	1	92
93	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, \bar{B}^0 \rightarrow K^0\psi', B^0 \rightarrow \pi^-\rho^+D^+, K^0 \rightarrow K_S, \psi' \rightarrow \pi^0\pi^0J/\psi,$ $\rho^+ \rightarrow \pi^0\pi^+, \rho^- \rightarrow \pi^0\pi^-, D^+ \rightarrow \bar{K}^*a_1^+, K_S \rightarrow \pi^+\pi^-, J/\psi \rightarrow \mu^+\mu^-, \bar{K}^* \rightarrow \pi^+K^-,$ $a_1^+ \rightarrow \pi^+f_0(600)$ $(e^+e^- \rightarrow \mu^+\mu^-\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-f_0(600)\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	92	92	1	93
94	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\rho^+\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^-K^0D^+, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, K^0 \rightarrow K_L, D^+ \rightarrow K_La_1^+, \bar{D}^0 \rightarrow \pi^-K^+, a_1^+ \rightarrow \pi^+f_0(600)$ $(e^+e^- \rightarrow K_LK_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+f_0(600)\gamma\gamma)$	93	93	1	94
95	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^+\omega D^-, \bar{B}^0 \rightarrow \pi^0\omega K^0K^-D^+, \rho^+ \rightarrow \pi^0\pi^+, \omega \rightarrow \pi^0\pi^+\pi^-,$ $D^- \rightarrow \pi^-\pi^-K^+, \pi^0 \rightarrow e^+e^-, \omega \rightarrow \pi^0\pi^+\pi^-, K^0 \rightarrow K_S, D^+ \rightarrow \mu^+\nu_\mu\bar{K}^*, K_S \rightarrow \pi^+\pi^-,$ $\bar{K}^* \rightarrow \pi^+K^-$ $(e^+e^- \rightarrow e^+e^-\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma)$	94	94	1	95
96	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e\bar{D}^{*-}, \bar{B}^0 \rightarrow e^-\bar{\nu}_eD^{*+}, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^{*+} \rightarrow \pi^+D^0,$ $\bar{D}^0 \rightarrow K^+a_1^-, D^0 \rightarrow \pi^0\pi^+K^-, a_1^- \rightarrow \pi^-f_0(600)$ $(e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\pi^+\pi^+\pi^-\pi^-K^+K^-f_0(600)\gamma\gamma)$	95	95	1	96
97	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^{*+}\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\pi^-\bar{D}^{*+}\Delta^+\Delta^+, K^{*+} \rightarrow \pi^+K^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $D^{*+} \rightarrow \pi^+D^0, \Delta^+ \rightarrow \pi^+n, \bar{\Delta}^+ \rightarrow \pi^0\bar{p}, K^0 \rightarrow K_L, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, D^0 \rightarrow \pi^+\pi^-K_S,$ $K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+n\bar{p}\gamma\gamma\gamma\gamma\gamma)$	96	96	1	97
98	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow D_2^{*-}D_s^{*+}, \bar{B}^0 \rightarrow \pi^+\pi^-D^+D_s^-, D_2^{*-} \rightarrow \pi^0\bar{D}^{*-}, D_s^{*+} \rightarrow D_s^+\gamma,$ $D^+ \rightarrow \pi^+\bar{K}_1'^0, D_s^- \rightarrow e^-\bar{\nu}_e\eta', \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D_s^+ \rightarrow \pi^+\phi, \bar{K}_1'^0 \rightarrow \pi^+K^{*-}, \eta' \rightarrow \pi^0\pi^0\eta,$ $\bar{D}^0 \rightarrow \pi^-\omega K^+, \phi \rightarrow \pi^-\rho^+, K^{*-} \rightarrow \pi^-\bar{K}^0, \eta \rightarrow \pi^0\pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	97	97	1	98
99	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K_L\eta_c, \bar{B}^0 \rightarrow \pi^-\pi^-\rho^+D^{*+}, \eta_c \rightarrow \pi^0K^0\bar{K}^0\bar{K}^*K^*, \rho^+ \rightarrow \pi^0\pi^+,$ $D^{*+} \rightarrow \pi^0D^+, K^0 \rightarrow K_S, \bar{K}^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^-K^+, D^+ \rightarrow \pi^0\pi^+K_S,$ $K_S \rightarrow \pi^0\pi^0, K_S \rightarrow \pi^+\pi^-, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow K_LK_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	98	98	1	99
100	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^0\rho^0\pi^+\bar{D}^{*-}, \bar{B}^0 \rightarrow K^*K^-D^+, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $K^* \rightarrow \pi^0K^0, D^+ \rightarrow \pi^+\pi^+K^-, \bar{D}^0 \rightarrow \pi^-\rho^+, K^0 \rightarrow K_S, \rho^+ \rightarrow \pi^0\pi^+, K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	99	99	1	100

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
132	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow \bar{B}^0 \bar{B}^0, \bar{B}^0 \rightarrow \rho^- D^+, \bar{B}^0 \rightarrow \rho^0 \pi^- \omega D^+, \rho^- \rightarrow \pi^0 \pi^-, D^+ \rightarrow e^+ \nu_e \pi^+ K^-,$ $\rho^0 \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^+ \rightarrow \pi^+ \pi^+ K^-$ $(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- K^- \gamma \gamma \gamma \gamma)$	131	131	1	132
133	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \bar{D}^{*-} D_s^+, B^0 \rightarrow e^+ \nu_e D_2^{*-}, \bar{D}^{*-} \rightarrow \pi^0 D^-, D_s^+ \rightarrow \mu^+ \nu_\mu \phi,$ $D_2^{*-} \rightarrow \pi^- \bar{D}^{*0}, D^- \rightarrow e^- \bar{\nu}_e \pi^- K^+, \phi \rightarrow K^+ K^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{D}^0 \rightarrow K^+ a_1^-, a_1^- \rightarrow \rho^0 \pi^-,$ $\rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^+ e^- \nu_e \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^+ K^- \gamma \gamma \gamma)$	132	132	1	133
134	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^+ \pi^- \rho^+ \bar{D}^{*-}, \bar{B}^0 \rightarrow D_2^{*+} D_s^-, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0,$ $D_2^{*+} \rightarrow \pi^+ D^0, D_s^- \rightarrow \tau^- \bar{\nu}_\tau, \bar{D}^0 \rightarrow \pi^0 K_L \pi^+ \pi^-, D^0 \rightarrow \rho^+ K^{*-}, \tau^- \rightarrow \nu_\tau \pi^0 \pi^-, \rho^+ \rightarrow \pi^0 \pi^+,$ $K^{*-} \rightarrow \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow \nu_\tau \bar{\nu}_\tau K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	133	133	1	134
135	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^0 \omega K^+ D_s^-, B^0 \rightarrow \mu^- \bar{\nu}_\mu D^{*+}, \omega \rightarrow \pi^0 \pi^+ \pi^-, D_s^- \rightarrow D_s^- \gamma,$ $D^{*+} \rightarrow \pi^+ D^0, D_s^- \rightarrow \rho^- \eta', D^0 \rightarrow \pi^+ \pi^+ \pi^- K^-, \rho^- \rightarrow \pi^0 \pi^-, \eta' \rightarrow \rho^0 \gamma, \rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	134	134	1	135
136	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow D_s^{*+} D_1'^-, \bar{B}^0 \rightarrow \rho^0 \pi^- D^{*+}, D_s^{*+} \rightarrow D_s^+ \gamma, D_1'^- \rightarrow \pi^- \bar{D}^{*0},$ $\rho^0 \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, D_s^+ \rightarrow K_L \pi^+ \pi^- K^+, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow K^- a_1^+, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^*,$ $a_1^+ \rightarrow \pi^+ f_0(600), K^* \rightarrow \pi^- K^+$ $(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- f_0(600) \gamma \gamma \gamma \gamma)$	135	135	1	136
137	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^0 \pi^- \rho^+ \rho^+ K^0 D^-, \bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^- \eta \omega D^+, \rho^0 \rightarrow \pi^+ \pi^-, \rho^+ \rightarrow \pi^0 \pi^+,$ $\rho^+ \rightarrow \pi^0 \pi^+, K^0 \rightarrow K_S, D^- \rightarrow K_L \pi^+ \pi^- K^-, \pi^0 \rightarrow e^+ e^-, \rho^0 \rightarrow \pi^+ \pi^-, \eta \rightarrow \pi^+ \pi^-,$ $\omega \rightarrow \pi^0 \pi^+ \pi^-, D^+ \rightarrow K_L a_1^+, K_S \rightarrow \pi^+ \pi^-, a_1^+ \rightarrow \pi^0 \rho^+, \rho^+ \rightarrow \pi^0 \pi^+$ $(e^+e^- \rightarrow e^+ e^- K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	136	136	1	137
138	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^0 \pi^0 K^+ D_s^{*-}, \bar{B}^0 \rightarrow D^{*0} n \bar{n}, D_s^{*-} \rightarrow D_s^- \gamma, D^{*0} \rightarrow \pi^0 D^0,$ $D_s^- \rightarrow \rho^- \eta', D^0 \rightarrow \pi^+ K^-, \rho^- \rightarrow \pi^0 \pi^-, \eta' \rightarrow \rho^0 \gamma, \rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- K^+ K^- n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	137	137	1	138
139	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow e^+ \nu_e D^-, \bar{B}^0 \rightarrow K^+ \Delta^+ \bar{\Sigma}_c^{*-}, D^- \rightarrow K_L \pi^+ \pi^- K^-, \Delta^+ \rightarrow \pi^0 p,$ $\bar{\Sigma}_c^{*-} \rightarrow \pi^- \bar{\Lambda}_c^-, \bar{\Lambda}_c^- \rightarrow \pi^0 \pi^- \bar{\Delta}^0, \bar{\Delta}^0 \rightarrow \pi^+ \bar{p}$ $(e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- p \bar{p} \gamma \gamma \gamma \gamma)$	138	138	1	139
140	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^+ \rho^+ \rho^- \eta \bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^+ \pi^- \pi^- \bar{K}^0 K^+ K^+ K^{*-}, \rho^+ \rightarrow \pi^0 \pi^+, \rho^+ \rightarrow \pi^0 \pi^+,$ $\rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^0 D^-, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^- K^+, K^{*-} \rightarrow \pi^- \bar{K}^0,$ $D^- \rightarrow e^- \bar{\nu}_e K^*, K_S \rightarrow \pi^+ \pi^-, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^- K^+, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	139	139	1	140
141	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^- D^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \rho^0 \rightarrow \pi^+ \pi^-,$ $D^+ \rightarrow \pi^0 \pi^+ \bar{K}^*, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+, \bar{K}^* \rightarrow \pi^0 \bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma)$	140	140	1	141

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
142	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow D^-D_s^{*+}\gamma, \bar{B}^0 \rightarrow \pi^+\pi^-\rho^-D^+, D^- \rightarrow \pi^0\pi^-K^+K^-, D_s^{*+} \rightarrow D_s^+\gamma,$ $\rho^- \rightarrow \pi^0\pi^-, D^+ \rightarrow \mu^+\nu_\mu\bar{K}^*, D_s^+ \rightarrow \bar{K}^*K^{*+}, \bar{K}^* \rightarrow \pi^+K^-, \bar{K}^* \rightarrow \pi^+K^-, K^{*+} \rightarrow \pi^0K^+$ $(e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$	141	141	1	142
143	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^+n\bar{\Sigma}_c^-, \bar{B}^0 \rightarrow D^{*+}D_{s1}^{\prime-}, \rho^+ \rightarrow \pi^0\pi^+, \bar{\Sigma}_c^- \rightarrow \pi^0\bar{\Lambda}_c^-,$ $D^{*+} \rightarrow \pi^+D^0, D_{s1}^{\prime-} \rightarrow \pi^0D_s^{*-}, \bar{\Lambda}_c^- \rightarrow \bar{K}^*\bar{\Sigma}^-, D^0 \rightarrow \pi^0\pi^+K^-, D_s^{*-} \rightarrow D_s^-\gamma, \bar{K}^* \rightarrow \pi^+K^-,$ $\bar{\Sigma}^- \rightarrow \pi^-\bar{n}, D_s^- \rightarrow K^*K^-, K^* \rightarrow \pi^-K^+$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-K^-K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	142	142	1	143
144	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow \bar{B}^0\bar{B}^0, \bar{B}^0 \rightarrow \mu^-\bar{\nu}_\mu D^+, \bar{B}^0 \rightarrow \bar{K}^*K^-D^{*+}, D^+ \rightarrow K_S K^{*+}, \bar{K}^* \rightarrow \pi^+K^-,$ $D^{*+} \rightarrow \pi^0D^+, K_S \rightarrow \pi^+\pi^-, K^{*+} \rightarrow \pi^0K^+, D^+ \rightarrow \pi^0\pi^0\pi^+$ $(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$	143	143	1	144
145	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+\pi^+\pi^-\omega\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\pi^+\pi^-\pi^-D^{*+}, \omega \rightarrow \pi^0\pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $D^{*+} \rightarrow \pi^+D^0, \bar{D}^0 \rightarrow e^-\bar{\nu}_e\pi^+K^0, D^0 \rightarrow \rho^+K^{*-}, K^0 \rightarrow K_S, \rho^+ \rightarrow \pi^0\pi^+, K^{*-} \rightarrow \pi^-\bar{K}^0,$ $K_S \rightarrow \pi^+\pi^-, \bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow e^-\bar{\nu}_eK_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma)$	144	144	1	145
146	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+K^0\bar{K}^*\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^+K^-D^-D^{*+}, K^0 \rightarrow K_L, \bar{K}^* \rightarrow \pi^+K^-,$ $\bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^- \rightarrow K_S a_1^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^0 \rightarrow K_S\eta', K_S \rightarrow \pi^+\pi^-, a_1^- \rightarrow \rho^0\pi^-,$ $D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, \eta' \rightarrow \rho^0\gamma, \rho^0 \rightarrow \pi^+\pi^-, \rho^0 \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma)$	145	145	1	146
147	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, \bar{B}^0 \rightarrow \rho^-D_2^{*+}, \bar{B}^0 \rightarrow \rho^0\pi^+K^{*-}\eta_c, \rho^- \rightarrow \pi^0\pi^-, D_2^{*+} \rightarrow \pi^+D^0,$ $\rho^0 \rightarrow \pi^+\pi^-, K^{*-} \rightarrow \pi^-\bar{K}^0, \eta_c \rightarrow \pi^0\pi^+\pi^-\omega, D^0 \rightarrow \pi^+\omega K^-, \bar{K}^0 \rightarrow K_L, \omega \rightarrow \pi^0\pi^+\pi^-,$ $\omega \rightarrow \pi^0\pi^+\pi^-$ $(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	146	146	1	147
148	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\pi^+\pi^+\rho^-D^-, \bar{B}^0 \rightarrow D_s^{*-}D_1^+, \rho^0 \rightarrow \pi^+\pi^-, \rho^- \rightarrow \pi^0\pi^-,$ $D^- \rightarrow \mu^-\bar{\nu}_\mu K^0, D_s^{*-} \rightarrow D_s^-\gamma, D_1^+ \rightarrow \pi^+D^{*0}, K^0 \rightarrow K_S, D_s^- \rightarrow \pi^+\pi^-K_S K^-, D^{*0} \rightarrow D^0\gamma,$ $K_S \rightarrow \pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, D^0 \rightarrow \pi^+\omega K^-, \omega \rightarrow \pi^0\pi^+\pi^-$ $(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma)$	147	147	1	148
149	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\rho^0\pi^+D^-, \bar{B}^0 \rightarrow \pi^+\pi^-\pi^-D^+, \rho^0 \rightarrow \pi^+\pi^-, D^- \rightarrow \pi^-K_1^{\prime 0},$ $D^+ \rightarrow K_S a_1^+, K_1^{\prime 0} \rightarrow \pi^-K^{*+}, K_S \rightarrow \pi^+\pi^-, a_1^+ \rightarrow \pi^0\rho^+, K^{*+} \rightarrow \pi^0K^+, \rho^+ \rightarrow \pi^0\pi^+$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	148	148	1	149
150	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \tau^+\nu_\tau D_0^{*-}, \bar{B}^0 \rightarrow \pi^0\omega K^*K^-D^+, \tau^+ \rightarrow \mu^+\nu_\mu\bar{\nu}_\tau, D_0^{*-} \rightarrow \pi^-\bar{D}^0,$ $\omega \rightarrow \pi^0\pi^+\pi^-, K^* \rightarrow \pi^0K^0, D^+ \rightarrow \pi^+\pi^+K^-, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, K^0 \rightarrow K_L$ $(e^+e^- \rightarrow \mu^+\nu_\mu\bar{\nu}_\tau K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	149	149	1	150
151	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e\pi^+\pi^-\bar{D}^{*-}, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^{*+}, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^{*+} \rightarrow \pi^0D^+,$ $\bar{D}^0 \rightarrow \pi^-K^+, D^+ \rightarrow \mu^+\nu_\mu\pi^+K^-$ $(e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma)$	150	150	1	151

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
163	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^+ \omega D^{*-}, \bar{B}^0 \rightarrow D^{*+} D_s^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0,$ $D^{*+} \rightarrow \pi^0 D^+, D_s^- \rightarrow \mu^- \bar{\nu}_\mu \eta', \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, D^+ \rightarrow \pi^+ \pi^+ K^-, \eta' \rightarrow \rho^0 \gamma, K_S \rightarrow \pi^+ \pi^-,$ $\rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma)$	162	162	1	163
164	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^0 \Sigma^0 \Xi_c^0, \bar{B}^0 \rightarrow D^+ D_{s1}^-, \Sigma^0 \rightarrow \Lambda \gamma, \Xi_c^0 \rightarrow \pi^- K^+ \Sigma^0,$ $D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^*, D_{s1}^- \rightarrow \pi^0 D_s^{*-}, \Lambda \rightarrow \pi^- p, \bar{\Sigma}^0 \rightarrow \bar{\Lambda} \gamma, \bar{K}^* \rightarrow \pi^+ K^-, D_s^{*-} \rightarrow D_s^- \gamma,$ $\bar{\Lambda} \rightarrow \pi^+ \bar{p}, D_s^- \rightarrow \rho^- \eta', \rho^- \rightarrow \pi^0 \pi^-, \eta' \rightarrow \pi^+ \pi^- \eta, \eta \rightarrow \gamma \gamma$ $(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	163	163	1	164
165	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^0 \eta \omega D^{*0}, \bar{B}^0 \rightarrow \pi^0 \rho^- \omega D^{*+}, \rho^0 \rightarrow \pi^+ \pi^-, \eta \rightarrow \pi^0 \pi^+ \pi^-,$ $\omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \rho^- \rightarrow \pi^0 \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+,$ $D^0 \rightarrow e^+ \nu_e K^{*-}, K^{*-} \rightarrow \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	164	164	1	165
166	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \bar{D}^{*-} \Delta^- \Delta^0, \bar{B}^0 \rightarrow \rho^- D^+, \bar{D}^{*-} \rightarrow \pi^0 D^-, \Delta^- \rightarrow \pi^+ \bar{n},$ $\Delta^0 \rightarrow \pi^0 n, \rho^- \rightarrow \pi^0 \pi^-, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, K^0 \rightarrow K_L$ $(e^+e^- \rightarrow \mu^+ \mu^- \nu_\mu \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^- K^- n \bar{n} \gamma \gamma \gamma \gamma \gamma)$	165	165	1	166
167	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^- p \Sigma_c^0, \bar{B}^0 \rightarrow \tau^- \bar{\nu}_\tau D^{*+}, \rho^- \rightarrow \pi^0 \pi^-, \bar{\Sigma}_c^0 \rightarrow \pi^+ \bar{\Lambda}_c^-,$ $\tau^- \rightarrow \nu_\tau \pi^0 \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{\Lambda}_c^- \rightarrow \pi^- \eta \bar{\Lambda}, D^0 \rightarrow K_S \phi, \eta \rightarrow e^+ e^-, \bar{\Lambda} \rightarrow \pi^0 \bar{n},$ $K_S \rightarrow \pi^+ \pi^-, \phi \rightarrow K^+ K^-$ $(e^+e^- \rightarrow e^+ e^- \nu_\tau \bar{\nu}_\tau \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma)$	166	166	1	167
168	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^+ K^{*-} J/\psi, \bar{B}^0 \rightarrow \bar{K}^0 D^{*0} \bar{D}^{*0}, K^{*-} \rightarrow \pi^- K^0, J/\psi \rightarrow K^* \bar{K}^* \gamma,$ $\bar{K}^0 \rightarrow K_L, D^{*0} \rightarrow D^0 \gamma, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{K}^0 \rightarrow K_L, K^* \rightarrow \pi^- K^+, \bar{K}^* \rightarrow \pi^+ K^-,$ $D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^*, K^* \rightarrow \pi^- K^+$ $(e^+e^- \rightarrow K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma)$	167	167	1	168
169	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^- K^{*+} D^0 \bar{D}^{*0}, \bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \pi^- D^{*+}, K^{*+} \rightarrow \pi^+ K^0, D^0 \rightarrow K^- a_1^+,$ $\bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^{*+} \rightarrow \pi^+ D^0, K^0 \rightarrow K_S, a_1^+ \rightarrow \pi^+ \pi^+ \pi^-, \bar{D}^0 \rightarrow \rho^- K^{*+}, D^0 \rightarrow \pi^+ K^-,$ $K_S \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, K^{*+} \rightarrow \pi^0 K^+$ $(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	168	168	1	169
170	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu D^-, \bar{B}^0 \rightarrow \pi^+ \pi^+ \pi^- \pi^- \pi^- \eta K^+ K^+ D_s^{*-}, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, \eta \rightarrow \pi^0 \pi^+ \pi^-,$ $D_s^{*-} \rightarrow D_s^- \gamma, K^0 \rightarrow K_L, D_s^- \rightarrow \pi^0 \pi^+ \pi^+ \pi^- \pi^- \pi^-$ $(e^+e^- \rightarrow \mu^+ \mu^- \nu_\mu \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ \gamma \gamma \gamma \gamma \gamma)$	169	169	1	170
171	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^0 \bar{K}^0 D^- \Delta^0 \bar{\Sigma}^+, \bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^+ \pi^- \rho^- \bar{D}^0, \bar{K}^0 \rightarrow K_L, D^- \rightarrow \pi^0 \pi^- K_S,$ $\Delta^0 \rightarrow \pi^0 n, \bar{\Sigma}^+ \rightarrow \pi^+ \bar{n}, \rho^- \rightarrow \pi^0 \pi^-, \bar{D}^0 \rightarrow \pi^- \rho^+, K_S \rightarrow \pi^0 \pi^0, \rho^+ \rightarrow \pi^0 \pi^+$ $(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	170	170	1	171
172	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^+ \rho^- \rho^- \omega D^{*+}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \rho^- \rightarrow \pi^0 \pi^-,$ $\rho^- \rightarrow \pi^0 \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, D^+ \rightarrow K_S K^{*+}, K_S \rightarrow \pi^+ \pi^-,$ $K_S \rightarrow \pi^0 \pi^0, K^{*+} \rightarrow \pi^0 K^+$ $(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	171	171	1	172

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
194	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e D^-, \bar{B}^0 \rightarrow K^{*-}D^{*+}\bar{D}^0, D^- \rightarrow K^*K^-, K^{*-} \rightarrow \pi^- \bar{K}^0,$ $D^{*+} \rightarrow \pi^+ D^0, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, K^* \rightarrow \pi^- K^+, \bar{K}^0 \rightarrow K_L, D^0 \rightarrow \pi^+ \pi^-, K_L \rightarrow \pi^0 \pi^0 \pi^0$ $(e^+e^- \rightarrow e^+\nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma)$	193	193	1	194
195	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow J/\psi K_1^0, \bar{B}^0 \rightarrow \pi^0 D^+ D_s^{*-}, J/\psi \rightarrow \pi^0 \eta \eta, K_1^0 \rightarrow \pi^+ \pi^- K^0,$ $D^+ \rightarrow e^+\nu_e \bar{K}^0, D_s^{*-} \rightarrow D_s^- \gamma, \eta \rightarrow \gamma \gamma, \eta \rightarrow \gamma \gamma, K^0 \rightarrow K_S, \bar{K}^0 \rightarrow K_S,$ $D_s^- \rightarrow \rho^- \eta, K_S \rightarrow \pi^0 \pi^0, K_S \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \pi^0 \pi^0 \pi^0$ $(e^+e^- \rightarrow e^+\nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	194	194	1	195
196	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^* D^+ D^-, \bar{B}^0 \rightarrow \bar{D}^{*-} \bar{\Delta}^- \Delta^0, K^* \rightarrow \pi^0 K^0, D^+ \rightarrow \pi^+ \bar{K}_1^{'0},$ $D^- \rightarrow e^- \bar{\nu}_e K_2^{*0}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{\Delta}^- \rightarrow \pi^+ \bar{n}, \Delta^0 \rightarrow \pi^0 n, K^0 \rightarrow K_L, \bar{K}_1^{'0} \rightarrow \pi^+ K^{*-},$ $K_2^{*0} \rightarrow \pi^0 K^0, \bar{D}^0 \rightarrow e^- \bar{\nu}_e \pi^+ K^0, K^{*-} \rightarrow \pi^0 K^-, K^0 \rightarrow K_S, K^0 \rightarrow K_L, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- e^- \bar{\nu}_e \bar{\nu}_e K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	195	195	1	196
197	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0 \pi^- \eta \bar{D}^{*0} D_s^{*+}, \bar{B}^0 \rightarrow D^{*0} \Delta^0 \bar{\Delta}^0, \eta \rightarrow \gamma \gamma, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma,$ $D_s^{*+} \rightarrow D_s^+ \gamma, D^{*0} \rightarrow \pi^0 D^0, \Delta^0 \rightarrow \pi^0 n, \bar{\Delta}^0 \rightarrow \pi^0 \bar{n}, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, D_s^+ \rightarrow \mu^+ \nu_\mu,$ $D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, \pi^0 \rightarrow e^+ e^-, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^0 \pi^0$ $(e^+e^- \rightarrow e^+ e^+ e^- \nu_e \mu^+ \nu_\mu \pi^- \pi^- \pi^- K^+ n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	196	196	1	197
198	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0 \pi^+ \omega \bar{D}^{*-}, \bar{B}^0 \rightarrow D^0 n \bar{n}, \rho^0 \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-,$ $\bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow K_L \eta, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, \eta \rightarrow \gamma \gamma$ $(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	197	197	1	198
199	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}, \bar{B}^0 \rightarrow \rho^0 \pi^+ \pi^- \rho^+ \omega \bar{D}^{*-}, \bar{D}^{*-} \rightarrow \pi^0 D^-, \rho^0 \rightarrow \pi^+ \pi^-,$ $\rho^+ \rightarrow \pi^0 \pi^+, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^- \rightarrow e^- \bar{\nu}_e \pi^- K^+, D^- \rightarrow \pi^0 \pi^- K^*, K^* \rightarrow \pi^- K^+$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	198	198	1	199
200	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- D^-, \bar{B}^0 \rightarrow e^- \bar{\nu}_e \pi^+ D^0, D^- \rightarrow \mu^- \bar{\nu}_\mu K_1^0, D^0 \rightarrow \pi^+ \pi^- K_S,$ $K_1^0 \rightarrow \pi^+ \pi^- K^0, K_S \rightarrow \pi^+ \pi^-, K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^-)$	199	199	1	200

Table 2: Event initial-final states.

[illegible]

index	event initial-final states	iEvtIFSts	nEvts	nCmltEvts
121	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^-\bar{\nu}_\mu K_L\pi^+\pi^+\pi^+\pi^-\pi^-K^-\gamma\gamma\gamma\gamma$	120	1	121
122	$e^+e^- \rightarrow \mu^+\nu_\mu K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma$	121	1	122
123	$e^+e^- \rightarrow e^-e^-\bar{\nu}_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma$	122	1	123
124	$e^+e^- \rightarrow e^-\bar{\nu}_e\nu_\tau\bar{\nu}_\tau K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	123	1	124
125	$e^+e^- \rightarrow e^+e^-\mu^-\bar{\nu}_\mu K_L K_L\pi^+\pi^+\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	124	1	125
126	$e^+e^- \rightarrow e^+\nu_e\mu^+\mu^-\nu_\mu\bar{\nu}_\mu\pi^+\pi^+\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	125	1	126
127	$e^+e^- \rightarrow e^+e^-\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	126	1	127
128	$e^+e^- \rightarrow e^+e^-e^-\nu_e\bar{\nu}_e K_L\pi^+\pi^+\pi^+\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma$	127	1	128
129	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\nu_\tau\bar{\nu}_\tau\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma$	128	1	129
130	$e^+e^- \rightarrow e^+e^-e^-\nu_e\nu_e\bar{\nu}_e\pi^+\pi^+\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	129	1	130
131	$e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	130	1	131
132	$e^+e^- \rightarrow e^+\nu_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma$	131	1	132
133	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-\pi^-K^+K^+K^+K^-\gamma\gamma\gamma$	132	1	133
134	$e^+e^- \rightarrow \nu_\tau\bar{\nu}_\tau K_L K_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	133	1	134
135	$e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	134	1	135
136	$e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+K^-f_0(600)\gamma\gamma\gamma\gamma$	135	1	136
137	$e^+e^- \rightarrow e^+e^-K_L K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	136	1	137
138	$e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-K^+K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	137	1	138
139	$e^+e^- \rightarrow e^+\nu_e K_L\pi^+\pi^+\pi^-\pi^-K^+K^-p\bar{p}\gamma\gamma\gamma\gamma$	138	1	139
140	$e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	139	1	140
141	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma$	140	1	141
142	$e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	141	1	142
143	$e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-K^-K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	142	1	143
144	$e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	143	1	144
145	$e^+e^- \rightarrow e^-\bar{\nu}_e K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	144	1	145
146	$e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma$	145	1	146
147	$e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	146	1	147
148	$e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	147	1	148
149	$e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	148	1	149
150	$e^+e^- \rightarrow \mu^+\nu_\mu\nu_\tau\bar{\nu}_\tau K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	149	1	150
151	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^-\pi^-K^+K^-\gamma\gamma$	150	1	151
152	$e^+e^- \rightarrow e^-\nu_e\mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+n\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	151	1	152
153	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	152	1	153
154	$e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	153	1	154
155	$e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	154	1	155
156	$e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	155	1	156
157	$e^+e^- \rightarrow e^+e^+\nu_e\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	156	1	157
158	$e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	157	1	158
159	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+f_0(600)\gamma\gamma\gamma\gamma\gamma$	158	1	159
160	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	159	1	160

index	event initial-final states	iEvtIFSts	nEvts	nCmltEvts
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Table 3: Event branches of B^0 .

index	event branch of B^0	iEvtBrOfP1	nEtrs	nCmltEtrs
1	$B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}$	12	11	11
2	$B^0 \rightarrow e^+ \nu_e \bar{D}^{*-}$	6	9	20
3	$B^0 \rightarrow \pi^0 \pi^+ \pi^- \bar{D}^{*-}$	10	5	25
4	$B^0 \rightarrow e^+ \nu_e D^-$	54	5	30
5	$B^0 \rightarrow \tau^+ \nu_\tau \bar{D}^{*-}$	8	4	34
6	$B^0 \rightarrow \bar{D}^{*-} a_1^+$	3	4	38
7	$B^0 \rightarrow \mu^+ \nu_\mu D^-$	27	3	41
8	$B^0 \rightarrow \tau^+ \nu_\tau D_0^{*-}$	31	3	44
9	$B^0 \rightarrow \rho^+ D^-$	16	3	47
10	$B^0 \rightarrow \bar{D}^{*-} D_{s1}^+$	86	3	50
rest	$B^0 \rightarrow \text{others}$	—	146	196

Table 4: Event branches of \bar{B}^0 .

index	event branch of \bar{B}^0	iEvtBrOfP2	nEtrs	nCmltEtrs
1	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e D^{*+}$	13	16	16
2	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D^{*+}$	6	14	30
3	$\bar{B}^0 \rightarrow D^{*+} D_s^{*-}$	7	5	35
4	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e D^+$	42	4	39
5	$\bar{B}^0 \rightarrow \rho^0 \pi^- D^{*+}$	64	4	43
6	$\bar{B}^0 \rightarrow \pi^+ \pi^- \rho^- D^+$	22	3	46
7	$\bar{B}^0 \rightarrow D^{*+} D_s^-$	38	3	49
8	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D^+$	41	3	52
9	$\bar{B}^0 \rightarrow \pi^+ \pi^- D^+ D_s^-$	4	3	55
10	$\bar{B}^0 \rightarrow \rho^- D^+$	21	3	58
11	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e D_2^{*+}$	69	3	61
12	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \pi^- D^{*+}$	84	3	64
13	$\bar{B}^0 \rightarrow \pi^0 \pi^- D^{*+}$	1	2	66
14	$\bar{B}^0 \rightarrow \pi^+ \pi^+ \pi^- \pi^- \pi^- D^{*+}$	3	2	68
15	$\bar{B}^0 \rightarrow \pi^0 \pi^+ D^0 D_s^{*-}$	45	2	70
16	$\bar{B}^0 \rightarrow \tau^- \bar{\nu}_\tau D^{*+}$	54	2	72
17	$\bar{B}^0 \rightarrow \rho^0 \rho^- \eta D^{*+}$	56	2	74
18	$\bar{B}^0 \rightarrow \rho^- D^{*+}$	57	2	76
19	$\bar{B}^0 \rightarrow K^- D^{*+} D^{*0}$	62	2	78
20	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \rho^- D^+$	30	2	80
21	$\bar{B}^0 \rightarrow \pi^+ D^0 D_s^-$	67	2	82
22	$\bar{B}^0 \rightarrow \pi^- D^+$	31	2	84
23	$\bar{B}^0 \rightarrow \pi^- \rho^+ \rho^- D^+$	75	2	86
24	$\bar{B}^0 \rightarrow \pi^- \pi^- \rho^+ D^{*+}$	79	2	88
25	$\bar{B}^0 \rightarrow \pi^+ K^* D^{*-} D^0$	18	2	90
26	$\bar{B}^0 \rightarrow \pi^- \eta D^{*+}$	90	2	92
27	$\bar{B}^0 \rightarrow D_2^{*+} D_s^-$	93	2	94
28	$\bar{B}^0 \rightarrow D^{*+} D_{s1}^{'-}$	101	2	96
29	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e D_1^+$	28	1	97
30	$\bar{B}^0 \rightarrow \eta D^+ p \Delta^{++}$	29	1	98
31	$\bar{B}^0 \rightarrow D^+ D_s^{*-}$	9	1	99
32	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \rho^- \rho^- D^+$	10	1	100
33	$\bar{B}^0 \rightarrow \pi^0 \pi^0 K^* K^{*-} D^+$	32	1	101
34	$\bar{B}^0 \rightarrow \rho^- D^{*+} \gamma$	33	1	102
35	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu \pi^0 \pi^0 D^{*+}$	34	1	103
36	$\bar{B}^0 \rightarrow \pi^- \omega D^{*+}$	35	1	104
37	$\bar{B}^0 \rightarrow \pi^+ K^- \eta_c(2S)$	36	1	105
38	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- D^+ \Sigma^- \Sigma^0$	37	1	106
39	$\bar{B}^0 \rightarrow K^0 K^{*-} D^{*+}$	11	1	107
40	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^- D^{*+}$	39	1	108

index	event branch of \bar{B}^0	iEvtBrOfP2	nEtrs	nCmltEtrs
41	$\bar{B}^0 \rightarrow \pi^+ K^- D^+ D^-$	40	1	109
42	$\bar{B}^0 \rightarrow \pi^- K^+ K^- D^{*+}$	12	1	110
43	$\bar{B}^0 \rightarrow \pi^0 K^* K^- D^+$	5	1	111
44	$\bar{B}^0 \rightarrow \rho^+ \rho^- D^{*0}$	43	1	112
45	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \rho^0 D^+$	44	1	113
46	$\bar{B}^0 \rightarrow \pi^0 \pi^+ K^{*-} D^0 \bar{D}^{*0}$	14	1	114
47	$\bar{B}^0 \rightarrow \pi^0 \Delta^+ \Sigma_c^+$	46	1	115
48	$\bar{B}^0 \rightarrow D^+ \Delta^0 \Delta^+$	47	1	116
49	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^+ \pi^- \eta \eta$	48	1	117
50	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \pi^0 \rho^0 \rho^0 \pi^+ \pi^- \pi^- D^{*+}$	49	1	118
51	$\bar{B}^0 \rightarrow \pi^- K^0 D^+ \bar{D}^{*0}$	50	1	119
52	$\bar{B}^0 \rightarrow \pi^- \pi^- \pi^- \rho^+ \rho^+ \omega D^{*+}$	51	1	120
53	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \rho^0 \rho^0 \pi^- D^+$	52	1	121
54	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \pi^+ \pi^- \pi^- D^{*+} p \bar{p}$	53	1	122
55	$\bar{B}^0 \rightarrow \pi^0 \eta K^0 K^- D_s^+$	15	1	123
56	$\bar{B}^0 \rightarrow \eta D^+ D_s^{*-}$	55	1	124
57	$\bar{B}^0 \rightarrow \pi^0 K^* K^+ K^-$	16	1	125
58	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \rho^- \eta \omega D^{*+}$	17	1	126
59	$\bar{B}^0 \rightarrow K^{*-} D^+$	58	1	127
60	$\bar{B}^0 \rightarrow \pi^- \pi^- D^{*+} \bar{n} \Delta^+$	59	1	128
61	$\bar{B}^0 \rightarrow D^{*+} D_{s0}^{*-}$	60	1	129
62	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \rho^+ D^{*-} D^{*0}$	61	1	130
63	$\bar{B}^0 \rightarrow \pi^+ D^0 D_s^{*-}$	0	1	131
64	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \rho^- \omega K^0 D^{*+}$	63	1	132
65	$\bar{B}^0 \rightarrow \pi^0 \pi^- \omega D^+$	19	1	133
66	$\bar{B}^0 \rightarrow \pi^0 \pi^- \omega K^0 K^0 K^* D^{*+}$	65	1	134
67	$\bar{B}^0 \rightarrow \pi^+ \pi^- D^+ D_s^{*-}$	66	1	135
68	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D_1^+$	20	1	136
69	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e \eta D^+$	68	1	137
70	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \rho^- \eta D^+$	2	1	138
71	$\bar{B}^0 \rightarrow \pi^- \rho^+ K^0 K^{*-} D^+$	70	1	139
72	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D_0^{*+}$	71	1	140
73	$\bar{B}^0 \rightarrow \pi^- \pi^- D^+ \bar{n} p$	72	1	141
74	$\bar{B}^0 \rightarrow \pi^0 \pi^+ K^- \eta_c(2S)$	73	1	142
75	$\bar{B}^0 \rightarrow K^0 \psi'$	74	1	143
76	$\bar{B}^0 \rightarrow \rho^0 K^0 K^{*-} D^+$	8	1	144
77	$\bar{B}^0 \rightarrow \pi^- K^0 D^+$	76	1	145
78	$\bar{B}^0 \rightarrow \pi^0 \omega K^0 K^- D^+$	77	1	146
79	$\bar{B}^0 \rightarrow \pi^0 \pi^- D^{*+} \Delta^+ \Delta^+$	78	1	147
80	$\bar{B}^0 \rightarrow \pi^+ \rho^- \rho^- D^+$	23	1	148

index	event branch of \bar{B}^0	iEvtBrOfP2	nEtrs	nCmltEtrs
81	$\bar{B}^0 \rightarrow K^* K^- D^+$	80	1	149
82	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \rho^0 \pi^- \pi^- \rho^+ D^{*+}$	81	1	150
83	$\bar{B}^0 \rightarrow \rho^0 \pi^- \rho^+ D^0$	82	1	151
84	$\bar{B}^0 \rightarrow \pi^+ D^{*0} D_s^-$	83	1	152
85	$\bar{B}^0 \rightarrow \bar{K}_1^0 \gamma$	24	1	153
86	$\bar{B}^0 \rightarrow \rho^- \eta \omega \omega D^{*+}$	85	1	154
87	$\bar{B}^0 \rightarrow \bar{K}^0 \Sigma^{*0} \Sigma_c^{*0}$	86	1	155
88	$\bar{B}^0 \rightarrow \rho^0 \pi^+ \Delta^{++} \Lambda_c^+$	87	1	156
89	$\bar{B}^0 \rightarrow D_s^{*+} \Delta^+ \Lambda$	88	1	157
90	$\bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D_1^{'+}$	89	1	158
91	$\bar{B}^0 \rightarrow \rho^0 \rho^- \eta \omega D^+$	25	1	159
92	$\bar{B}^0 \rightarrow \pi^+ \pi^- \omega D^{*0}$	91	1	160
93	$\bar{B}^0 \rightarrow \pi^0 \omega K^{*-} D_s^+$	92	1	161
94	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \rho^0 \pi^+ \pi^- \pi^- D^+$	26	1	162
95	$\bar{B}^0 \rightarrow K^* D^+ D^-$	94	1	163
96	$\bar{B}^0 \rightarrow \rho^- \eta D^+$	95	1	164
97	$\bar{B}^0 \rightarrow \rho^0 \pi^- \omega D^+$	96	1	165
98	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^- \eta \omega D^+$	97	1	166
99	$\bar{B}^0 \rightarrow D^{*0} n \bar{n}$	98	1	167
100	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^+ \pi^- \pi^- \bar{K}^0 K^* K^+ K^{*-}$	99	1	168
101	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \pi^- D^+$	100	1	169
102	$\bar{B}^0 \rightarrow K^* \chi_{c1}$	27	1	170
103	$\bar{B}^0 \rightarrow \bar{K}^* K^- D^{*+}$	102	1	171
104	$\bar{B}^0 \rightarrow \pi^+ K^- D^- D^{*+}$	103	1	172
105	$\bar{B}^0 \rightarrow \rho^- D_2^{*+}$	104	1	173
106	$\bar{B}^0 \rightarrow \rho^0 \pi^+ K^{*-} \eta_c$	105	1	174
107	$\bar{B}^0 \rightarrow D_s^{*-} D_1^+$	106	1	175
108	$\bar{B}^0 \rightarrow \pi^+ \pi^- \pi^- D^+$	107	1	176
109	$\bar{B}^0 \rightarrow \pi^0 \omega K^* K^- D^+$	108	1	177
110	$\bar{B}^0 \rightarrow \eta K^0 J/\psi$	109	1	178
111	$\bar{B}^0 \rightarrow \pi^+ K^- \chi_{c1}$	110	1	179
112	$\bar{B}^0 \rightarrow \pi^0 \rho^0 \rho^- D^{*+} \gamma$	111	1	180
113	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \pi^- \omega D^+$	112	1	181
114	$\bar{B}^0 \rightarrow D^+ D_{s1}^{'-}$	113	1	182
115	$\bar{B}^0 \rightarrow \pi^0 \rho^- \omega D^{*+}$	114	1	183
116	$\bar{B}^0 \rightarrow \pi^+ K^{*-} J/\psi$	115	1	184
117	$\bar{B}^0 \rightarrow \bar{K}^0 D^{*0} \bar{D}^{*0}$	116	1	185
118	$\bar{B}^0 \rightarrow \pi^+ \rho^- \rho^- \omega D^{*+}$	117	1	186
119	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^+ K^- D^-$	118	1	187
120	$\bar{B}^0 \rightarrow \rho^- \omega D^+ \gamma$	119	1	188

index	event branch of \bar{B}^0	iEvtBrOfP2	nEtrs	nCmltEtrs
121	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \pi^+ K^- K^0 K^- D^{*+}$	120	1	189
122	$\bar{B}^0 \rightarrow \pi^0 \bar{n} \Sigma_c^0$	121	1	190
123	$\bar{B}^0 \rightarrow \pi^0 \pi^0 \pi^0 \pi^+ K^{*-} \bar{D}^{*0}$	122	1	191
124	$\bar{B}^0 \rightarrow D^+ \Delta^- \bar{n}$	123	1	192
125	$\bar{B}^0 \rightarrow K^* \Lambda \Xi_c^{*0}$	124	1	193
126	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^- \rho^- D^{*+}$	125	1	194
127	$\bar{B}^0 \rightarrow \omega K^0 K^* K^*$	126	1	195
128	$\bar{B}^0 \rightarrow \pi^0 \pi^+ \eta K^{*-}$	127	1	196
129	$\bar{B}^0 \rightarrow \rho^0 \pi^- \pi^- \rho^+ K^* D^{*+}$	128	1	197
130	$\bar{B}^0 \rightarrow \rho^0 \rho^- D^{*+}$	129	1	198
131	$\bar{B}^0 \rightarrow \rho^0 \pi^- K^0 \bar{K}^{*} D^+$	130	1	199
132	$\bar{B}^0 \rightarrow K^{*-} D^{*+} \bar{D}^0$	131	1	200
133	$\bar{B}^0 \rightarrow \pi^0 D^+ D_s^{*-}$	132	1	201
134	$\bar{B}^0 \rightarrow D^{*0} \Delta^0 \Delta^0$	133	1	202
135	$\bar{B}^0 \rightarrow D^0 n \bar{n}$	134	1	203
136	$\bar{B}^0 \rightarrow e^- \bar{\nu}_e \pi^+ D^0$	135	1	204