

Topology Analysis ^{*}

(v1.6.0)

Xingyu Zhou [†]
Beihang University

November 29, 2018

^{*}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, Guanda Gong, Junhao Yin, Xiaoping Qin, Xiqing Hao, HongPeng Wang, JiaWei Zhang for their efforts in helping me test the program.

[†]Email: zhouxy@buaa.edu.cn

List of Tables

1	Event trees and their respective initial-final states.	3
2	Event initial-final states.	23
3	Signal inclusive event branches.	28

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

[illegible]

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
11	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}, \bar{B}^0 \rightarrow \rho^0 K^0 K^{*-} D^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \rho^0 \rightarrow \pi^+ \pi^-,$ $K^0 \rightarrow K_L, K^{*-} \rightarrow \pi^0 K^-, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^0, \bar{D}^0 \rightarrow \rho^- K^{*+}, \bar{K}^0 \rightarrow K_L, \rho^- \rightarrow \pi^0 \pi^-,$ $K^{*+} \rightarrow \pi^0 K^+$ $(e^+e^- \rightarrow \mu^+ \mu^+ \nu_\mu \nu_\mu K_L K_L \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$	10	10	1	11
12	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^- K^+ J/\psi, \bar{B}^0 \rightarrow D^+ D_s^{*-}, \rho^- \rightarrow \pi^0 \pi^-, J/\psi \rightarrow e^+ e^-,$ $D^+ \rightarrow \pi^0 \pi^+ K_S, D_s^{*-} \rightarrow D_s^- \gamma, K_S \rightarrow \pi^0 \pi^0, D_s^- \rightarrow \tau^- \bar{\nu}_\tau, \tau^- \rightarrow \mu^- \bar{\nu}_\mu \nu_\tau$ $(e^+e^- \rightarrow e^+ e^- \mu^- \bar{\nu}_\mu \nu_\tau \pi^+ \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	11	11	1	12
13	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^+ \pi^- K^0 \bar{D}^0, \bar{B}^0 \rightarrow \pi^0 \pi^+ \rho^- \rho^- D^+, K^0 \rightarrow K_L, D^0 \rightarrow K_S \eta',$ $\bar{D}^0 \rightarrow \rho^- K^{*+}, \rho^- \rightarrow \pi^0 \pi^-, \rho^- \rightarrow \pi^0 \pi^-, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^0, K_L \rightarrow \pi^0 \pi^0 \pi^0, K_S \rightarrow \pi^+ \pi^-,$ $\eta' \rightarrow \pi^+ \pi^- \eta, \rho^- \rightarrow \pi^0 \pi^-, K^{*+} \rightarrow \pi^0 K^+, \bar{K}^0 \rightarrow K_L, \eta \rightarrow \pi^0 \pi^+ \pi^-$ $(e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	12	12	1	13
14	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^+ \eta \bar{D}^{*-}, \bar{B}^0 \rightarrow K^0 K^{*-} D^{*+}, \eta \rightarrow \pi^0 \pi^0 \pi^0, \bar{D}^{*-} \rightarrow \pi^0 D^-,$ $K^0 \rightarrow K_S, K^{*-} \rightarrow \pi^0 K^-, D^{*+} \rightarrow \pi^+ D^0, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, K_S \rightarrow \pi^+ \pi^-, D^0 \rightarrow \pi^0 \rho^0,$ $K^0 \rightarrow K_L, \rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	13	13	1	14
15	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \rho^+ D^-, \bar{B}^0 \rightarrow \pi^- K^+ K^- D^{*+}, \rho^+ \rightarrow \pi^0 \pi^+, D^- \rightarrow K_S a_1^-,$ $D^{*+} \rightarrow \pi^+ D^0, K_S \rightarrow \pi^0 \pi^0, a_1^- \rightarrow \pi^0 \rho^-, D^0 \rightarrow \pi^0 \pi^+ K^-, \rho^- \rightarrow \pi^0 \pi^-$ $(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	14	14	1	15
16	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \pi^0 \pi^0 \pi^+ \eta \bar{D}^{*-}, \bar{B}^0 \rightarrow e^- \bar{\nu}_e D^{*+}, \eta \rightarrow \pi^0 \pi^0 \pi^0, \bar{D}^{*-} \rightarrow \pi^0 D^-,$ $D^{*+} \rightarrow \pi^0 D^+, D^- \rightarrow \pi^+ \pi^- \pi^- \pi^- K^+, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^*, \bar{K}^* \rightarrow \pi^+ K^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	15	15	1	16
17	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow e^+ \nu_e \bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0 \pi^+ K^{*-} D^0 \bar{D}^{*0}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, K^{*-} \rightarrow \pi^- \bar{K}^0,$ $D^0 \rightarrow K_L \pi^+ \pi^-, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+, \bar{K}^0 \rightarrow K_S, \bar{D}^0 \rightarrow \pi^+ \pi^- K_S K_S, K_S \rightarrow \pi^+ \pi^-,$ $K_S \rightarrow \pi^0 \pi^0, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^+ \nu_e \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	16	16	1	17
18	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow K^* D^- D^{*+}, \bar{B}^0 \rightarrow \pi^0 \eta \bar{K}^0 K^- D_s^+, K^* \rightarrow \pi^0 K^0, D^- \rightarrow \pi^- \pi^- K^+,$ $D^{*+} \rightarrow \pi^+ D^0, \eta \rightarrow \gamma \gamma, \bar{K}^0 \rightarrow K_L, D_s^+ \rightarrow \mu^+ \nu_\mu \phi, K^0 \rightarrow K_S, D^0 \rightarrow \pi^0 \pi^+ K^{*-},$ $\phi \rightarrow K^+ K^-, K_S \rightarrow \pi^0 \pi^0, K^{*-} \rightarrow \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow \mu^+ \nu_\mu K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	17	17	1	18
19	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \bar{D}^{*-} D_s^{*+}, \bar{B}^0 \rightarrow e^- \bar{\nu}_e D^{*+}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_s^{*+} \rightarrow D_s^+ \gamma,$ $D^{*+} \rightarrow \pi^+ D^0, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, D_s^+ \rightarrow \rho^+ \eta, D^0 \rightarrow \pi^+ \eta K^-, K_S \rightarrow \pi^+ \pi^-, \rho^+ \rightarrow \pi^0 \pi^+,$ $\eta \rightarrow \pi^0 \pi^0 \pi^0, \eta \rightarrow \pi^0 \pi^0 \pi^0$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	18	18	1	19
20	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0 \bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu D_2^{*-}, \bar{B}^0 \rightarrow \pi^0 \pi^+ \pi^+ \pi^- \rho^- \bar{D}^{*0}, D_2^{*-} \rightarrow \pi^- \bar{D}^{*0}, \rho^- \rightarrow \pi^0 \pi^-,$ $\bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{D}^0 \rightarrow K^+ a_1^-, \bar{D}^0 \rightarrow \pi^0 K_L \pi^+ \pi^-, a_1^- \rightarrow \rho^0 \pi^-, \rho^0 \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	19	19	1	20

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
42	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^+\nu_\mu\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^-\omega D^{*+}, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, \omega \rightarrow \pi^0\pi^+\pi^-,$ $D^{*+} \rightarrow \pi^0 D^+, \bar{D}^0 \rightarrow \pi^0\pi^- K^+, D^+ \rightarrow \pi^+\pi^+ K^-$ $(e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma)$	41	41	1	42
43	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow \bar{B}^0\bar{B}^0, \bar{B}^0 \rightarrow \pi^+ K^- \eta_c(2S), \bar{B}^0 \rightarrow \pi^0\pi^+\pi^- D^+ \Sigma^- \bar{\Sigma}^0, \eta_c(2S) \rightarrow \pi^0\rho^0\pi^+\pi^-\pi^- \rho^+\eta, D^+ \rightarrow \mu^+\nu_\mu\bar{K}^*,$ $\Sigma^- \rightarrow \pi^- n, \bar{\Sigma}^0 \rightarrow \bar{\Lambda}\gamma, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+, \eta \rightarrow \gamma\gamma, \bar{K}^* \rightarrow \pi^+ K^-,$ $\bar{\Lambda} \rightarrow \pi^+\bar{p}$ $(e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^- K^- n\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	42	42	1	43
44	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \eta D^- D_s^+, \bar{B}^0 \rightarrow e^- \bar{\nu}_e D^{*+}, \eta \rightarrow \pi^0\pi^0\pi^0, D^- \rightarrow \rho^- K^*,$ $D_s^+ \rightarrow \pi^+\eta', D^{*+} \rightarrow \pi^+ D^0, \rho^- \rightarrow \pi^0\pi^-, K^* \rightarrow \pi^0 K^0, \eta' \rightarrow \pi^0\pi^0\eta, D^0 \rightarrow \pi^0\pi^+ K^-,$ $K^0 \rightarrow K_S, \eta \rightarrow \gamma\gamma, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^- K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	43	43	1	44
45	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \omega K^+ \bar{D}^{*-}, \bar{B}^0 \rightarrow D^{*+} D_s^-, \omega \rightarrow \pi^0\pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $D^{*+} \rightarrow \pi^0 D^+, D_s^- \rightarrow \pi^- f_0(980), \bar{D}^0 \rightarrow \pi^-\omega K^+, D^+ \rightarrow K_S K^{*+}, f_0(980) \rightarrow \pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-,$ $K_S \rightarrow \pi^+\pi^-, K^{*+} \rightarrow \pi^+ K^0, K^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^+ K^+ \gamma\gamma\gamma\gamma\gamma)$	44	44	1	45
46	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \eta \bar{D}^{*-} D_s^+, B^0 \rightarrow \pi^0\pi^- \rho^+ K^0 K^+ D^-, \eta \rightarrow \gamma\gamma, \bar{D}^{*-} \rightarrow \pi^0 D^-,$ $D_s^+ \rightarrow \mu^+\nu_\mu\eta, \rho^+ \rightarrow \pi^0\pi^+, \bar{K}^0 \rightarrow K_S, D^- \rightarrow K_S K^{*-}, D^- \rightarrow \pi^-\pi^- K^+, \eta \rightarrow \pi^0\pi^0\pi^0,$ $K_S \rightarrow \pi^0\pi^0, K_S \rightarrow \pi^+\pi^-, K^{*-} \rightarrow \pi^-\bar{K}^0, \pi^0 \rightarrow e^+e^-, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow e^+e^- \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^+ K^+ \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	45	45	1	46
47	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^+\pi^-\rho^-\eta\eta K^0 K^+ D^-, B^0 \rightarrow \pi^0\rho^0\pi^- D^{*+}, \rho^- \rightarrow \pi^0\pi^-, \eta \rightarrow \gamma\gamma,$ $\eta \rightarrow \pi^0\pi^0\pi^0, \bar{K}^0 \rightarrow K_L, D^- \rightarrow \pi^- K_S, \rho^0 \rightarrow \pi^+\pi^-, D^{*+} \rightarrow \pi^0 D^+, K_S \rightarrow \pi^+\pi^-,$ $D^+ \rightarrow \pi^0 K_L \pi^+$ $(e^+e^- \rightarrow K_L K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^- K^+ \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	46	46	1	47
48	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\rho^+ \bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^+ K^- D^+ D^-, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^+ \rightarrow \pi^0\pi^+ \bar{K}^*, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+, \bar{K}^* \rightarrow \pi^0 \bar{K}^0, K^0 \rightarrow K_S,$ $\bar{K}^0 \rightarrow K_L, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow \mu^-\mu^- \bar{\nu}_\mu \bar{\nu}_\mu K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma)$	47	47	1	48
49	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\rho^+ D^-, \bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D^+, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $D^- \rightarrow \mu^- \bar{\nu}_\mu K^*, D^+ \rightarrow e^+ \nu_e \bar{K}^*, K^* \rightarrow \pi^0 K^0, \bar{K}^* \rightarrow \pi^0 \bar{K}^0, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S,$ $K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow e^+ \nu_e \mu^-\mu^- \bar{\nu}_\mu \bar{\nu}_\mu K_L \pi^+\pi^+\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	48	48	1	49
50	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+\pi^- \rho^+ \eta D^-, \bar{B}^0 \rightarrow \mu^- \bar{\nu}_\mu D^{*+}, \rho^+ \rightarrow \pi^0\pi^+, \eta \rightarrow \pi^0\pi^0\pi^0,$ $D^- \rightarrow K_S K^-, D^{*+} \rightarrow \pi^+ D^0, \pi^0 \rightarrow e^+e^-, K_S \rightarrow \pi^+\pi^-, D^0 \rightarrow \pi^0\pi^+\pi^- \bar{K}^*, \bar{K}^* \rightarrow \pi^0 \bar{K}^0,$ $\bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow e^+e^- \mu^- \bar{\nu}_\mu K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^- K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	49	49	1	50

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

index	event tree (event initial-final states)	iEvtTr	iEvtIFSts	nEvts	nCmltEvts
91	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^+\pi^-\rho^+D^-, \bar{B}^0 \rightarrow \mu^-\bar{\nu}_\mu D^{*+}, \rho^+ \rightarrow \pi^0\pi^+, D^- \rightarrow \mu^-\bar{\nu}_\mu\pi^-K^+,$ $D^{*+} \rightarrow \pi^0D^+, D^+ \rightarrow \pi^+\pi^+K^-$ $(e^+e^- \rightarrow \mu^-\mu^-\bar{\nu}_\mu\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma)$	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	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow D_2^{*-}D_s^{*+}, \bar{B}^0 \rightarrow \pi^+\pi^-D^+D_s^-, D_2^{*-} \rightarrow \pi^0\bar{D}^{*-}, D_s^{*+} \rightarrow D_s^+\gamma,$ $D^+ \rightarrow \pi^+\bar{K}_1^{\prime 0}, D_s^- \rightarrow e^-\bar{\nu}_e\eta', \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D_s^+ \rightarrow \pi^+\phi, \bar{K}_1^{\prime 0} \rightarrow \pi^+K^{*-}, \eta' \rightarrow \pi^0\pi^0\eta,$ $\bar{D}^0 \rightarrow \pi^-\omega K^+, \phi \rightarrow \pi^-\rho^+, K^{*-} \rightarrow \pi^-\bar{K}^0, \eta \rightarrow \pi^0\pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+,$ $\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	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	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\pi^0\rho^+\bar{D}^{*-}, \bar{B}^0 \rightarrow K^*K^-D^+, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $K^* \rightarrow \pi^0K^0, D^+ \rightarrow \pi^+\pi^+K^-, \bar{D}^0 \rightarrow \pi^-\rho^+, K^0 \rightarrow K_S, \rho^+ \rightarrow \pi^0\pi^+, K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	99	99	1	100

[illegible]

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	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^+n\bar{\Sigma}_c^-, \bar{B}^0 \rightarrow D^{*+}D_{s1}^{\prime-}, \rho^+ \rightarrow \pi^0\pi^+, \bar{\Sigma}_c^- \rightarrow \pi^0\bar{\Lambda}_c^-,$ $D^{*+} \rightarrow \pi^+D^0, D_{s1}^{\prime-} \rightarrow \pi^0D_s^{*-}, \bar{\Lambda}_c^- \rightarrow \bar{K}^*\bar{\Sigma}^-, D^0 \rightarrow \pi^0\pi^+K^-, D_s^{*-} \rightarrow D_s^-\gamma, \bar{K}^* \rightarrow \pi^+K^-,$ $\bar{\Sigma}^- \rightarrow \pi^-\bar{n}, D_s^- \rightarrow K^*K^-, K^* \rightarrow \pi^-K^+$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-K^-K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	142	142	1	143
144	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^-\bar{\nu}_\mu D^+, \bar{B}^0 \rightarrow \bar{K}^*K^-D^{*+}, D^+ \rightarrow K_S K^{*+}, \bar{K}^* \rightarrow \pi^+K^-,$ $D^{*+} \rightarrow \pi^0D^+, K_S \rightarrow \pi^+\pi^-, K^{*+} \rightarrow \pi^0K^+, D^+ \rightarrow \pi^0\pi^0\pi^+$ $(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	143	143	1	144
145	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+\pi^+\pi^-\omega\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\pi^+\pi^-\pi^-D^{*+}, \omega \rightarrow \pi^0\pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0,$ $D^{*+} \rightarrow \pi^+D^0, \bar{D}^0 \rightarrow e^-\bar{\nu}_e\pi^+K^0, D^0 \rightarrow \rho^+K^{*-}, K^0 \rightarrow K_S, \rho^+ \rightarrow \pi^0\pi^+, K^{*-} \rightarrow \pi^-\bar{K}^0,$ $K_S \rightarrow \pi^+\pi^-, \bar{K}^0 \rightarrow K_L$ $(e^+e^- \rightarrow e^-\bar{\nu}_e K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma)$	144	144	1	145
146	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+K^0\bar{K}^*\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^+K^-D^-D^{*+}, K^0 \rightarrow K_L, \bar{K}^* \rightarrow \pi^+K^-,$ $\bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^- \rightarrow K_S a_1^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^0 \rightarrow K_S \eta', K_S \rightarrow \pi^+\pi^-, a_1^- \rightarrow \rho^0\pi^-,$ $D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, \eta' \rightarrow \rho^0\gamma, \rho^0 \rightarrow \pi^+\pi^-, \rho^0 \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$	145	145	1	146
147	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, \bar{B}^0 \rightarrow \rho^-D_2^{*+}, \bar{B}^0 \rightarrow \rho^0\pi^+K^{*-}\eta_c, \rho^- \rightarrow \pi^0\pi^-, D_2^{*+} \rightarrow \pi^+D^0,$ $\rho^0 \rightarrow \pi^+\pi^-, K^{*-} \rightarrow \pi^-\bar{K}^0, \eta_c \rightarrow \pi^0\pi^+\pi^-\omega, D^0 \rightarrow \pi^+\omega K^-, \bar{K}^0 \rightarrow K_L, \omega \rightarrow \pi^0\pi^+\pi^-,$ $\omega \rightarrow \pi^0\pi^+\pi^-$ $(e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	146	146	1	147
148	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\pi^+\pi^+\rho^-D^-, \bar{B}^0 \rightarrow D_s^{*-}D_1^+, \rho^0 \rightarrow \pi^+\pi^-, \rho^- \rightarrow \pi^0\pi^-,$ $D^- \rightarrow \mu^-\bar{\nu}_\mu K^0, D_s^{*-} \rightarrow D_s^-\gamma, D_1^+ \rightarrow \pi^+D^{*0}, K^0 \rightarrow K_S, D_s^- \rightarrow \pi^+\pi^-K_S K^-, D^{*0} \rightarrow D^0\gamma,$ $K_S \rightarrow \pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, D^0 \rightarrow \pi^+\omega K^-, \omega \rightarrow \pi^0\pi^+\pi^-$ $(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu \pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$	147	147	1	148
149	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^0\rho^0\pi^+D^-, \bar{B}^0 \rightarrow \pi^+\pi^-\pi^-D^+, \rho^0 \rightarrow \pi^+\pi^-, D^- \rightarrow \pi^-K_1^{\prime 0},$ $D^+ \rightarrow K_S a_1^+, K_1^{\prime 0} \rightarrow \pi^-K^{*+}, K_S \rightarrow \pi^+\pi^-, a_1^+ \rightarrow \pi^0\rho^+, K^{*+} \rightarrow \pi^0K^+, \rho^+ \rightarrow \pi^0\pi^+$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	148	148	1	149
150	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \tau^+\nu_\tau D_0^{*-}, \bar{B}^0 \rightarrow \pi^0\omega K^*K^-D^+, \tau^+ \rightarrow \mu^+\nu_\mu\bar{\nu}_\tau, D_0^{*-} \rightarrow \pi^-\bar{D}^0,$ $\omega \rightarrow \pi^0\pi^+\pi^-, K^* \rightarrow \pi^0K^0, D^+ \rightarrow \pi^+\pi^+K^-, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, K^0 \rightarrow K_L$ $(e^+e^- \rightarrow \mu^+\nu_\mu\nu_\tau\bar{\nu}_\tau K_L \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	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
152	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\bar{D}^{*-}\Sigma^0\Sigma^+, \bar{B}^0 \rightarrow \eta\bar{K}^0 J/\psi, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^0 D^-,$ $\Sigma^0 \rightarrow \bar{\Lambda}\gamma, \Sigma^+ \rightarrow \pi^+n, \eta \rightarrow \pi^0\pi^0\pi^0, \bar{K}^0 \rightarrow K_L, J/\psi \rightarrow \pi^-\eta K_S K^+, D^- \rightarrow \mu^-\bar{\nu}_\mu K^0,$ $\bar{\Lambda} \rightarrow \pi^+\bar{p}, K_L \rightarrow e^-\nu_e\pi^+, \eta \rightarrow \pi^0\pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, K^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0$ $(e^+e^- \rightarrow e^-\nu_e\mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+n\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	151	151	1	152
153	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0\rho^0\rho^0\rho^+\bar{D}^{*-}, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^{*+}, \rho^0 \rightarrow \pi^+\pi^-, \rho^0 \rightarrow \pi^+\pi^-,$ $\rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^{*+} \rightarrow D^+\gamma, \bar{D}^0 \rightarrow \rho^-K^{*+}, D^+ \rightarrow K_S K^{*+},$ $\rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^0 K^+, K_S \rightarrow \pi^+\pi^-, K^{*+} \rightarrow \pi^+K^0, K^0 \rightarrow K_L, K_L \rightarrow \mu^-\nu_\mu\pi^+$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\mu^-\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma)$	152	152	1	153
154	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^{*+}D^-, \bar{B}^0 \rightarrow \pi^+K^-\chi_{c1}, K^{*+} \rightarrow \pi^0 K^+, D^- \rightarrow \pi^-K_1^{'0},$ $\chi_{c1} \rightarrow \pi^-\eta\eta\bar{K}^0 K^+, K_1^{'0} \rightarrow \pi^-K^{*+}, \eta \rightarrow \gamma\gamma, \eta \rightarrow \pi^0\pi^0\pi^0, \bar{K}^0 \rightarrow K_S, K^{*+} \rightarrow \pi^0 K^+,$ $K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	153	153	1	154
155	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^{*+}D^-D^0, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D_2^{*+}, K^{*+} \rightarrow \pi^0 K^+, D^- \rightarrow \pi^0\pi^-K_S,$ $D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, D_2^{*+} \rightarrow \pi^+D^0, K_S \rightarrow \pi^+\pi^-, D^0 \rightarrow \pi^0\pi^+K^{*-}, K^{*-} \rightarrow \pi^0 K^-$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	154	154	1	155
156	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^+D^-, \bar{B}^0 \rightarrow \pi^-\pi^-\rho^+D^{*+}, \rho^+ \rightarrow \pi^0\pi^+, D^- \rightarrow \rho^-K^*,$ $\rho^+ \rightarrow \pi^0\pi^+, D^{*+} \rightarrow \pi^+D^0, \rho^- \rightarrow \pi^0\pi^-, K^* \rightarrow \pi^-K^+, D^0 \rightarrow \pi^0\pi^0\bar{K}^*, \bar{K}^* \rightarrow \pi^+K^-$ $(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	155	155	1	156
157	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow e^+\nu_e\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\rho^0\rho^-D^{*+}\gamma, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, \rho^0 \rightarrow \pi^+\pi^-,$ $\rho^- \rightarrow \pi^0\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, D^0 \rightarrow e^+\nu_e\rho^-, \rho^- \rightarrow \pi^0\pi^-$ $(e^+e^- \rightarrow e^+e^+\nu_e\nu_e\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	156	156	1	157
158	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+\bar{D}^{*-}, \bar{B}^0 \rightarrow \pi^0\rho^0\pi^+\pi^+\pi^-\pi^-\pi^-\eta\omega D^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, \rho^0 \rightarrow \pi^+\pi^-,$ $\eta \rightarrow \pi^0\pi^+\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-, D^- \rightarrow \mu^-\bar{\nu}_\mu\pi^-K^+, \bar{D}^0 \rightarrow \pi^0\pi^-K^+$ $(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	157	157	1	158
159	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^-K^0D^+\bar{D}^{*0}, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^+, K^0 \rightarrow K_S, D^+ \rightarrow K_S a_1^+,$ $\bar{D}^{*0} \rightarrow \bar{D}^0\gamma, D^+ \rightarrow \mu^+\nu_\mu\bar{K}^*, K_S \rightarrow \pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, a_1^+ \rightarrow \pi^+f_0(600), \bar{D}^0 \rightarrow \pi^0\pi^-K^+,$ $\bar{K}^* \rightarrow \pi^0\bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+f_0(600)\gamma\gamma\gamma\gamma)$	158	158	1	159
160	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^+\nu_\mu D_1^-, \bar{B}^0 \rightarrow e^-\bar{\nu}_e D^{*+}, D_1^- \rightarrow \pi^-\bar{D}^{*0}, D^{*+} \rightarrow \pi^0 D^+,$ $\bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D^+ \rightarrow e^+\nu_e\pi^0, \bar{D}^0 \rightarrow \pi^0 K_S, K_S \rightarrow \pi^+\pi^-$ $(e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+f_0(600)\gamma\gamma\gamma\gamma\gamma\gamma)$	159	159	1	160
161	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \bar{K}^0 K^+ D^-, \bar{B}^0 \rightarrow \rho^0\pi^-D^{*+}, \bar{K}^0 \rightarrow K_L, D^- \rightarrow K^* a_1^-,$ $\rho^0 \rightarrow \pi^+\pi^-, D^{*+} \rightarrow \pi^+D^0, K^* \rightarrow \pi^-K^+, a_1^- \rightarrow \pi^-f_0(600), D^0 \rightarrow \pi^+\omega K^-, \omega \rightarrow \pi^0\pi^+\pi^-$ $(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^-f_0(600)\gamma\gamma)$	160	160	1	161
162	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, \bar{B}^0 \rightarrow D^{*+}D_s^-, \bar{B}^0 \rightarrow \pi^0\pi^0\pi^-\omega D^+, D^{*+} \rightarrow \pi^+D^0, D_s^- \rightarrow \mu^-\bar{\nu}_\mu\eta,$ $\omega \rightarrow \pi^+\pi^-, D^+ \rightarrow \mu^+\nu_\mu\bar{K}^*, D^0 \rightarrow \pi^0\pi^+K^-, \eta \rightarrow \pi^0\pi^0\pi^0, \bar{K}^* \rightarrow \pi^+K^-$ $(e^+e^- \rightarrow \mu^+\mu^-\nu_\mu\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$	161	161	1	162

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	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow K^* D^+ D^-, B^0 \rightarrow \bar{D}^{*-} \bar{\Delta}^- \Delta^0, K^* \rightarrow \pi^0 K^0, D^+ \rightarrow \pi^+ \bar{K}_1^{\prime 0},$ $D^- \rightarrow e^- \bar{\nu}_e K_2^{*0}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{\Delta}^- \rightarrow \pi^+ \bar{n}, \Delta^0 \rightarrow \pi^0 n, K^0 \rightarrow K_L, \bar{K}_1^{\prime 0} \rightarrow \pi^+ K^{*-},$ $K_2^{*0} \rightarrow \pi^0 K^0, \bar{D}^0 \rightarrow e^- \bar{\nu}_e \pi^+ K^0, K^{*-} \rightarrow \pi^0 K^-, K^0 \rightarrow K_S, K^0 \rightarrow K_L, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- e^- \bar{\nu}_e \bar{\nu}_e K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	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	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \rho^0 \pi^+ \omega \bar{D}^{*-}, \bar{B}^0 \rightarrow D^0 n \bar{n}, \rho^0 \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-,$ $\bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow K_L \eta, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, \eta \rightarrow \gamma \gamma$ $(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	197	197	1	198
199	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \mu^+ \nu_\mu \bar{D}^{*-}, B^0 \rightarrow \rho^0 \pi^+ \pi^- \rho^+ \omega \bar{D}^{*-}, \bar{D}^{*-} \rightarrow \pi^0 D^-, \rho^0 \rightarrow \pi^+ \pi^-,$ $\rho^+ \rightarrow \pi^0 \pi^+, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^- \rightarrow e^- \bar{\nu}_e \pi^- K^+, D^- \rightarrow \pi^0 \pi^- K^*, K^* \rightarrow \pi^- K^+$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$	198	198	1	199
200	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(4S) \rightarrow B^0\bar{B}^0, B^0 \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- D^-, \bar{B}^0 \rightarrow e^- \bar{\nu}_e \pi^+ D^0, D^- \rightarrow \mu^- \bar{\nu}_\mu K_1^0, D^0 \rightarrow \pi^+ \pi^- K_S,$ $K_1^0 \rightarrow \pi^+ \pi^- K^0, K_S \rightarrow \pi^+ \pi^-, K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$ $(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^-)$	199	199	1	200

Table 2: Event initial-final states.

[illegible]

[illegible]

index	event initial-final states	iEvtIFSts	nEvts	nCmltEvts
121	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^-\bar{\nu}_\mu K_L\pi^+\pi^+\pi^+\pi^-K^-\gamma\gamma\gamma\gamma$	120	1	121
122	$e^+e^- \rightarrow \mu^+\nu_\mu K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma$	121	1	122
123	$e^+e^- \rightarrow e^-e^-\bar{\nu}_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-K^+K^-\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow e^+e^-e^-\nu_e\bar{\nu}_e\bar{\nu}_e K_L\pi^+\pi^+\pi^+\pi^-K^-K^-\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	130	1	131
132	$e^+e^- \rightarrow e^+\nu_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma$	131	1	132
133	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma$	132	1	133
134	$e^+e^- \rightarrow \nu_\tau\bar{\nu}_\tau K_L K_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-K^+K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-K^-K^-n\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow e^-\bar{\nu}_e K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-K^+K^-\gamma\gamma$	150	1	151
152	$e^+e^- \rightarrow e^-\nu_e\mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+n\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	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	$e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+f_0(600)\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	158	1	159
160	$e^+e^- \rightarrow e^+e^-\nu_e\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$	159	1	160

Table 3: Signal inclusive event branches.

index	signal inclusive event branch	iSigIncEvtBr	nEtrs	nCmltEtrs
1	$B^0 \rightarrow e^+ \nu_e + \text{anything}$	1	20	20
2	$B^0 \rightarrow J/\psi + \text{anything}$	0	5	25