

# Topology Analysis <sup>\*</sup>

(v1.6.0)

Xingyu Zhou <sup>†</sup>  
Beihang University

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<sup>\*</sup>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 and Yeqi Chen for their efforts in helping me test the program.

<sup>†</sup>Email: [zhouxy@buaa.edu.cn](mailto:zhouxy@buaa.edu.cn)

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

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 1     | $e^+e^- \rightarrow \pi^+\omega K^- \bar{D}^{*-} D_s^{*+}, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^0 D^-, D_s^{*+} \rightarrow \pi^0 D_s^+, D^- \rightarrow \pi^- \pi^- K^+, D_s^+ \rightarrow \rho^0 K^+,$<br>$\rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 0      | 0         | 1     | 1         |
| 2     | $e^+e^- \rightarrow D^- D^{*+}, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, D^{*+} \rightarrow \pi^0 D^+, K^0 \rightarrow K_L, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^0, K_L \rightarrow e^- \nu_e \pi^+,$<br>$\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \nu_e \mu^+ \mu^- \nu_\mu \bar{\nu}_\mu \pi^+ \pi^+ \pi^- \gamma \gamma)$   | 1      | 1         | 1     | 2         |
| 3     | $e^+e^- \rightarrow \pi^+ \pi^- D^{*0} \bar{D}^{*0}, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+, \bar{K}^0 \rightarrow K_S,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ e^- \nu_e \bar{\nu}_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma)$  | 2      | 2         | 1     | 3         |
| 4     | $e^+e^- \rightarrow K^0 \bar{K}^0 D_s^{*+} D_s^{*-}, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S, D_s^{*+} \rightarrow D_s^+ \gamma, D_s^{*-} \rightarrow D_s^- \gamma, K_S \rightarrow \pi^+ \pi^-,$<br>$D_s^+ \rightarrow e^+ \nu_e \phi, D_s^- \rightarrow K^* K^-, \phi \rightarrow \pi^+ \rho^-, K^* \rightarrow \pi^0 K^0, \rho^- \rightarrow \pi^0 \pi^-, K^0 \rightarrow K_L,$<br>$\pi^0 \rightarrow e^+ e^-$<br>$(e^+e^- \rightarrow e^+ e^+ e^- \nu_e K_L K_L \pi^+ \pi^+ \pi^- \pi^- K^- \gamma \gamma \gamma \gamma)$   | 3      | 3         | 1     | 4         |
| 5     | $e^+e^- \rightarrow \pi^0 \pi^0 \omega \bar{K}^0 \bar{D}^{*-} D_{s0}^{*+}, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{K}^0 \rightarrow K_S, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_{s0}^{*+} \rightarrow \pi^0 D_s^+, K_S \rightarrow \pi^+ \pi^-,$<br>$\bar{D}^0 \rightarrow \rho^- K^{*+}, D_s^+ \rightarrow K_S K^+, \rho^- \rightarrow \pi^0 \pi^-, K^{*+} \rightarrow \pi^+ K^0, K_S \rightarrow \pi^+ \pi^-, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$ | 4      | 4         | 1     | 5         |
| 6     | $e^+e^- \rightarrow \pi^0 \pi^+ \bar{D}^{*-} \bar{p} \Lambda_c^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \Lambda_c^+ \rightarrow \rho^0 \pi^+ \Sigma^0, \bar{D}^0 \rightarrow \pi^0 K_S, \rho^0 \rightarrow \pi^+ \pi^-, \Sigma^0 \rightarrow \Lambda \gamma,$<br>$K_S \rightarrow \pi^+ \pi^-, \Lambda \rightarrow \pi^- p$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- p \bar{p} \gamma \gamma \gamma \gamma)$  | 5      | 5         | 1     | 6         |
| 7     | $e^+e^- \rightarrow \pi^0 \pi^- D^{*+} \bar{D}^{*0}, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^*, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+, \bar{K}^* \rightarrow \pi^0 \bar{K}^0,$<br>$\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma)$  | 6      | 6         | 1     | 7         |
| 8     | $e^+e^- \rightarrow \pi^0 D^{*+} \bar{D}^{*-}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow \pi^0 \pi^+ \pi^- \bar{K}^*, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^+ K^-, \bar{K}^* \rightarrow \pi^0 \bar{K}^0,$<br>$\bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 7      | 7         | 1     | 8         |
| 9     | $e^+e^- \rightarrow \pi^0 D^{*+} D_2^{*-} \bar{n} \Delta^0, D^{*+} \rightarrow \pi^0 D^+, D_2^{*-} \rightarrow \pi^- \bar{D}^0, \Delta^0 \rightarrow \pi^- p, D^+ \rightarrow \pi^0 \pi^+ \bar{K}^*, \bar{D}^0 \rightarrow \pi^0 K_1^0,$<br>$\bar{K}^* \rightarrow \pi^0 \bar{K}^0, K_1^0 \rightarrow \pi^0 \pi^0 K^0, \bar{K}^0 \rightarrow K_L, K^0 \rightarrow K_S, K_S \rightarrow \pi^0 \pi^0$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^- \pi^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$                               | 8      | 8         | 1     | 9         |
| 10    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \rho^- \eta D^{*+} \bar{D}^{*0}, \rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ K^-,$<br>$\bar{D}^0 \rightarrow \pi^0 K_L \eta, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 9      | 9         | 1     | 10        |
| 11    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^+ \bar{D}^{*-} D_2^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_2^{*0} \rightarrow \pi^- D^+, \bar{D}^0 \rightarrow \rho^0 \pi^- K^+, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-,$<br>$\rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma)$  | 10     | 10        | 1     | 11        |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 12    | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- \pi^- D^{*+} \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^0 \rightarrow \pi^0 \rho^- K^+,$<br>$\rho^- \rightarrow \pi^0 \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 11     | 11        | 1     | 12        |
| 13    | $e^+e^- \rightarrow \pi^0 \eta \eta \omega D^{*+} \bar{D}^{*-}, \eta \rightarrow e^+ e^-, \eta \rightarrow \pi^0 \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*-} \rightarrow \pi^0 D^-,$<br>$D^+ \rightarrow \pi^+ \pi^+ K^-, D^- \rightarrow e^- \bar{\nu}_e K_1^0, K_1^0 \rightarrow \rho^- K^+, \rho^- \rightarrow \pi^0 \pi^-$<br>( $e^+e^- \rightarrow e^+ e^- e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 12     | 12        | 1     | 13        |
| 14    | $e^+e^- \rightarrow \rho^0 \pi^+ \bar{K}^0 K^* D^0 D_1'^-, \rho^0 \rightarrow \pi^+ \pi^-, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^- K^+, D^0 \rightarrow \pi^+ \omega K^-, D_1'^- \rightarrow \pi^- \bar{D}^{*0},$<br>$K_S \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{D}^0 \rightarrow \pi^- K^+ \eta', \eta' \rightarrow \rho^0 \gamma, \rho^0 \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma$ )             | 13     | 13        | 1     | 14        |
| 15    | $e^+e^- \rightarrow \pi^+ K^+ D_s^{*-} \bar{p} \Sigma_c^{*0}, D_s^{*-} \rightarrow D_s^- \gamma, \Sigma_c^{*0} \rightarrow \pi^- \Lambda_c^+, D_s^- \rightarrow \rho^- \phi, \Lambda_c^+ \rightarrow K^* \Sigma^{*+}, \rho^- \rightarrow \pi^0 \pi^-,$<br>$\phi \rightarrow K_L K_S, K^* \rightarrow \pi^- K^+, \Sigma^{*+} \rightarrow \pi^0 \Sigma^+, K_L \rightarrow \mu^- \nu_\mu \pi^+, K_S \rightarrow \pi^+ \pi^-, \Sigma^+ \rightarrow \pi^+ n$<br>( $e^+e^- \rightarrow \mu^- \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ n \bar{p} \gamma \gamma \gamma \gamma$ ) | 14     | 14        | 1     | 15        |
| 16    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \rho^+ \bar{D}^{*-} D^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^0 \rightarrow \rho^0 \rho^0, D^0 \rightarrow \pi^0 K_L \pi^+ \pi^-,$<br>$\rho^0 \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, K_L \rightarrow \mu^+ \nu_\mu \pi^-$<br>( $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 15     | 15        | 1     | 16        |
| 17    | $e^+e^- \rightarrow \pi^- \rho^+ D^{*+} \bar{D}^{*-}, \rho^+ \rightarrow \pi^0 \pi^+, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^+ \rightarrow \pi^0 \pi^+ K^+ K^-, \bar{D}^0 \rightarrow \pi^+ \pi^- K^*,$<br>$K^* \rightarrow \pi^- K^+$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma$ )   | 16     | 0         | 1     | 17        |
| 18    | $e^+e^- \rightarrow D^{*+} n n \bar{n} \bar{\Lambda}_c^-, D^{*+} \rightarrow \pi^0 D^+, \bar{\Lambda}_c^- \rightarrow \pi^- K^+ \bar{p}, D^+ \rightarrow \pi^0 \pi^+ K_S, K_S \rightarrow \pi^0 \pi^0$<br>( $e^+e^- \rightarrow \pi^+ \pi^- K^+ n n \bar{n} \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 17     | 16        | 1     | 18        |
| 19    | $e^+e^- \rightarrow \eta D^+ \Delta^0 \bar{\Sigma}_c^-, \eta \rightarrow \gamma \gamma, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-, \Delta^0 \rightarrow \pi^0 n, \bar{\Sigma}_c^- \rightarrow \pi^0 \bar{\Lambda}_c^-, \bar{\Lambda}_c^- \rightarrow \eta K^0 \bar{p},$<br>$\eta \rightarrow \gamma \gamma, K^0 \rightarrow K_L$<br>( $e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 18     | 17        | 1     | 19        |
| 20    | $e^+e^- \rightarrow \pi^0 \pi^- D^{*+} \bar{D}^{*0}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^0 \rightarrow e^+ \nu_e K^-, \bar{D}^0 \rightarrow \pi^0 \rho^- K^+, \rho^- \rightarrow \pi^0 \pi^-$<br>( $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 19     | 18        | 1     | 20        |
| 21    | $e^+e^- \rightarrow \omega D^0 p \bar{\Lambda}_c^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^0 \rightarrow K_S \eta', \bar{\Lambda}_c^- \rightarrow \pi^0 \bar{\Sigma}^-, K_S \rightarrow \pi^0 \pi^0, \eta' \rightarrow \omega \gamma,$<br>$\bar{\Sigma}^- \rightarrow \pi^- \bar{n}, \omega \rightarrow \pi^0 \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- \pi^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 20     | 19        | 1     | 21        |
| 22    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \rho^+ \bar{D}^{*-} D^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, D^0 \rightarrow \pi^0 K_L,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 21     | 20        | 1     | 22        |
| 23    | $e^+e^- \rightarrow \pi^0 \pi^- D^+ \bar{D}_1^0, D^+ \rightarrow e^+ \nu_e \bar{K}^0, \bar{D}_1^0 \rightarrow \pi^0 \bar{D}^{*0}, \bar{K}^0 \rightarrow K_L, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 22     | 21        | 1     | 23        |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 24    | $e^+e^- \rightarrow \rho^- \bar{K}^0 K^* K^+ D^+ D_s^{*-}, \rho^- \rightarrow \pi^0 \pi^-, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^- K^+, D^+ \rightarrow \pi^+ \pi^+ K^-, D_s^{*-} \rightarrow D_s^- \gamma,$<br>$K_S \rightarrow \pi^0 \pi^0, D_s^- \rightarrow \rho^- \phi, \rho^- \rightarrow \pi^0 \pi^-, \phi \rightarrow \pi^- \rho^+, \rho^+ \rightarrow \pi^0 \pi^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 23     | 22        | 1     | 24        |
| 25    | $e^+e^- \rightarrow \pi^+ \Sigma_c^{*0} \bar{\Lambda}_c^-, \Sigma_c^{*0} \rightarrow \pi^- \Lambda_c^+, \bar{\Lambda}_c^- \rightarrow \pi^0 \pi^- \bar{\Sigma}^0, \Lambda_c^+ \rightarrow \pi^+ \Sigma^0, \bar{\Sigma}^0 \rightarrow \bar{\Lambda} \gamma, \Sigma^0 \rightarrow \Lambda \gamma,$<br>$\bar{\Lambda} \rightarrow \pi^+ \bar{p}, \Lambda \rightarrow \pi^- p$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- p \bar{p} \gamma \gamma \gamma \gamma)$   | 24     | 23        | 1     | 25        |
| 26    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \omega \bar{K}^0 K^+ \bar{D}^{*-} D^{*0}, \omega \rightarrow \pi^0 \pi^+ \pi^-, \bar{K}^0 \rightarrow K_L, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^{*0} \rightarrow D^0 \gamma, D^- \rightarrow \pi^- \pi^- K^+,$<br>$D^0 \rightarrow \omega K_S, \omega \rightarrow \pi^0 \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 25     | 24        | 1     | 26        |
| 27    | $e^+e^- \rightarrow \pi^0 D^- \bar{\Delta}^- \Sigma_c^{*0}, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, \bar{\Delta}^- \rightarrow \pi^+ \bar{n}, \Sigma_c^{*0} \rightarrow \pi^- \Lambda_c^+, K^0 \rightarrow K_S, \Lambda_c^+ \rightarrow \pi^+ \Sigma^0,$<br>$K_S \rightarrow \pi^+ \pi^-, \Sigma^0 \rightarrow \Lambda \gamma, \Lambda \rightarrow \pi^0 n$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- n \bar{n} \gamma \gamma \gamma \gamma \gamma)$  | 26     | 25        | 1     | 27        |
| 28    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^+ \pi^- K^+ K^- D^{*+} \bar{D}^{*-}, \rho^0 \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^0 \rightarrow \pi^0 \pi^+ K^-, D^- \rightarrow K_L a_1^-,$<br>$a_1^- \rightarrow \pi^0 \rho^-, \rho^- \rightarrow \pi^0 \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 27     | 26        | 1     | 28        |
| 29    | $e^+e^- \rightarrow \pi^0 \pi^+ K^0 D^{*0} D_s^{*-}, K^0 \rightarrow K_L, D^{*0} \rightarrow \pi^0 D^0, D_s^{*-} \rightarrow D_s^- \gamma, D^0 \rightarrow \pi^+ \pi^- K_S, D_s^- \rightarrow e^- \bar{\nu}_e \phi,$<br>$K_S \rightarrow \pi^+ \pi^-, \phi \rightarrow K^+ K^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$   | 28     | 27        | 1     | 29        |
| 30    | $e^+e^- \rightarrow \rho^0 \pi^- K^+ K^- D^+ \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, D^+ \rightarrow K_S K^{*+}, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, K_S \rightarrow \pi^+ \pi^-, K^{*+} \rightarrow \pi^+ K^0,$<br>$\bar{D}^0 \rightarrow K_S \eta', K^0 \rightarrow K_L, K_S \rightarrow \pi^+ \pi^-, \eta' \rightarrow \rho^0 \gamma, \rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 29     | 28        | 1     | 30        |
| 31    | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^0 \pi^+ \bar{D}^{*-} D^{*0}, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^{*0} \rightarrow \pi^0 D^0, D^- \rightarrow \pi^0 \pi^- K_S, D^0 \rightarrow \mu^+ \nu_\mu K^-, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 30     | 29        | 1     | 31        |
| 32    | $e^+e^- \rightarrow \pi^+ \rho^- \bar{K}^0 K^* D^{*0} \bar{D}^{*0}, \rho^- \rightarrow \pi^0 \pi^-, \bar{K}^0 \rightarrow K_S, K^* \rightarrow \pi^0 K^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0,$<br>$K_S \rightarrow \pi^+ \pi^-, K^0 \rightarrow K_L, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^{*+}, K_S \rightarrow \pi^+ \pi^-, K^{*+} \rightarrow \pi^0 K^+$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$ | 31     | 30        | 1     | 32        |
| 33    | $e^+e^- \rightarrow \pi^0 K^- \bar{D}^{*0} D_s^+, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D_s^+ \rightarrow \pi^+ \phi, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+, \phi \rightarrow K_L K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^- K^+ K^- \gamma \gamma \gamma \gamma)$  | 32     | 31        | 1     | 33        |
| 34    | $e^+e^- \rightarrow \pi^+ \pi^- D^+ D_1'^-, D^+ \rightarrow \pi^+ \pi^+ K^-, D_1'^- \rightarrow \pi^- \bar{D}^{*0}, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma)$   | 33     | 32        | 1     | 34        |
| 35    | $e^+e^- \rightarrow K^+ D^{*0} D_s^- p \bar{p}, D^{*0} \rightarrow D^0 \gamma, D_s^- \rightarrow \rho^- \eta', D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, \rho^- \rightarrow \pi^0 \pi^-, \eta' \rightarrow \rho^0 \gamma,$<br>$\bar{K}^0 \rightarrow K_S, \rho^0 \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ p \bar{p} \gamma \gamma \gamma \gamma)$  | 34     | 33        | 1     | 35        |
| 36    | $e^+e^- \rightarrow \pi^+ K^0 K^- \bar{D}^0 D^{*0}, K^0 \rightarrow K_S, \bar{D}^0 \rightarrow K^+ a_1^-, D^{*0} \rightarrow \pi^0 D^0, K_S \rightarrow \pi^+ \pi^-, a_1^- \rightarrow \pi^0 \rho^-,$<br>$D^0 \rightarrow \pi^0 \pi^+ K^-, \rho^- \rightarrow \pi^0 \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 35     | 34        | 1     | 36        |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 37    | $e^+e^- \rightarrow \pi^- K^+ K^- D^{*+} \bar{D}^{*0}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^{*+}, K^{*+} \rightarrow \pi^+ K^0,$<br>$K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma)$   | 36     | 35        | 1     | 37        |
| 38    | $e^+e^- \rightarrow \pi^- \eta D^{*+} p \bar{\Lambda}_c^-, \eta \rightarrow e^+ e^- \pi^+ \pi^-, D^{*+} \rightarrow \pi^0 D^+, \bar{\Lambda}_c^- \rightarrow \pi^+ \pi^- \bar{\Sigma}^-, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-, \bar{\Sigma}^- \rightarrow \pi^0 \bar{p}$<br>$(e^+e^- \rightarrow e^+ e^- \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- p \bar{p} \gamma \gamma \gamma \gamma)$  | 37     | 36        | 1     | 38        |
| 39    | $e^+e^- \rightarrow \pi^0 \pi^0 D^0 \bar{D}^0, D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^0 \rightarrow \pi^- \omega K^+, \omega \rightarrow \pi^0 \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 38     | 37        | 1     | 39        |
| 40    | $e^+e^- \rightarrow \rho^0 \rho^0 \pi^+ \pi^+ \pi^- D^- D^0, \rho^0 \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, D^- \rightarrow K_S a_1^-, D^0 \rightarrow \pi^+ K^-, K_S \rightarrow \pi^+ \pi^-,$<br>$a_1^- \rightarrow \pi^0 \rho^-, \rho^- \rightarrow \pi^0 \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma)$   | 39     | 38        | 1     | 40        |
| 41    | $e^+e^- \rightarrow \pi^0 D^{*0} \bar{D}^{*0}, D^{*0} \rightarrow D^0 \gamma, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, \bar{D}^0 \rightarrow \omega K_S, \bar{K}^0 \rightarrow K_L,$<br>$\omega \rightarrow \pi^0 \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma)$   | 40     | 39        | 1     | 41        |
| 42    | $e^+e^- \rightarrow \rho^- K^+ K^- \bar{D}^0 D_0^{*+}, \rho^- \rightarrow \pi^0 \pi^-, \bar{D}^0 \rightarrow e^- \bar{\nu}_e \pi^+ K^0, D_0^{*+} \rightarrow \pi^+ D^0, K^0 \rightarrow K_S, D^0 \rightarrow \pi^0 \pi^+ K^-,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma)$  | 41     | 40        | 1     | 42        |
| 43    | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^0 K^{*+} D_2^{*0} D_s^-, K^{*+} \rightarrow \pi^+ K^0, D_2^{*0} \rightarrow \pi^- D^+, D_s^- \rightarrow K^* K^-, K^0 \rightarrow K_S, D^+ \rightarrow e^+ \nu_e \pi^+ K^-,$<br>$K^* \rightarrow \pi^0 K^0, K_S \rightarrow \pi^0 \pi^0, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 42     | 41        | 1     | 43        |
| 44    | $e^+e^- \rightarrow \pi^0 D^+ \bar{D}^{*-}, D^+ \rightarrow \pi^0 \pi^+ \pi^-, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{D}^0 \rightarrow K_S \eta', K_S \rightarrow \pi^0 \pi^0, \eta' \rightarrow \rho^0 \gamma,$<br>$\rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 43     | 42        | 1     | 44        |
| 45    | $e^+e^- \rightarrow \pi^- \rho^+ D^+ D^-, \rho^+ \rightarrow \pi^0 \pi^+, D^+ \rightarrow \pi^0 \pi^+ \bar{K}^*, D^- \rightarrow \pi^0 \pi^- \phi, \pi^0 \rightarrow e^+ e^-, \bar{K}^* \rightarrow \pi^+ K^-,$<br>$\phi \rightarrow K^+ K^-$<br>$(e^+e^- \rightarrow e^+ e^- \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma)$  | 44     | 43        | 1     | 45        |
| 46    | $e^+e^- \rightarrow \pi^+ \rho^- \bar{D}^0 D^{*0}, \rho^- \rightarrow \pi^0 \pi^-, \bar{D}^0 \rightarrow \pi^+ \pi^+ \pi^- \pi^-, D^{*0} \rightarrow \pi^0 D^0, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma)$  | 45     | 44        | 1     | 46        |
| 47    | $e^+e^- \rightarrow K^0 \bar{K}^0 \phi D_s^- D_s^{*+}, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_L, \phi \rightarrow K^+ K^-, D_s^- \rightarrow \rho^- \eta, D_s^{*+} \rightarrow D_s^+ \gamma,$<br>$\rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \gamma \gamma, D_s^+ \rightarrow \bar{K}^* K^{*+}, \bar{K}^* \rightarrow \pi^+ K^-, K^{*+} \rightarrow \pi^0 K^+, \pi^0 \rightarrow e^+ e^-$<br>$(e^+e^- \rightarrow e^+ e^- K_L K_L \pi^+ \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma)$ | 46     | 45        | 1     | 47        |
| 48    | $e^+e^- \rightarrow \pi^- D^{*+} \Delta^+ \bar{\Sigma}_c^{*-}, D^{*+} \rightarrow \pi^0 D^+, \Delta^+ \rightarrow \pi^+ n, \bar{\Sigma}_c^{*-} \rightarrow \pi^0 \bar{\Lambda}_c^-, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^0, \bar{\Lambda}_c^- \rightarrow \pi^0 \pi^- K^+ \bar{p},$<br>$\bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^- \pi^- K^+ n \bar{p} \gamma \gamma \gamma \gamma \gamma)$   | 47     | 46        | 1     | 48        |
| 49    | $e^+e^- \rightarrow \pi^+ \pi^- \rho^+ \bar{D}^{*-} D^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^0 \rightarrow \pi^+ \pi^- K_S, D^0 \rightarrow \eta \eta,$<br>$K_S \rightarrow \pi^0 \pi^0, \eta \rightarrow \gamma \gamma, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$                                    | 48     | 47        | 1     | 49        |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 50    | $e^+e^- \rightarrow D^{*+}\bar{D}^{*-}, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^*, \bar{D}^0 \rightarrow K_L \pi^+ \pi^-, \bar{K}^* \rightarrow \pi^0 \bar{K}^0,$<br>$\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma)$  | 49     | 48        | 1     | 50        |
| 51    | $e^+e^- \rightarrow K^- \bar{D}^0 D_s^{*+}, \bar{D}^0 \rightarrow \pi^- K_1^+, D_s^{*+} \rightarrow D_s^+ \gamma, K_1^+ \rightarrow \rho^0 K^+, D_s^+ \rightarrow e^+ \nu_e \bar{K}^0, \rho^0 \rightarrow \pi^+ \pi^-,$<br>$\bar{K}^0 \rightarrow K_L, K_L \rightarrow \pi^0 \pi^0 \pi^0$<br>$(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma)$  | 50     | 49        | 1     | 51        |
| 52    | $e^+e^- \rightarrow K^- \bar{D}_2^{*0} D_s^+, \bar{D}_2^{*0} \rightarrow \pi^0 \bar{D}^0, D_s^+ \rightarrow \rho^+ \eta', \bar{D}^0 \rightarrow \pi^- K^+, \rho^+ \rightarrow \pi^0 \pi^+, \eta' \rightarrow \pi^0 \pi^0 \eta,$<br>$\eta \rightarrow \pi^0 \pi^0 \pi^0$<br>$(e^+e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 51     | 50        | 1     | 52        |
| 53    | $e^+e^- \rightarrow \pi^0 \pi^- \bar{K}^0 K^{*+} D^{*+} \bar{D}^{*-}, \bar{K}^0 \rightarrow K_L, K^{*+} \rightarrow \pi^0 K^+, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow \pi^0 \pi^+ K^-,$<br>$\bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e K_L \pi^+ \pi^+ \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma)$  | 52     | 51        | 1     | 53        |
| 54    | $e^+e^- \rightarrow \pi^0 D^{*+} \bar{D}^{*-}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow K^- a_1^+, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^*, a_1^+ \rightarrow \pi^0 \rho^+,$<br>$K^* \rightarrow \pi^- K^+, \rho^+ \rightarrow \pi^0 \pi^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 53     | 52        | 1     | 54        |
| 55    | $e^+e^- \rightarrow K^0 \bar{D}^{*-} D_{s2}^{*+} (2573)^+ \bar{\Delta}^0 \Xi^0, K^0 \rightarrow K_L, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_{s2}^{*+} (2573)^+ \rightarrow K^+ D^0, \bar{\Delta}^0 \rightarrow \pi^0 \bar{n}, \Xi^0 \rightarrow \pi^0 \Lambda,$<br>$\bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+, D^0 \rightarrow \rho^+ K^{*-}, \Lambda \rightarrow \pi^- p, \rho^+ \rightarrow \pi^0 \pi^+, K^{*-} \rightarrow \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_S,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma)$ | 54     | 53        | 1     | 55        |
| 56    | $e^+e^- \rightarrow \pi^+ \omega D^{*0} D_1'^-, \omega \rightarrow \pi^0 \gamma, D^{*0} \rightarrow \pi^0 D^0, D_1'^- \rightarrow \pi^0 \bar{D}^{*-}, D^0 \rightarrow \rho^+ K^{*-}, \bar{D}^{*-} \rightarrow \pi^0 D^-,$<br>$\rho^+ \rightarrow \pi^0 \pi^+, K^{*-} \rightarrow \pi^- \bar{K}^0, D^- \rightarrow \mu^- \bar{\nu}_\mu K^0, \bar{K}^0 \rightarrow K_L, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L K_L \pi^+ \pi^+ \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 55     | 54        | 1     | 56        |
| 57    | $e^+e^- \rightarrow \rho^0 \rho^0 K^+ K^- D^0 \bar{D}^0, \rho^0 \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, D^0 \rightarrow \pi^+ K^-, \bar{D}^0 \rightarrow \omega K^*, \omega \rightarrow \pi^0 \pi^+ \pi^-,$<br>$K^* \rightarrow \pi^- K^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma)$  | 56     | 55        | 1     | 57        |
| 58    | $e^+e^- \rightarrow \pi^0 \pi^- D^0 \bar{D}^{*0} \bar{n} p, D^0 \rightarrow \mu^+ \nu_\mu K^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{D}^0 \rightarrow \pi^- \eta K^+, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^- \pi^- K^+ K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma)$  | 57     | 56        | 1     | 58        |
| 59    | $e^+e^- \rightarrow \pi^0 \pi^- D^{*+} \bar{D}^{*0}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow e^+ \nu_e K^-, \bar{D}^0 \rightarrow K^+ a_1^-, a_1^- \rightarrow \rho^0 \pi^-,$<br>$\rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma)$  | 58     | 57        | 1     | 59        |
| 60    | $e^+e^- \rightarrow \eta D^{*+} \bar{D}^{*-}, \eta \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow \pi^+ \rho^-, \bar{D}^0 \rightarrow \pi^- K_1^+,$<br>$\rho^- \rightarrow \pi^0 \pi^-, K_1^+ \rightarrow \pi^+ \pi^- K^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma)$   | 59     | 58        | 1     | 60        |
| 61    | $e^+e^- \rightarrow \pi^+ \rho^- \bar{K}^0 \bar{D}^{*-} D_s^{*+}, \rho^- \rightarrow \pi^0 \pi^-, \bar{K}^0 \rightarrow K_L, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_s^{*+} \rightarrow D_s^+ \gamma, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S,$<br>$D_s^+ \rightarrow \pi^+ \eta', K_S \rightarrow \pi^0 \pi^0, \eta' \rightarrow \pi^0 \pi^0 \eta, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 60     | 59        | 1     | 61        |





| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 74    | $e^+e^- \rightarrow \pi^0 \rho^+ \rho^- D^0 \bar{D}^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \rho^- \rightarrow \pi^0 \pi^-, D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+$<br>( $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 73     | 70        | 1     | 74        |
| 75    | $e^+e^- \rightarrow K^0 \bar{K}^0 \phi D_s^{*+} D_s^{*-}, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S, \phi \rightarrow K_L K_S, D_s^{*+} \rightarrow D_s^+ \gamma, D_s^{*-} \rightarrow D_s^- \gamma,$<br>$K_S \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-, D_s^+ \rightarrow \mu^+ \nu_\mu \phi, D_s^- \rightarrow K^* K^{*-}, \phi \rightarrow K_L K_S, K^* \rightarrow \pi^- K^+,$<br>$K^{*-} \rightarrow \pi^0 K^-, K_S \rightarrow \pi^0 \pi^0$<br>( $e^+e^- \rightarrow \mu^+ \nu_\mu K_L K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma$ ) | 74     | 71        | 1     | 75        |
| 76    | $e^+e^- \rightarrow \bar{K}^0 D^- D_s^{*+}, \bar{K}^0 \rightarrow K_L, D^- \rightarrow \pi^- \pi^- K^+, D_s^{*+} \rightarrow D_s^+ \gamma, D_s^+ \rightarrow \rho^+ \eta', \rho^+ \rightarrow \pi^0 \pi^+,$<br>$\eta' \rightarrow \pi^+ \pi^- \eta, \eta \rightarrow \gamma \gamma$<br>( $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma$ )   | 75     | 72        | 1     | 76        |
| 77    | $e^+e^- \rightarrow \pi^0 \rho^0 \omega D^{*0} \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*0} \rightarrow D^0 \gamma, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S,$<br>$\bar{D}^0 \rightarrow \pi^- K^+, K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 76     | 73        | 1     | 77        |
| 78    | $e^+e^- \rightarrow \omega \bar{\Lambda}_c^- \Sigma_c^{*+}, \omega \rightarrow \pi^0 \gamma, \bar{\Lambda}_c^- \rightarrow \rho^0 \bar{\Sigma}^-, \Sigma_c^{*+} \rightarrow \pi^0 \Lambda_c^+, \rho^0 \rightarrow \pi^+ \pi^-, \bar{\Sigma}^- \rightarrow \pi^0 \bar{p},$<br>$\Lambda_c^+ \rightarrow \pi^0 \bar{K}^0 p, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 77     | 74        | 1     | 78        |
| 79    | $e^+e^- \rightarrow \pi^0 \pi^- D^+ \bar{D}^0, D^+ \rightarrow \pi^0 K_L \pi^+, \bar{D}^0 \rightarrow K_L \pi^+ \pi^-, K_L \rightarrow e^- \nu_e \pi^+$<br>( $e^+e^- \rightarrow e^- \nu_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma \gamma$ )  | 78     | 75        | 1     | 79        |
| 80    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^+ \pi^- \rho^- \eta D^+ \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \pi^0 \pi^0 \pi^0, D^+ \rightarrow \pi^+ \rho^+ K^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma,$<br>$\rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^{*+}, K^{*+} \rightarrow \pi^0 K^+$<br>( $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 79     | 76        | 1     | 80        |
| 81    | $e^+e^- \rightarrow K^+ K^- K^- \bar{D}^{*0} D_{s2}^*(2573)^+, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D_{s2}^*(2573)^+ \rightarrow K^0 D^+, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, K^0 \rightarrow K_L, D^+ \rightarrow e^+ \nu_e \bar{K}^*,$<br>$\bar{K}^* \rightarrow \pi^+ K^-$<br>( $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma$ )  | 80     | 77        | 1     | 81        |
| 82    | $e^+e^- \rightarrow \pi^0 \rho^+ \rho^- K^+ K^- D^{*0} \bar{D}^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \rho^- \rightarrow \pi^0 \pi^-, D^{*0} \rightarrow D^0 \gamma, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^0 \rightarrow \eta K_S,$<br>$\bar{D}^0 \rightarrow \pi^+ \pi^+ \pi^- \pi^- K_S, \eta \rightarrow \gamma \gamma, K_S \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 81     | 78        | 1     | 82        |
| 83    | $e^+e^- \rightarrow \pi^0 \pi^+ \rho^- D^0 \bar{D}^{*0}, \rho^- \rightarrow \pi^0 \pi^-, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, K_S \rightarrow \pi^+ \pi^-, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>( $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )   | 82     | 79        | 1     | 83        |
| 84    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- D^+ \bar{D}^{*-}, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^*, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{K}^* \rightarrow \pi^+ K^-, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^*, K^* \rightarrow \pi^- K^+$<br>( $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma$ )  | 83     | 80        | 1     | 84        |
| 85    | $e^+e^- \rightarrow \pi^+ K^* K^{*-} D^{*0} \bar{D}^{*0}, K^* \rightarrow \pi^0 K^0, K^{*-} \rightarrow \pi^- \bar{K}^0, D^{*0} \rightarrow D^0 \gamma, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, K^0 \rightarrow K_L,$<br>$\bar{K}^0 \rightarrow K_L, D^0 \rightarrow \pi^0 K_L, \bar{D}^0 \rightarrow \rho^- K^{*+}, \rho^- \rightarrow \pi^0 \pi^-, K^{*+} \rightarrow \pi^0 K^+$<br>( $e^+e^- \rightarrow K_L K_L K_L \pi^+ \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ )  | 84     | 81        | 1     | 85        |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 86    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^- K^+ K^{*-} D^{*+} \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, K^{*-} \rightarrow \pi^- \bar{K}^0, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, \bar{K}^0 \rightarrow K_S,$<br>$D^0 \rightarrow \rho^0 \bar{K}^*, \bar{D}^0 \rightarrow K_S \eta', K_S \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, \bar{K}^* \rightarrow \pi^0 \bar{K}^0, K_S \rightarrow \pi^0 \pi^0,$<br>$\eta' \rightarrow \pi^0 \pi^0 \eta, \bar{K}^0 \rightarrow K_S, \eta \rightarrow \pi^0 \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$ | 85     | 82        | 1     | 86        |
| 87    | $e^+e^- \rightarrow \pi^+ \pi^- \rho^- K^+ D_s^{*-} D_1^{'+}, \rho^- \rightarrow \pi^0 \pi^-, D_s^{*-} \rightarrow D_s^- \gamma, D_1^{'+} \rightarrow \pi^+ D^{*0}, D_s^- \rightarrow \rho^- \eta, D^{*0} \rightarrow \pi^0 D^0,$<br>$\rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \pi^0 \pi^+ \pi^-, D^0 \rightarrow \pi^0 \pi^+ K^{*-}, K^{*-} \rightarrow \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 86     | 83        | 1     | 87        |
| 88    | $e^+e^- \rightarrow K^0 D^{*+} D_s^{*-}, K^0 \rightarrow K_S, D^{*+} \rightarrow \pi^+ D^0, D_s^{*-} \rightarrow D_s^- \gamma, K_S \rightarrow \pi^0 \pi^0, D^0 \rightarrow K^- a_1^+,$<br>$D_s^- \rightarrow \rho^- \phi, a_1^+ \rightarrow \rho^0 \pi^+, \rho^- \rightarrow \pi^0 \pi^-, \phi \rightarrow K^+ K^-, \rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 87     | 84        | 1     | 88        |
| 89    | $e^+e^- \rightarrow \pi^- D^{*0} \bar{D}_2^{*0} \bar{\Delta}^+ \Delta^{++}, D^{*0} \rightarrow \pi^0 D^0, \bar{D}_2^{*0} \rightarrow \pi^+ D^-, \bar{\Delta}^+ \rightarrow \pi^0 \bar{p}, \Delta^{++} \rightarrow \pi^+ p, D^0 \rightarrow K^- a_1^+,$<br>$D^- \rightarrow e^- \bar{\nu}_e K^*, a_1^+ \rightarrow \pi^0 \rho^+, K^* \rightarrow \pi^- K^+, \rho^+ \rightarrow \pi^0 \pi^+$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 88     | 85        | 1     | 89        |
| 90    | $e^+e^- \rightarrow \bar{K}^0 K^* D^{*+} \bar{D}^{*-}, \bar{K}^0 \rightarrow K_L, K^* \rightarrow \pi^0 K^0, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^0 D^-, K^0 \rightarrow K_S,$<br>$D^0 \rightarrow \pi^+ \pi^- \bar{K}^*, D^- \rightarrow \pi^0 \pi^- \pi^- K^+, K_S \rightarrow \pi^+ \pi^-, \bar{K}^* \rightarrow \pi^+ K^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 89     | 86        | 1     | 90        |
| 91    | $e^+e^- \rightarrow \pi^+ \rho^- \bar{D}^0 D_0^{*0}, \rho^- \rightarrow \pi^0 \pi^-, \bar{D}^0 \rightarrow \pi^- \omega K^+, D_0^{*0} \rightarrow \pi^- D^+, \omega \rightarrow \pi^0 \gamma, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 90     | 87        | 1     | 91        |
| 92    | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- \pi^- D^{*+} \bar{D}^0, \rho^0 \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu \pi^+, D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, \bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow e^+ \nu_e \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^-)$  | 91     | 88        | 1     | 92        |
| 93    | $e^+e^- \rightarrow K^0 K^+ K^- K^{*-} D^+ \bar{D}^{*0}, K^0 \rightarrow K_L, K^{*-} \rightarrow \pi^- \bar{K}^0, D^+ \rightarrow \pi^0 \pi^+ K^+ K^-, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{K}^0 \rightarrow K_S,$<br>$\bar{D}^0 \rightarrow \eta K_S, K_S \rightarrow \pi^+ \pi^-, \eta \rightarrow \gamma \gamma, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma)$   | 92     | 89        | 1     | 93        |
| 94    | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^+ \pi^- \pi^- D^{*+} D_s^{*-} p \bar{\Lambda}, D^{*+} \rightarrow \pi^0 D^+, D_s^{*-} \rightarrow D_s^- \gamma, \bar{\Lambda} \rightarrow \pi^0 \bar{n}, D^+ \rightarrow \pi^+ \eta', D_s^- \rightarrow K^0 K^{*-},$<br>$\eta' \rightarrow \rho^0 \gamma, K^0 \rightarrow K_S, K^{*-} \rightarrow \pi^0 K^-, \rho^0 \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^0 \pi^0$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 93     | 90        | 1     | 94        |
| 95    | $e^+e^- \rightarrow \pi^+ \bar{D}^{*-} D_1^{'+0}, \bar{D}^{*-} \rightarrow \pi^0 D^-, D_1^{'+0} \rightarrow \pi^- D^{*+}, D^- \rightarrow \pi^- \pi^- K^{*+}, D^{*+} \rightarrow \pi^+ D^0, K^{*+} \rightarrow \pi^0 K^+,$<br>$D^0 \rightarrow \pi^+ \pi^- \bar{K}^*, \bar{K}^* \rightarrow \pi^+ K^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$  | 94     | 91        | 1     | 95        |
| 96    | $e^+e^- \rightarrow \pi^+ \pi^- \omega D^{*0} \bar{D}_1^{'+0}, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*0} \rightarrow D^0 \gamma, \bar{D}_1^{'+0} \rightarrow \pi^0 \bar{D}^{*0}, D^0 \rightarrow \pi^+ K^-, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0,$<br>$\bar{D}^0 \rightarrow \rho^- K^{*+}, \rho^- \rightarrow \pi^0 \pi^-, K^{*+} \rightarrow \pi^+ K^0, K^0 \rightarrow K_S, K_S \rightarrow \pi^0 \pi^0$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 95     | 92        | 1     | 96        |
| 97    | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- \omega D^{*0} \bar{D}^{*0}, \rho^0 \rightarrow \pi^+ \pi^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ K^-,$<br>$\bar{D}^0 \rightarrow \pi^- K^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 96     | 93        | 1     | 97        |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 98    | $e^+e^- \rightarrow \bar{D}^{*0}D_1^0, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D_1^0 \rightarrow \pi^-D^{*+}, \bar{D}^0 \rightarrow \rho^-K^{*+}, D^{*+} \rightarrow \pi^+D^0, \rho^- \rightarrow \pi^0\pi^-,$<br>$K^{*+} \rightarrow \pi^+K^0, D^0 \rightarrow K_L\eta, K^0 \rightarrow K_L, \eta \rightarrow \gamma\gamma$<br>$(e^+e^- \rightarrow K_LK_L\pi^+\pi^+\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma)$  | 97     | 94        | 1     | 98        |
| 99    | $e^+e^- \rightarrow D^{*0}\Delta^{++}\bar{\Sigma}_c^{--}, D^{*0} \rightarrow D^0\gamma, \Delta^{++} \rightarrow \pi^+p, \bar{\Sigma}_c^{--} \rightarrow \pi^-\bar{\Lambda}_c^-, D^0 \rightarrow \pi^0\pi^+K^-, \bar{\Lambda}_c^- \rightarrow \pi^0\pi^-\bar{\Lambda},$<br>$\bar{\Lambda} \rightarrow \pi^+\bar{p}$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-K^-p\bar{p}\gamma\gamma\gamma\gamma\gamma)$   | 98     | 95        | 1     | 99        |
| 100   | $e^+e^- \rightarrow \pi^0\pi^+\pi^-\omega D^{*+}\bar{D}^{*-}, \omega \rightarrow \pi^0\pi^+\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*-} \rightarrow \pi^0D^-, D^0 \rightarrow K^-a_1^+, D^- \rightarrow \pi^-K_S,$<br>$a_1^+ \rightarrow \rho^0\pi^+, K_S \rightarrow \pi^+\pi^-, \rho^0 \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$   | 99     | 96        | 1     | 100       |
| 101   | $e^+e^- \rightarrow \pi^0\pi^-\bar{D}_2^{*0}D_0^{*+}, \bar{D}_2^{*0} \rightarrow \pi^+\bar{D}^{*-}, D_0^{*+} \rightarrow \pi^0D^+, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^+ \rightarrow \mu^+\nu_\mu\pi^+K^-, \bar{D}^0 \rightarrow K^+a_1^-,$<br>$a_1^- \rightarrow \rho^0\pi^-, \rho^0 \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma)$  | 100    | 80        | 1     | 101       |
| 102   | $e^+e^- \rightarrow \pi^0\rho^-\omega D^{*+}\bar{D}^{*0}, \rho^- \rightarrow \pi^0\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-, D^{*+} \rightarrow \pi^0D^+, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D^+ \rightarrow \pi^+\pi^+K^-,$<br>$\bar{D}^0 \rightarrow \pi^0\pi^+\pi^-K^+K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$  | 101    | 97        | 1     | 102       |
| 103   | $e^+e^- \rightarrow \pi^0\pi^0K^-\bar{D}^0D_{s2}^{*+}(2573)^+, \bar{D}^0 \rightarrow e^-\bar{\nu}_eK^+, D_{s2}^{*+}(2573)^+ \rightarrow K^+D^0, D^0 \rightarrow \pi^+K^-$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+K^+K^+K^-K^-\gamma\gamma\gamma\gamma)$   | 102    | 98        | 1     | 103       |
| 104   | $e^+e^- \rightarrow \rho^0D^{*0}p\bar{\Lambda}_c^-, \rho^0 \rightarrow \pi^+\pi^-, D^{*0} \rightarrow \pi^0D^0, \bar{\Lambda}_c^- \rightarrow \rho^0\pi^-\bar{n}, D^0 \rightarrow \pi^0\pi^0\bar{K}^*, \rho^0 \rightarrow \pi^+\pi^-,$<br>$\bar{K}^* \rightarrow \pi^+K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\bar{n}p\gamma\gamma\gamma\gamma\gamma)$  | 103    | 99        | 1     | 104       |
| 105   | $e^+e^- \rightarrow \pi^0\pi^+D_2^{*-}D^{*0}, D_2^{*-} \rightarrow \pi^-\bar{D}^0, D^{*0} \rightarrow \pi^0D^0, \bar{D}^0 \rightarrow K_S\eta', D^0 \rightarrow e^+\nu_eK^-, K_S \rightarrow \pi^+\pi^-,$<br>$\eta' \rightarrow \pi^+\pi^-\eta, \eta \rightarrow \gamma\gamma$<br>$(e^+e^- \rightarrow e^+\nu_e\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$  | 104    | 100       | 1     | 105       |
| 106   | $e^+e^- \rightarrow \pi^0\rho^0\pi^+\bar{D}^{*-}D^0, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, \bar{D}^0 \rightarrow K_L\pi^+K^-$<br>$(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 105    | 101       | 1     | 106       |
| 107   | $e^+e^- \rightarrow \pi^0\pi^+\rho^+\rho^-\bar{D}^{*-}D_2^{*0}, \rho^+ \rightarrow \pi^0\pi^+, \rho^- \rightarrow \pi^0\pi^-, \bar{D}^{*-} \rightarrow \pi^0D^-, D_2^{*0} \rightarrow \pi^-D^+, D^- \rightarrow e^-\bar{\nu}_e\pi^-K^+,$<br>$D^+ \rightarrow \mu^+\nu_\mu\bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$ | 106    | 102       | 1     | 107       |
| 108   | $e^+e^- \rightarrow \bar{D}^0D^{*0}, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, D^{*0} \rightarrow D^0\gamma, D^0 \rightarrow \pi^+K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma\gamma\gamma)$  | 107    | 103       | 1     | 108       |
| 109   | $e^+e^- \rightarrow \pi^0\pi^0\pi^+\rho^-D^{*+}\bar{D}^{*-}, \rho^- \rightarrow \pi^0\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, \bar{D}^0 \rightarrow K_L\pi^-K^+$<br>$(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$  | 108    | 104       | 1     | 109       |
| 110   | $e^+e^- \rightarrow \pi^-\bar{D}^0\bar{\Delta}^-\Sigma_c^{*0}, \bar{D}^0 \rightarrow K_L\omega, \bar{\Delta}^- \rightarrow \pi^+\bar{n}, \Sigma_c^{*0} \rightarrow \pi^-\Lambda_c^+, \omega \rightarrow \pi^0\pi^+\pi^-, \Lambda_c^+ \rightarrow \pi^0\bar{K}^0p,$<br>$\bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow K_LK_L\pi^+\pi^+\pi^-\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma)$   | 109    | 105       | 1     | 110       |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 111   | $e^+e^- \rightarrow \pi^- \rho^+ K^+ D^{*0} D_s^{*-}, \rho^+ \rightarrow \pi^0 \pi^+, D^{*0} \rightarrow \pi^0 D^0, D_s^{*-} \rightarrow D_s^- \gamma, D^0 \rightarrow K_L \eta', D_s^- \rightarrow \rho^- \eta',$<br>$\eta' \rightarrow \pi^+ \pi^- \eta, \rho^- \rightarrow \pi^0 \pi^-, \eta' \rightarrow \pi^0 \pi^0 \eta, \eta \rightarrow \gamma \gamma, \eta \rightarrow \pi^0 \pi^0 \pi^0$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 110    | 106       | 1     | 111       |
| 112   | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \eta D^{*0} \bar{D}^{*0}, \eta \rightarrow \pi^0 \pi^0 \pi^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, \bar{D}^0 \rightarrow \pi^0 \pi^- K^{*+},$<br>$K_S \rightarrow \pi^+ \pi^-, K^{*+} \rightarrow \pi^0 K^+$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 111    | 107       | 1     | 112       |
| 113   | $e^+e^- \rightarrow \pi^+ \omega K^- D_s^{*+} D_1^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, D_s^{*+} \rightarrow D_s^+ \gamma, D_1^- \rightarrow \pi^0 \bar{D}^{*-}, D_s^+ \rightarrow \rho^+ \eta', \bar{D}^{*-} \rightarrow \pi^0 D^-,$<br>$\rho^+ \rightarrow \pi^0 \pi^+, \eta' \rightarrow \pi^0 \pi^0 \eta, D^- \rightarrow K_L \pi^-, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 112    | 108       | 1     | 113       |
| 114   | $e^+e^- \rightarrow K^+ K^- \phi D_s^- D_s^{*+}, \phi \rightarrow K_L K_S, D_s^- \rightarrow \pi^+ \pi^- \pi^- \eta, D_s^{*+} \rightarrow D_s^+ \gamma, K_S \rightarrow \pi^0 \pi^0, \eta \rightarrow \pi^0 \pi^0 \pi^0,$<br>$D_s^+ \rightarrow \pi^0 \pi^+ \omega, \omega \rightarrow \pi^0 \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 113    | 109       | 1     | 114       |
| 115   | $e^+e^- \rightarrow D^{*0} \bar{D}^{*0}, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow K^- a_1^+, \bar{D}^0 \rightarrow \pi^0 \eta', a_1^+ \rightarrow \pi^0 \rho^+,$<br>$\eta' \rightarrow \rho^0 \gamma, \rho^+ \rightarrow \pi^0 \pi^+, \rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 114    | 110       | 1     | 115       |
| 116   | $e^+e^- \rightarrow \pi^+ \pi^- \bar{D}^{*-} D_s^{*+} \bar{n} \Lambda, \bar{D}^{*-} \rightarrow \pi^0 D^-, D_s^{*+} \rightarrow \pi^0 D_s^+, \Lambda \rightarrow \pi^- p, D^- \rightarrow K_S K_S K^-, D_s^+ \rightarrow \rho^+ \eta,$<br>$K_S \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-, \rho^+ \rightarrow \pi^0 \pi^+, \eta \rightarrow \gamma \gamma$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 115    | 111       | 1     | 116       |
| 117   | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^- \rho^- D^{*+} \bar{D}^{*0} \bar{\Sigma}^+ \Sigma^0, \rho^0 \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{\Sigma}^+ \rightarrow \pi^+ \bar{n},$<br>$\Sigma^0 \rightarrow \Lambda \gamma, D^0 \rightarrow \pi^0 K_L \pi^+ \pi^-, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+, \Lambda \rightarrow \pi^0 n$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ n \bar{n} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$ | 116    | 112       | 1     | 117       |
| 118   | $e^+e^- \rightarrow \pi^+ \bar{D}^{*-} D^{*0}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^{*0} \rightarrow \pi^0 D^0, \bar{D}^0 \rightarrow \rho^- K^{*+}, D^0 \rightarrow K_L \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-,$<br>$K^{*+} \rightarrow \pi^+ K^0, K^0 \rightarrow K_L, K_L \rightarrow \mu^- \nu_\mu \pi^+$<br>$(e^+e^- \rightarrow \mu^- \nu_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma)$   | 117    | 113       | 1     | 118       |
| 119   | $e^+e^- \rightarrow \rho^- \bar{D}_0^{*0} D_1'^+, \rho^- \rightarrow \pi^0 \pi^-, \bar{D}_0^{*0} \rightarrow \pi^0 \bar{D}^0, D_1'^+ \rightarrow \pi^+ D^{*0}, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^{*+}, D^{*0} \rightarrow D^0 \gamma,$<br>$K^{*+} \rightarrow \pi^+ K^0, D^0 \rightarrow \pi^+ \omega K^-, K^0 \rightarrow K_L, \omega \rightarrow \pi^0 \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 118    | 114       | 1     | 119       |
| 120   | $e^+e^- \rightarrow D^+ \bar{D}^{*-}, D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^- \rightarrow e^- \bar{\nu}_e K^*, K^* \rightarrow \pi^- K^+$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^- K^+ K^- \gamma \gamma)$  | 119    | 115       | 1     | 120       |
| 121   | $e^+e^- \rightarrow \pi^- \rho^+ \bar{D}^{*-} D^0 \bar{\Sigma}^0 \Sigma^+, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow e^+ \nu_e \pi^0 K^-, \bar{\Sigma}^0 \rightarrow \bar{\Lambda} \gamma, \Sigma^+ \rightarrow \pi^+ n,$<br>$\bar{D}^0 \rightarrow \pi^0 \pi^0, \bar{\Lambda} \rightarrow \pi^+ \bar{p}$<br>$(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 120    | 116       | 1     | 121       |
| 122   | $e^+e^- \rightarrow \pi^- \bar{K}^* \bar{D}^{*0} D_s^{*+}, \bar{K}^* \rightarrow \pi^+ K^-, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D_s^{*+} \rightarrow D_s^+ \gamma, \bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+, D_s^+ \rightarrow \rho^+ \eta,$<br>$\rho^+ \rightarrow \pi^0 \pi^+, \eta \rightarrow \pi^0 \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 121    | 117       | 1     | 122       |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 123   | $e^+e^- \rightarrow \pi^+\Lambda_c^+\bar{\Sigma}_c^{*-}, \Lambda_c^+ \rightarrow \pi^+\pi^+\pi^-\Sigma^{*0}, \bar{\Sigma}_c^{*-} \rightarrow \pi^-\bar{\Lambda}_c^-, \Sigma^{*0} \rightarrow \pi^0\Lambda, \bar{\Lambda}_c^- \rightarrow \pi^+\pi^-\bar{\Sigma}^{*-}, \Lambda \rightarrow \pi^-p,$<br>$\bar{\Sigma}^{*-} \rightarrow \pi^0\bar{\Sigma}^-, \bar{\Sigma}^- \rightarrow \pi^-\bar{n}$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma)$   | 122    | 118       | 1     | 123       |
| 124   | $e^+e^- \rightarrow \eta'\bar{D}^{*-}\bar{n}\Lambda_c^+, \eta' \rightarrow \pi^+\pi^-\eta, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, \Lambda_c^+ \rightarrow \pi^0\bar{K}^0p, \eta \rightarrow \gamma\gamma, \bar{D}^0 \rightarrow \pi^+\pi^-K_S,$<br>$\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma)$  | 123    | 119       | 1     | 124       |
| 125   | $e^+e^- \rightarrow \pi^+\bar{D}^{*-}D_1^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D_1^0 \rightarrow \pi^0D^{*0}, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, D^{*0} \rightarrow \pi^0D^0, D^0 \rightarrow K_S\phi,$<br>$K_S \rightarrow \pi^+\pi^-, \phi \rightarrow K^+K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma)$   | 124    | 120       | 1     | 125       |
| 126   | $e^+e^- \rightarrow \pi^0\rho^0D^0\bar{D}^0, \rho^0 \rightarrow \pi^+\pi^-, D^0 \rightarrow e^+\nu_e\pi^-\bar{K}^0, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^+\nu_e\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma)$   | 125    | 121       | 1     | 126       |
| 127   | $e^+e^- \rightarrow \pi^+\omega D^-D^{*0}, \omega \rightarrow \pi^0\pi^+\pi^-, D^- \rightarrow e^-\bar{\nu}_eK^0, D^{*0} \rightarrow \pi^0D^0, K^0 \rightarrow K_S, D^0 \rightarrow \pi^0\pi^+K^-,$<br>$K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$   | 126    | 122       | 1     | 127       |
| 128   | $e^+e^- \rightarrow \pi^0\rho^-\omega D^{*+}\bar{D}^{*0}, \pi^0 \rightarrow e^+e^-, \rho^- \rightarrow \pi^0\pi^-, \omega \rightarrow \pi^0\gamma, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0,$<br>$D^0 \rightarrow K^-a_1^+, \bar{D}^0 \rightarrow \rho^-K^{*+}, a_1^+ \rightarrow \rho^0\pi^+, \rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^+K^0, \rho^0 \rightarrow \pi^+\pi^-,$<br>$K^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^+e^-\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$ | 127    | 123       | 1     | 128       |
| 129   | $e^+e^- \rightarrow \bar{n}p\Lambda_c^+\bar{\Sigma}_c^{*-}, \Lambda_c^+ \rightarrow \pi^+\pi^-\bar{K}^0p, \bar{\Sigma}_c^{*-} \rightarrow \pi^-\bar{\Lambda}_c^-, \bar{K}^0 \rightarrow K_S, \bar{\Lambda}_c^- \rightarrow K^0\bar{p}, K_S \rightarrow \pi^+\pi^-,$<br>$K^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-\pi^-\bar{n}pp\bar{p}\gamma\gamma\gamma\gamma)$  | 128    | 124       | 1     | 129       |
| 130   | $e^+e^- \rightarrow \pi^+\pi^-\omega D^{*+}\bar{D}^{*0}, \omega \rightarrow \pi^0\pi^+\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*0} \rightarrow \pi^0D^-, D^0 \rightarrow \pi^+\pi^-\bar{K}^*, D^- \rightarrow \pi^0\pi^-K^*,$<br>$\bar{K}^* \rightarrow \pi^+K^-, K^* \rightarrow \pi^-K^+$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma)$   | 129    | 125       | 1     | 130       |
| 131   | $e^+e^- \rightarrow \rho^-K^+K^-\phi D^{*+}\bar{D}^{*0}, \rho^- \rightarrow \pi^0\pi^-, \phi \rightarrow K^+K^-, D^{*+} \rightarrow \pi^0D^+, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D^+ \rightarrow \pi^+\bar{K}_1'^0,$<br>$\bar{D}^0 \rightarrow \mu^-\bar{\nu}_\mu K^+, \bar{K}_1'^0 \rightarrow \pi^+K^{*-}, K^{*-} \rightarrow \pi^-\bar{K}^0, \bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow \mu^-\bar{\nu}_\mu\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma)$  | 130    | 126       | 1     | 131       |
| 132   | $e^+e^- \rightarrow \pi^0\eta\bar{K}^0K^+\bar{D}^{*-}D^0, \eta \rightarrow \pi^0\pi^0\pi^0, \bar{K}^0 \rightarrow K_L, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^0 \rightarrow \pi^0\pi^0K_L, K_L \rightarrow \mu^+\nu_\mu\pi^-,$<br>$\bar{D}^0 \rightarrow \pi^+\pi^-K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow \mu^+\nu_\mu K_L\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 131    | 127       | 1     | 132       |
| 133   | $e^+e^- \rightarrow \pi^-\omega K^{*+}D^{*+}D_s^{*-}, \omega \rightarrow \pi^0\pi^+\pi^-, K^{*+} \rightarrow \pi^+K^0, D^{*+} \rightarrow \pi^+D^0, D_s^{*-} \rightarrow D_s^-\gamma, K^0 \rightarrow K_L,$<br>$D^0 \rightarrow \pi^0\pi^+K^-, D_s^- \rightarrow K^*K^{*-}, K^* \rightarrow \pi^0K^0, K^{*-} \rightarrow \pi^-\bar{K}^0, K^0 \rightarrow K_L, \bar{K}^0 \rightarrow K_S,$<br>$K_S \rightarrow \pi^0\pi^0$<br>$(e^+e^- \rightarrow K_LK_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$  | 132    | 128       | 1     | 133       |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 134   | $e^+e^- \rightarrow \pi^0\pi^+\pi^+\rho^-\bar{D}^{*-}D^{*0}, \rho^- \rightarrow \pi^0\pi^-, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^{*0} \rightarrow \pi^0D^0, \bar{D}^0 \rightarrow \pi^0\pi^0K^+K^-, D^0 \rightarrow \pi^0\pi^+K^-$<br>( $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )   | 133    | 129       | 1     | 134       |
| 135   | $e^+e^- \rightarrow \pi^+D^{*0}p\bar{\Sigma}_c^{--}, D^{*0} \rightarrow \pi^0D^0, \bar{\Sigma}_c^{--} \rightarrow \pi^-\bar{\Lambda}_c^-, D^0 \rightarrow \pi^0\pi^+\pi^-\bar{K}^*, \bar{\Lambda}_c^- \rightarrow K^{*-}\bar{\Lambda}, \bar{K}^* \rightarrow \pi^+K^-,$<br>$K^{*-} \rightarrow \pi^-\bar{K}^0, \bar{\Lambda} \rightarrow \pi^0\bar{n}, \bar{K}^0 \rightarrow K_L$<br>( $e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^-\pi^-K^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma$ )   | 134    | 130       | 1     | 135       |
| 136   | $e^+e^- \rightarrow \pi^0\pi^0\bar{K}^0\bar{D}^{*-}D_s^{*+}, \bar{K}^0 \rightarrow K_L, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D_s^{*+} \rightarrow D_s^+\gamma, K_L \rightarrow \pi^0\pi^0\pi^0, \bar{D}^0 \rightarrow \pi^0\pi^0K_S,$<br>$D_s^+ \rightarrow \rho^+\eta, K_S \rightarrow \pi^0\pi^0, \rho^+ \rightarrow \pi^0\pi^+, \eta \rightarrow \pi^0\pi^0\pi^0$<br>( $e^+e^- \rightarrow \pi^+\pi^-\gamma$ )   | 135    | 131       | 1     | 136       |
| 137   | $e^+e^- \rightarrow \pi^0\pi^0\pi^0\rho^+D^{*0}D_1^{*-}, \rho^0 \rightarrow \pi^+\pi^-, D^{*0} \rightarrow \pi^0D^0, D_1^{*-} \rightarrow \pi^-\bar{D}^{*0}, D^0 \rightarrow \eta K_S, \bar{D}^{*0} \rightarrow \bar{D}^0\gamma,$<br>$\eta \rightarrow \pi^0\pi^+\pi^-, K_S \rightarrow \pi^+\pi^-, \bar{D}^0 \rightarrow \rho^-K^{*+}, \pi^0 \rightarrow e^+e^-, \rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^+K^0,$<br>$K^0 \rightarrow K_S, K_S \rightarrow \pi^0\pi^0$<br>( $e^+e^- \rightarrow e^+e^-\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ ) | 136    | 132       | 1     | 137       |
| 138   | $e^+e^- \rightarrow \pi^+\bar{K}^0K^*D^-D^0, \bar{K}^0 \rightarrow K_L, K^* \rightarrow \pi^-K^+, D^- \rightarrow K_S a_1^-, D^0 \rightarrow \pi^0\pi^0\pi^+\pi^-, K_S \rightarrow \pi^0\pi^0,$<br>$a_1^- \rightarrow \pi^0\rho^-, \rho^- \rightarrow \pi^0\pi^-$<br>( $e^+e^- \rightarrow K_L\pi^+\pi^+\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )   | 137    | 133       | 1     | 138       |
| 139   | $e^+e^- \rightarrow K^{*-}D_s^{*+}p\bar{\Lambda}_c^-, K^{*-} \rightarrow \pi^-\bar{K}^0, D_s^{*+} \rightarrow D_s^+\gamma, \bar{\Lambda}_c^- \rightarrow \pi^0\pi^+\pi^-\bar{p}, \bar{K}^0 \rightarrow K_L, D_s^+ \rightarrow \pi^0\pi^0\pi^+\eta,$<br>$\eta \rightarrow \pi^0\pi^0\pi^0$<br>( $e^+e^- \rightarrow K_L\pi^+\pi^+\pi^-\pi^-\bar{p}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )   | 138    | 134       | 1     | 139       |
| 140   | $e^+e^- \rightarrow \rho^0K^-\bar{D}^{*0}D_s^{*+}, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*0} \rightarrow \bar{D}^0\gamma, D_s^{*+} \rightarrow \pi^0D_s^+, \bar{D}^0 \rightarrow \rho^0K^*, D_s^+ \rightarrow \pi^0\pi^+\pi^+\pi^-\pi^-,$<br>$\rho^0 \rightarrow \pi^+\pi^-, K^* \rightarrow \pi^-K^+$<br>( $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma$ )   | 139    | 135       | 1     | 140       |
| 141   | $e^+e^- \rightarrow \pi^0\rho^0\rho^+K^-\bar{D}^{*0}D_{s0}^{*+}, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+, \bar{D}^{*0} \rightarrow \pi^-\bar{D}^0, D_{s0}^{*+} \rightarrow \pi^0D_s^+, \bar{D}^0 \rightarrow e^-\bar{\nu}_e\pi^+,$<br>$D_s^+ \rightarrow \rho^+\eta', \rho^+ \rightarrow \pi^0\pi^+, \eta' \rightarrow \pi^+\pi^-\eta, \eta \rightarrow \gamma\gamma$<br>( $e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )   | 140    | 136       | 1     | 141       |
| 142   | $e^+e^- \rightarrow \pi^0\pi^+\pi^-\omega\bar{D}^{*-}\bar{n}\Lambda_c^+, \omega \rightarrow \pi^0\pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^0D^-, \Lambda_c^+ \rightarrow \omega\Sigma^{*+}, D^- \rightarrow \pi^0\pi^+\pi^-\pi^-K^0, \omega \rightarrow \pi^0\pi^+\pi^-,$<br>$\Sigma^{*+} \rightarrow \pi^+\Lambda, K^0 \rightarrow K_L, \Lambda \rightarrow \pi^-p$<br>( $e^+e^- \rightarrow K_L\pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )  | 141    | 137       | 1     | 142       |
| 143   | $e^+e^- \rightarrow \pi^0\pi^+\pi^+\pi^-\rho^-\bar{K}^*D^-D_s^{*+}, \rho^- \rightarrow \pi^0\pi^-, \bar{K}^* \rightarrow \pi^+K^-, D^- \rightarrow \pi^+\pi^-\pi^-\pi^-K^+, D_s^{*+} \rightarrow D_s^+\gamma, D_s^+ \rightarrow e^+\nu_eK^0,$<br>$K^0 \rightarrow K_L$<br>( $e^+e^- \rightarrow e^+\nu_eK_L\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma$ )   | 142    | 138       | 1     | 143       |
| 144   | $e^+e^- \rightarrow \pi^-\rho^+K^*D^{*+}D_s^{*-}, \rho^+ \rightarrow \pi^0\pi^+, K^* \rightarrow \pi^-K^+, D^{*+} \rightarrow \pi^+D^0, D_s^{*-} \rightarrow D_s^-\gamma, D^0 \rightarrow \mu^+\nu_\mu K^-,$<br>$D_s^- \rightarrow \pi^0\pi^+\pi^+\pi^-\pi^-\pi^-$<br>( $e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma$ )  | 143    | 139       | 1     | 144       |
| 145   | $e^+e^- \rightarrow \omega D^{*+}\bar{D}^{*-}, \omega \rightarrow \pi^0\pi^+\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, D^0 \rightarrow \pi^0\pi^0, \bar{D}^0 \rightarrow \pi^0K_L$<br>( $e^+e^- \rightarrow K_L\pi^+\pi^+\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ )  | 144    | 140       | 1     | 145       |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 146   | $e^+e^- \rightarrow \pi^0 \rho^+ K^- D_s^+ D_0^{*-}, \rho^+ \rightarrow \pi^0 \pi^+, D_s^+ \rightarrow \rho^+ K^*, D_0^{*-} \rightarrow \pi^- \bar{D}^0, \rho^+ \rightarrow \pi^0 \pi^+, K^* \rightarrow \pi^0 K^0,$<br>$\bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+, \pi^0 \rightarrow e^+ e^-, K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+e^- e^- \bar{\nu}_e \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$   | 145    | 141       | 1     | 146       |
| 147   | $e^+e^- \rightarrow \pi^0 K^0 K^+ K^{*-} D^{*+} D_s^-, K^0 \rightarrow K_S, K^{*-} \rightarrow \pi^- \bar{K}^0, D^{*+} \rightarrow \pi^0 D^+, D_s^- \rightarrow \mu^- \bar{\nu}_\mu \eta, K_S \rightarrow \pi^+ \pi^-,$<br>$\bar{K}^0 \rightarrow K_L, D^+ \rightarrow \pi^+ \pi^+ K^-, \eta \rightarrow \pi^0 \pi^0 \pi^0$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 146    | 142       | 1     | 147       |
| 148   | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^+ \bar{D}^{*-} D_2^{*0}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_2^{*0} \rightarrow \pi^- D^{*+}, \bar{D}^0 \rightarrow \pi^- K^+, D^{*+} \rightarrow \pi^+ D^0, D^0 \rightarrow \pi^0 \pi^+ K^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$   | 147    | 143       | 1     | 148       |
| 149   | $e^+e^- \rightarrow \pi^0 D^{*+} \bar{D}^{*0} n \bar{p}, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, D^0 \rightarrow \pi^0 \pi^+ K^-, \bar{D}^0 \rightarrow \pi^0 \pi^0 K_L$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 148    | 144       | 1     | 149       |
| 150   | $e^+e^- \rightarrow \pi^0 \pi^- \eta D^{*+} \bar{D}^{*0}, \eta \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, D^0 \rightarrow e^+ \nu_e \pi^0 K^-, \bar{D}^0 \rightarrow K_L \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma)$   | 149    | 145       | 1     | 150       |
| 151   | $e^+e^- \rightarrow \pi^0 \pi^0 \rho^0 \pi^+ \pi^+ \pi^- \pi^- \rho^+ \bar{D}^{*-} D^0, \rho^0 \rightarrow \pi^+ \pi^-, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^0 \rightarrow e^+ \nu_e \pi^- \bar{K}^0, D^- \rightarrow e^- \bar{\nu}_e K^*,$<br>$\bar{K}^0 \rightarrow K_L, K^* \rightarrow \pi^- K^+$<br>$(e^+e^- \rightarrow e^+e^- \nu_e \bar{\nu}_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 150    | 146       | 1     | 151       |
| 152   | $e^+e^- \rightarrow \pi^- \phi D_s^+ \Sigma^{*+} \bar{\Lambda}_c^-, \phi \rightarrow K_L K_S, D_s^+ \rightarrow \bar{K}^0 K^{*+}, \Sigma^{*+} \rightarrow \pi^+ \Lambda, \bar{\Lambda}_c^- \rightarrow \pi^0 K^0 \bar{p}, K_S \rightarrow \pi^+ \pi^-,$<br>$\bar{K}^0 \rightarrow K_L, K^{*+} \rightarrow \pi^+ K^0, \Lambda \rightarrow \pi^- p, K^0 \rightarrow K_L, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow K_L K_L K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- p \bar{p} \gamma \gamma)$  | 151    | 147       | 1     | 152       |
| 153   | $e^+e^- \rightarrow \pi^0 \pi^+ \omega K^0 K^{*-} D_0^{*+} D_1'^-, \omega \rightarrow \pi^0 \pi^+ \pi^-, K^0 \rightarrow K_L, K^{*-} \rightarrow \pi^- \bar{K}^0, D_0^{*+} \rightarrow \pi^+ D^0, D_1'^- \rightarrow \pi^0 \bar{D}^{*-},$<br>$\bar{K}^0 \rightarrow K_S, D^0 \rightarrow \rho^0 \bar{K}^*, \bar{D}^{*-} \rightarrow \pi^0 D^-, K_S \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, \bar{K}^* \rightarrow \pi^+ K^-,$<br>$D^- \rightarrow \pi^0 K_L \pi^-$<br>$(e^+e^- \rightarrow K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$ | 152    | 148       | 1     | 153       |
| 154   | $e^+e^- \rightarrow \pi^0 \pi^- p \bar{\Lambda}_c^- D_1^+, \bar{\Lambda}_c^- \rightarrow \pi^- \pi^- \bar{\Sigma}^+, D_1^+ \rightarrow \pi^+ D^{*0}, \bar{\Sigma}^+ \rightarrow \pi^+ \bar{n}, D^{*0} \rightarrow D^0 \gamma, D^0 \rightarrow \pi^0 \pi^+ K^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma)$   | 153    | 149       | 1     | 154       |
| 155   | $e^+e^- \rightarrow \pi^0 \pi^- \rho^+ K^+ D^0 D_s^{*-}, \rho^+ \rightarrow \pi^0 \pi^+, D^0 \rightarrow \pi^0 K_L, D_s^{*-} \rightarrow D_s^- \gamma, \pi^0 \rightarrow e^+ e^-, D_s^- \rightarrow \pi^- \phi,$<br>$\phi \rightarrow K_L K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+e^- K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma)$   | 154    | 150       | 1     | 155       |
| 156   | $e^+e^- \rightarrow \rho^+ \bar{D}^{*-} p \bar{\Delta}^+ D_1^0, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{\Delta}^+ \rightarrow \pi^0 \bar{p}, D_1^0 \rightarrow \pi^- D^{*+}, \bar{D}^0 \rightarrow \pi^- K^+,$<br>$D^{*+} \rightarrow \pi^+ D^0, D^0 \rightarrow K_L \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ p \bar{p} \gamma \gamma \gamma \gamma)$   | 155    | 151       | 1     | 156       |
| 157   | $e^+e^- \rightarrow \rho^+ \bar{D}^{*-} \bar{\Delta}^0 \Sigma_c^{*0}, \rho^+ \rightarrow \pi^0 \pi^+, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{\Delta}^0 \rightarrow \pi^0 \bar{n}, \Sigma_c^{*0} \rightarrow \pi^- \Lambda_c^+, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^+,$<br>$\Lambda_c^+ \rightarrow \pi^+ \eta \Sigma^0, \eta \rightarrow \gamma \gamma, \Sigma^0 \rightarrow \Lambda \gamma, \Lambda \rightarrow \pi^- p$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma)$  | 156    | 152       | 1     | 157       |
| 158   | $e^+e^- \rightarrow \pi^+ \pi^- K^0 K^- K^- K^{*+} D^{*+} \bar{D}^{*0}, K^0 \rightarrow K_L, K^{*+} \rightarrow \pi^+ K^0, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*0} \rightarrow \pi^0 \bar{D}^0, K^0 \rightarrow K_S,$<br>$D^0 \rightarrow \pi^+ \pi^- K_S, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, K_S \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^+ \pi^-, K_S \rightarrow \pi^0 \pi^0$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 157    | 153       | 1     | 158       |

| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 159   | $e^+e^- \rightarrow \rho^0 \pi^+ \rho^- \eta D^{*+} \bar{D}^{*-}, \rho^0 \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, \eta \rightarrow \gamma \gamma, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^0 D^-,$<br>$D^0 \rightarrow \pi^+ \pi^- \bar{K}^*, D^- \rightarrow \mu^- \bar{\nu}_\mu \pi^- K^+, \bar{K}^* \rightarrow \pi^+ K^-$<br>$(e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma)$                                     | 158    | 154       | 1     | 159       |
| 160   | $e^+e^- \rightarrow \pi^+ K^- D_s^+ n \bar{\Lambda}_c^-, D_s^+ \rightarrow \pi^+ f_0(980), \bar{\Lambda}_c^- \rightarrow \pi^0 \rho^0 \bar{\Sigma}^-, f_0(980) \rightarrow \pi^+ \pi^-, \rho^0 \rightarrow \pi^+ \pi^-, \bar{\Sigma}^- \rightarrow \pi^0 \bar{p}$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- n \bar{p} \gamma \gamma \gamma)$   | 159    | 155       | 1     | 160       |
| 161   | $e^+e^- \rightarrow D^+ \bar{D}^{*-}, D^+ \rightarrow \mu^+ \nu_\mu \bar{K}^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, \bar{K}^0 \rightarrow K_S, \bar{D}^0 \rightarrow \pi^+ \pi^- K^*, K_S \rightarrow \pi^+ \pi^-,$<br>$K^* \rightarrow \pi^0 K^0, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma)$   | 160    | 156       | 1     | 161       |
| 162   | $e^+e^- \rightarrow \rho^0 K^+ K^+ K^- D^{*0} D_s^-, \rho^0 \rightarrow \pi^+ \pi^-, D^{*0} \rightarrow \pi^0 D^0, D_s^- \rightarrow \rho^- \phi, D^0 \rightarrow \pi^0 \pi^+ \pi^- \bar{K}^*, \rho^- \rightarrow \pi^0 \pi^-,$<br>$\phi \rightarrow K_L K_S, \bar{K}^* \rightarrow \pi^+ K^-, K_S \rightarrow \pi^0 \pi^0$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 161    | 157       | 1     | 162       |
| 163   | $e^+e^- \rightarrow \pi^0 \pi^+ \rho^- K^* \bar{K}^* D^{*+} \bar{D}^{*-}, \rho^- \rightarrow \pi^0 \pi^-, K^* \rightarrow \pi^- K^+, \bar{K}^* \rightarrow \pi^+ K^-, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*-} \rightarrow \pi^0 D^-,$<br>$D^+ \rightarrow \mu^+ \nu_\mu \pi^+ K^-, D^- \rightarrow e^- \bar{\nu}_e K^0, K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 162    | 158       | 1     | 163       |
| 164   | $e^+e^- \rightarrow \pi^+ D^{*+} \bar{D}^{*-} n \bar{p}, D^{*+} \rightarrow \pi^0 D^+, \bar{D}^{*-} \rightarrow \pi^0 D^-, D^+ \rightarrow e^+ \nu_e \bar{K}^0, D^- \rightarrow \pi^- \pi^- K^+, \bar{K}^0 \rightarrow K_S,$<br>$K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ n \bar{p} \gamma \gamma \gamma)$   | 163    | 159       | 1     | 164       |
| 165   | $e^+e^- \rightarrow \pi^+ D^- D^0, D^- \rightarrow \rho^0 \pi^- K^*, D^0 \rightarrow \pi^0 \pi^+ \pi^- K_S, \rho^0 \rightarrow \pi^+ \pi^-, K^* \rightarrow \pi^0 K^0, K_S \rightarrow \pi^0 \pi^0,$<br>$K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$  | 164    | 160       | 1     | 165       |
| 166   | $e^+e^- \rightarrow \pi^0 \pi^0 \rho^0 \pi^+ \pi^+ \rho^- D_2^{*-} D^0, \pi^0 \rightarrow e^+ e^-, \rho^0 \rightarrow \pi^+ \pi^-, \rho^- \rightarrow \pi^0 \pi^-, D_2^{*-} \rightarrow \pi^- \bar{D}^{*0}, D^0 \rightarrow K_L \pi^+ \pi^-,$<br>$\bar{D}^{*0} \rightarrow \bar{D}^0 \gamma, \bar{D}^0 \rightarrow \mu^- \bar{\nu}_\mu K^{*+}, K^{*+} \rightarrow \pi^+ K^0, K^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow e^+ e^- \mu^- \bar{\nu}_\mu K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma)$ | 165    | 161       | 1     | 166       |
| 167   | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- D^{*+} \bar{D}^{*-}, \rho^0 \rightarrow \pi^+ \pi^-, D^{*+} \rightarrow \pi^+ D^0, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D^0 \rightarrow K_L \eta, \bar{D}^0 \rightarrow \pi^0 \pi^- K^+,$<br>$\eta \rightarrow \pi^0 \pi^+ \pi^-$<br>$(e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma)$   | 166    | 162       | 1     | 167       |
| 168   | $e^+e^- \rightarrow \rho^+ K^- D_s^{*+} n \bar{\Lambda}_c^-, \rho^+ \rightarrow \pi^0 \pi^+, D_s^{*+} \rightarrow D_s^+ \gamma, \bar{\Lambda}_c^- \rightarrow \pi^0 \pi^0 \pi^- K^+ \bar{p}, D_s^+ \rightarrow \pi^+ \eta', \eta' \rightarrow \rho^0 \gamma,$<br>$\rho^0 \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 167    | 163       | 1     | 168       |
| 169   | $e^+e^- \rightarrow \pi^0 \pi^- \omega D^{*+} \bar{D}_1^{*0}, \omega \rightarrow \pi^0 \pi^+ \pi^-, D^{*+} \rightarrow \pi^0 D^+, \bar{D}_1^{*0} \rightarrow \pi^+ \bar{D}^{*-}, D^+ \rightarrow \pi^0 \pi^+ K^+ K^-, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0,$<br>$\bar{D}^0 \rightarrow e^- \bar{\nu}_e K^+$<br>$(e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 168    | 164       | 1     | 169       |
| 170   | $e^+e^- \rightarrow \pi^+ \pi^- \bar{D}^{*-} D_1^{*+}, \bar{D}^{*-} \rightarrow \pi^- \bar{D}^0, D_1^{*+} \rightarrow \pi^0 D^{*+}, \bar{D}^0 \rightarrow \pi^0 \pi^+ \pi^- K^*, D^{*+} \rightarrow \pi^+ D^0, K^* \rightarrow \pi^0 K^0,$<br>$D^0 \rightarrow \pi^0 \pi^+ K^-, K^0 \rightarrow K_S, K_S \rightarrow \pi^+ \pi^-$<br>$(e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma)$   | 169    | 165       | 1     | 170       |





| index | event tree<br>(event initial-final states)   | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|--------|-----------|-------|-----------|
| 185   | $e^+e^- \rightarrow K^{*+}D^{*0}D_s^-, K^{*+} \rightarrow \pi^+K^0, D^{*0} \rightarrow \pi^0D^0, D_s^- \rightarrow \rho^-\eta', K^0 \rightarrow K_L, D^0 \rightarrow \pi^0\pi^+K^-,$<br>$\rho^- \rightarrow \pi^0\pi^-, \eta' \rightarrow \pi^+\pi^-\eta, \eta \rightarrow \pi^0\pi^0\pi^0$<br>$(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$  | 184    | 180       | 1     | 185       |
| 186   | $e^+e^- \rightarrow \bar{D}^{*-}\bar{n}\Lambda_c^+, \bar{D}^{*-} \rightarrow \pi^0D^-, \Lambda_c^+ \rightarrow \omega\Sigma^+, D^- \rightarrow \pi^0K_L\pi^-, \omega \rightarrow \pi^0\pi^+\pi^-, \Sigma^+ \rightarrow \pi^+n$<br>$(e^+e^- \rightarrow K_L\pi^+\pi^+\pi^-\pi^-\bar{n}\gamma\gamma\gamma\gamma\gamma)$  | 185    | 181       | 1     | 186       |
| 187   | $e^+e^- \rightarrow \pi^+\pi^+\pi^-\bar{D}^{*-}D^{*0}, \bar{D}^{*-} \rightarrow \pi^0D^-, D^{*0} \rightarrow \pi^0D^0, D^- \rightarrow e^-\bar{\nu}_e\pi^-K^+, D^0 \rightarrow \pi^0K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma)$  | 186    | 182       | 1     | 187       |
| 188   | $e^+e^- \rightarrow \pi^-K^+D_s^{*-}D_1'^+, D_s^{*-} \rightarrow D_s^-\gamma, D_1'^+ \rightarrow \pi^+D^{*0}, D_s^- \rightarrow e^-\bar{\nu}_e\phi, D^{*0} \rightarrow \pi^0D^0, \phi \rightarrow \pi^-\rho^+,$<br>$D^0 \rightarrow \pi^+K^-, \rho^+ \rightarrow \pi^0\pi^+, \pi^0 \rightarrow e^+e^-$<br>$(e^+e^- \rightarrow e^+e^-e^-\bar{\nu}_e\pi^+\pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma)$  | 187    | 183       | 1     | 188       |
| 189   | $e^+e^- \rightarrow \pi^0\bar{K}^*D^-D_s^{*+}, \bar{K}^* \rightarrow \pi^0\bar{K}^0, D^- \rightarrow e^-\bar{\nu}_eK^0, D_s^{*+} \rightarrow D_s^+\gamma, \bar{K}^0 \rightarrow K_S, K^0 \rightarrow K_S,$<br>$D_s^+ \rightarrow \bar{K}^*K^+, K_S \rightarrow \pi^0\pi^0, K_S \rightarrow \pi^+\pi^-, \bar{K}^* \rightarrow \pi^+K^-$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 188    | 184       | 1     | 189       |
| 190   | $e^+e^- \rightarrow \pi^+\rho^-K^+D_s^-D_1'^0, \rho^- \rightarrow \pi^0\pi^-, D_s^- \rightarrow \mu^-\bar{\nu}_\mu\phi, D_1'^0 \rightarrow \pi^-D^{*+}, \phi \rightarrow K^+K^-, D^{*+} \rightarrow \pi^0D^+,$<br>$D^+ \rightarrow \mu^+\nu_\mu\pi^+K^-$<br>$(e^+e^- \rightarrow \mu^+\mu^-\nu_\mu\bar{\nu}_\mu\pi^+\pi^-\pi^-K^+K^+K^-K^-\gamma\gamma\gamma\gamma)$   | 189    | 185       | 1     | 190       |
| 191   | $e^+e^- \rightarrow \pi^0\rho^0\pi^-\rho^+\bar{D}^{*0}D_0^{*0}, \rho^0 \rightarrow \pi^+\pi^-, \rho^+ \rightarrow \pi^0\pi^+, \bar{D}^{*0} \rightarrow \bar{D}^0\gamma, D_0^{*0} \rightarrow \pi^-D^+, \bar{D}^0 \rightarrow \rho^0K^*,$<br>$D^+ \rightarrow \pi^+\pi^+K^{*-}, \rho^0 \rightarrow \pi^+\pi^-, K^* \rightarrow \pi^-K^+, K^{*-} \rightarrow \pi^0K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 190    | 186       | 1     | 191       |
| 192   | $e^+e^- \rightarrow \pi^0\pi^0\rho^0\pi^+\bar{D}^{*-}D^{*0}, \rho^0 \rightarrow \pi^+\pi^-, \bar{D}^{*-} \rightarrow \pi^0D^-, D^{*0} \rightarrow D^0\gamma, D^- \rightarrow \pi^0\pi^0\pi^0\pi^-, D^0 \rightarrow \mu^+\nu_\mu\rho^-,$<br>$\rho^- \rightarrow \pi^0\pi^-$<br>$(e^+e^- \rightarrow \mu^+\nu_\mu\pi^+\pi^+\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 191    | 187       | 1     | 192       |
| 193   | $e^+e^- \rightarrow \pi^0\pi^0K^{*+}D_s^{*-}D_0^{*0}, K^{*+} \rightarrow \pi^+K^0, D_s^{*-} \rightarrow D_s^-\gamma, D_0^{*0} \rightarrow \pi^0D^0, K^0 \rightarrow K_S, D_s^- \rightarrow \mu^-\bar{\nu}_\mu\phi,$<br>$D^0 \rightarrow \mu^+\nu_\mu K^{*-}, K_S \rightarrow \pi^+\pi^-, \phi \rightarrow K_LK_S, K^{*-} \rightarrow \pi^-\bar{K}^0, K_S \rightarrow \pi^+\pi^-, \bar{K}^0 \rightarrow K_L$<br>$(e^+e^- \rightarrow \mu^+\mu^-\nu_\mu\bar{\nu}_\mu K_LK_L\pi^+\pi^+\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$           | 192    | 188       | 1     | 193       |
| 194   | $e^+e^- \rightarrow K^-\bar{D}^{*0}\Lambda\bar{\Lambda}D_{s1}^{\prime+}, \bar{D}^{*0} \rightarrow \bar{D}^0\gamma, \Lambda \rightarrow \pi^0n, \bar{\Lambda} \rightarrow \pi^0\bar{n}, D_{s1}^{\prime+} \rightarrow D_s^+\gamma, \bar{D}^0 \rightarrow \pi^-\rho^+,$<br>$D_s^+ \rightarrow e^+\nu_e\phi, \rho^+ \rightarrow \pi^0\pi^+, \phi \rightarrow K^+K^-$<br>$(e^+e^- \rightarrow e^+\nu_e\pi^+\pi^-K^+K^-K^-\bar{n}\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$  | 193    | 189       | 1     | 194       |
| 195   | $e^+e^- \rightarrow \pi^0\rho^-D^{*+}\bar{D}^{*0}, \rho^- \rightarrow \pi^0\pi^-, D^{*+} \rightarrow \pi^+D^0, \bar{D}^{*0} \rightarrow \pi^0\bar{D}^0, D^0 \rightarrow e^+\nu_e\pi^-\bar{K}^0, \bar{D}^0 \rightarrow \pi^+\pi^-K^+K^-,$<br>$\bar{K}^0 \rightarrow K_S, K_S \rightarrow \pi^+\pi^-$<br>$(e^+e^- \rightarrow e^+\nu_e\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma)$   | 194    | 190       | 1     | 195       |
| 196   | $e^+e^- \rightarrow K^+K^-\bar{D}^0D^{*0}, \bar{D}^0 \rightarrow \rho^-K^{*+}, D^{*0} \rightarrow D^0\gamma, \rho^- \rightarrow \pi^0\pi^-, K^{*+} \rightarrow \pi^0K^+, D^0 \rightarrow \pi^0\pi^+K^-$<br>$(e^+e^- \rightarrow \pi^+\pi^-K^+K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 195    | 191       | 1     | 196       |
| 197   | $e^+e^- \rightarrow \bar{K}^0K^{*+}\bar{D}^{*-}\bar{p}\Lambda_c^+, \bar{K}^0 \rightarrow K_S, K^{*+} \rightarrow \pi^+K^0, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, \Lambda_c^+ \rightarrow \pi^0\pi^0\omega\Sigma^+, K_S \rightarrow \pi^+\pi^-,$<br>$K^0 \rightarrow K_S, \bar{D}^0 \rightarrow \pi^0\pi^-K^+, \omega \rightarrow \pi^0\pi^+\pi^-, \Sigma^+ \rightarrow \pi^0p, K_S \rightarrow \pi^0\pi^0$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+p\bar{p}\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$ | 196    | 192       | 1     | 197       |

| index | event tree<br>(event initial-final states)  | iEvtTr | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|--------|-----------|-------|-----------|
| 198   | $e^+e^- \rightarrow \pi^0\pi^0\omega K^{*+}D^{*0}D_s^-, \omega \rightarrow \pi^0\pi^+\pi^-, K^{*+} \rightarrow \pi^+K^0, D^{*0} \rightarrow \pi^0D^0, D_s^- \rightarrow \rho^-\eta', K^0 \rightarrow K_S,$<br>$D^0 \rightarrow \pi^0\pi^+K^-, \rho^- \rightarrow \pi^0\pi^-, \eta' \rightarrow \pi^+\pi^-\eta, K_S \rightarrow \pi^0\pi^0, \eta \rightarrow \pi^0\pi^+\pi^-$<br>$(e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$                                | 197    | 193       | 1     | 198       |
| 199   | $e^+e^- \rightarrow \pi^0\pi^-\eta'\bar{D}_0^{*0}D_1^{*+}, \pi^0 \rightarrow e^+e^-, \eta' \rightarrow \pi^0\pi^0\eta, \bar{D}_0^{*0} \rightarrow \pi^+D^-, D_1^{*+} \rightarrow \pi^0D^{*+}, \eta \rightarrow \pi^0\pi^0\pi^0,$<br>$D^- \rightarrow \pi^0\pi^-K^*, D^{*+} \rightarrow \pi^+D^0, K^* \rightarrow \pi^0K^0, D^0 \rightarrow e^+\nu_e K^{*-}, K^0 \rightarrow K_L, K^{*-} \rightarrow \pi^0K^-$<br>$(e^+e^- \rightarrow e^+e^+e^-\nu_e K_L\pi^+\pi^+\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$ | 198    | 194       | 1     | 199       |
| 200   | $e^+e^- \rightarrow \pi^+\pi^-K^0\bar{K}^0K^+K^-D^{*+}\bar{D}^{*-}, K^0 \rightarrow K_S, \bar{K}^0 \rightarrow K_S, D^{*+} \rightarrow \pi^0D^+, \bar{D}^{*-} \rightarrow \pi^-\bar{D}^0, K_S \rightarrow \pi^0\pi^0,$<br>$K_S \rightarrow \pi^+\pi^-, D^+ \rightarrow \pi^+\pi^+K^-, \bar{D}^0 \rightarrow e^-\bar{\nu}_e\pi^0K^+$<br>$(e^+e^- \rightarrow e^-\bar{\nu}_e\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma)$   | 199    | 195       | 1     | 200       |

Table 2: Event initial-final states.

| index | event initial-final states   | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|-----------|-------|-----------|
| 1     | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma\gamma\gamma$  | 0         | 2     | 2         |
| 2     | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                    | 22        | 2     | 4         |
| 3     | $e^+e^- \rightarrow e^+\nu_e K_L \pi^+\pi^+\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma$  | 39        | 2     | 6         |
| 4     | $e^+e^- \rightarrow \mu^+\nu_\mu \pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma$   | 80        | 2     | 8         |
| 5     | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                            | 4         | 1     | 9         |
| 6     | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-p\bar{p}\gamma\gamma\gamma\gamma$   | 5         | 1     | 10        |
| 7     | $e^+e^- \rightarrow e^-\bar{\nu}_e \mu^+\nu_\mu \pi^+\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma$                                    | 6         | 1     | 11        |
| 8     | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                                    | 7         | 1     | 12        |
| 9     | $e^+e^- \rightarrow K_L \pi^+\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ | 8         | 1     | 13        |
| 10    | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                | 9         | 1     | 14        |
| 11    | $e^+e^- \rightarrow \mu^+\nu_\mu \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma$  | 10        | 1     | 15        |
| 12    | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                                   | 11        | 1     | 16        |
| 13    | $e^+e^- \rightarrow e^+e^-e^-\bar{\nu}_e \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ | 12        | 1     | 17        |
| 14    | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma$                                    | 13        | 1     | 18        |
| 15    | $e^+e^- \rightarrow \mu^-\nu_\mu \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+n\bar{p}\gamma\gamma\gamma\gamma$                                | 14        | 1     | 19        |
| 16    | $e^+e^- \rightarrow \mu^+\nu_\mu \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$             | 15        | 1     | 20        |
| 17    | $e^+e^- \rightarrow \pi^+\pi^-K^+nn\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 16        | 1     | 21        |
| 18    | $e^+e^- \rightarrow \mu^+\nu_\mu K_L \pi^+K^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 17        | 1     | 22        |
| 19    | $e^+e^- \rightarrow e^+\nu_e \pi^+\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$  | 18        | 1     | 23        |
| 20    | $e^+e^- \rightarrow \pi^+\pi^+\pi^-\pi^-\pi^-\bar{n}p\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                               | 19        | 1     | 24        |
| 21    | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                    | 20        | 1     | 25        |
| 22    | $e^+e^- \rightarrow e^+\nu_e K_L \pi^+\pi^+\pi^-\pi^-\pi^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                                      | 21        | 1     | 26        |
| 23    | $e^+e^- \rightarrow e^-\nu_e \mu^+\mu^-\nu_\mu \bar{\nu}_\mu \pi^+\pi^+\pi^-\gamma\gamma$  | 1         | 1     | 27        |
| 24    | $e^+e^- \rightarrow \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-p\bar{p}\gamma\gamma\gamma\gamma$  | 23        | 1     | 28        |
| 25    | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-\pi^-K^+K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$               | 24        | 1     | 29        |
| 26    | $e^+e^- \rightarrow \mu^-\bar{\nu}_\mu \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-n\bar{n}\gamma\gamma\gamma\gamma$                                     | 25        | 1     | 30        |
| 27    | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^+K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                      | 26        | 1     | 31        |
| 28    | $e^+e^- \rightarrow e^-\bar{\nu}_e K_L \pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma\gamma$                                       | 27        | 1     | 32        |
| 29    | $e^+e^- \rightarrow K_L \pi^+\pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-\pi^-K^+K^-\gamma\gamma\gamma$   | 28        | 1     | 33        |
| 30    | $e^+e^- \rightarrow \mu^+\nu_\mu \pi^+\pi^+\pi^-\pi^-K^-\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                      | 29        | 1     | 34        |
| 31    | $e^+e^- \rightarrow e^-\bar{\nu}_e K_L \pi^+\pi^+\pi^+\pi^+\pi^-\pi^-\pi^-K^+\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ | 30        | 1     | 35        |
| 32    | $e^+e^- \rightarrow \mu^-\bar{\nu}_\mu K_L \pi^+\pi^+\pi^-K^+K^-\gamma\gamma\gamma\gamma$  | 31        | 1     | 36        |

| index | event initial-final states  | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|-----------|-------|-----------|
| 33    | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma\gamma$   | 32        | 1     | 37        |
| 34    | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ p \bar{p} \gamma\gamma\gamma\gamma$   | 33        | 1     | 38        |
| 35    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 34        | 1     | 39        |
| 36    | $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma\gamma\gamma$   | 35        | 1     | 40        |
| 37    | $e^+e^- \rightarrow e^+ e^- \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- p \bar{p} \gamma\gamma\gamma\gamma$   | 36        | 1     | 41        |
| 38    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 37        | 1     | 42        |
| 39    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- \gamma\gamma\gamma\gamma$   | 38        | 1     | 43        |
| 40    | $e^+e^- \rightarrow e^+ e^- \nu_e \bar{\nu}_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma\gamma\gamma\gamma$   | 2         | 1     | 44        |
| 41    | $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma\gamma\gamma\gamma$   | 40        | 1     | 45        |
| 42    | $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^- K^- K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 41        | 1     | 46        |
| 43    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 42        | 1     | 47        |
| 44    | $e^+e^- \rightarrow e^+ e^- \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma\gamma\gamma\gamma$   | 43        | 1     | 48        |
| 45    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 44        | 1     | 49        |
| 46    | $e^+e^- \rightarrow e^+ e^- K_L K_L \pi^+ \pi^- K^+ K^+ K^- K^- \gamma\gamma\gamma\gamma\gamma$   | 45        | 1     | 50        |
| 47    | $e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^- \pi^- K^+ n \bar{p} \gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 46        | 1     | 51        |
| 48    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 47        | 1     | 52        |
| 49    | $e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma$   | 48        | 1     | 53        |
| 50    | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^- \pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 49        | 1     | 54        |
| 51    | $e^+e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                                       | 50        | 1     | 55        |
| 52    | $e^+e^- \rightarrow e^- \bar{\nu}_e K_L \pi^+ \pi^+ \pi^- \pi^- K^+ K^+ K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 51        | 1     | 56        |
| 53    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$   | 52        | 1     | 57        |
| 54    | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ \bar{n} p \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                 | 53        | 1     | 58        |
| 55    | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L K_L \pi^+ \pi^+ \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$             | 54        | 1     | 59        |
| 56    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma\gamma$   | 55        | 1     | 60        |
| 57    | $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^- \pi^- K^+ K^- \bar{n} p \gamma\gamma\gamma\gamma\gamma$   | 56        | 1     | 61        |
| 58    | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma\gamma\gamma$   | 57        | 1     | 62        |
| 59    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma\gamma$   | 58        | 1     | 63        |
| 60    | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                   | 59        | 1     | 64        |
| 61    | $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^- n \bar{p} \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$ | 60        | 1     | 65        |
| 62    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                 | 61        | 1     | 66        |
| 63    | $e^+e^- \rightarrow e^+ e^- \nu_e \bar{\nu}_e K_L K_L \pi^+ \pi^- \gamma\gamma\gamma\gamma$   | 62        | 1     | 67        |
| 64    | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma\gamma$                   | 63        | 1     | 68        |

| index | event initial-final states  | iEvtIFSts | nEvts | nCmltEvts |
|-------|---|-----------|-------|-----------|
| 65    | $e^+e^- \rightarrow e^-\bar{\nu}_e K_L K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma$   | 64        | 1     | 69        |
| 66    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 65        | 1     | 70        |
| 67    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 66        | 1     | 71        |
| 68    | $e^+e^- \rightarrow \pi^+ \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 67        | 1     | 72        |
| 69    | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 68        | 1     | 73        |
| 70    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 69        | 1     | 74        |
| 71    | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 70        | 1     | 75        |
| 72    | $e^+e^- \rightarrow \mu^+ \nu_\mu K_L K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 71        | 1     | 76        |
| 73    | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma$   | 72        | 1     | 77        |
| 74    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 73        | 1     | 78        |
| 75    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^- \pi^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 74        | 1     | 79        |
| 76    | $e^+e^- \rightarrow e^- \nu_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma$   | 75        | 1     | 80        |
| 77    | $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                                | 76        | 1     | 81        |
| 78    | $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^- K^+ K^+ K^- K^- K^- \gamma \gamma \gamma \gamma \gamma$   | 77        | 1     | 82        |
| 79    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 78        | 1     | 83        |
| 80    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 79        | 1     | 84        |
| 81    | $e^+e^- \rightarrow e^+ e^+ e^- \nu_e K_L K_L \pi^+ \pi^+ \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma$   | 3         | 1     | 85        |
| 82    | $e^+e^- \rightarrow K_L K_L K_L \pi^+ \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 81        | 1     | 86        |
| 83    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ | 82        | 1     | 87        |
| 84    | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 83        | 1     | 88        |
| 85    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$  | 84        | 1     | 89        |
| 86    | $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                                  | 85        | 1     | 90        |
| 87    | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 86        | 1     | 91        |
| 88    | $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma$   | 87        | 1     | 92        |
| 89    | $e^+e^- \rightarrow e^+ \nu_e \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^-$  | 88        | 1     | 93        |
| 90    | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma$   | 89        | 1     | 94        |
| 91    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                           | 90        | 1     | 95        |
| 92    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 91        | 1     | 96        |
| 93    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                               | 92        | 1     | 97        |
| 94    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 93        | 1     | 98        |
| 95    | $e^+e^- \rightarrow K_L K_L \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 94        | 1     | 99        |
| 96    | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 95        | 1     | 100       |



| index | event initial-final states   | iEvtIFSts | nEvts | nCmltEvts |
|-------|--|-----------|-------|-----------|
| 129   | $e^+e^- \rightarrow K_L K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 128       | 1     | 133       |
| 130   | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 129       | 1     | 134       |
| 131   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma$  | 130       | 1     | 135       |
| 132   | $e^+e^- \rightarrow \pi^+ \pi^- \gamma$               | 131       | 1     | 136       |
| 133   | $e^+e^- \rightarrow e^+ e^- \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$ | 132       | 1     | 137       |
| 134   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 133       | 1     | 138       |
| 135   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 134       | 1     | 139       |
| 136   | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma$   | 135       | 1     | 140       |
| 137   | $e^+e^- \rightarrow e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 136       | 1     | 141       |
| 138   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                                     | 137       | 1     | 142       |
| 139   | $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma$   | 138       | 1     | 143       |
| 140   | $e^+e^- \rightarrow \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma$   | 139       | 1     | 144       |
| 141   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^- \pi^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 140       | 1     | 145       |
| 142   | $e^+e^- \rightarrow e^+ e^- e^- \bar{\nu}_e \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 141       | 1     | 146       |
| 143   | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 142       | 1     | 147       |
| 144   | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 143       | 1     | 148       |
| 145   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 144       | 1     | 149       |
| 146   | $e^+e^- \rightarrow e^+ \nu_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 145       | 1     | 150       |
| 147   | $e^+e^- \rightarrow e^+ e^- \nu_e \bar{\nu}_e K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                             | 146       | 1     | 151       |
| 148   | $e^+e^- \rightarrow K_L K_L K_L K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- p \bar{p} \gamma \gamma$   | 147       | 1     | 152       |
| 149   | $e^+e^- \rightarrow K_L K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                                       | 148       | 1     | 153       |
| 150   | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^- \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 149       | 1     | 154       |
| 151   | $e^+e^- \rightarrow e^+ e^- K_L K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 150       | 1     | 155       |
| 152   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ p \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 151       | 1     | 156       |
| 153   | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ \bar{n} p \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 152       | 1     | 157       |
| 154   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- \pi^- K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                                 | 153       | 1     | 158       |
| 155   | $e^+e^- \rightarrow \mu^- \bar{\nu}_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- \pi^- K^+ K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                             | 154       | 1     | 159       |
| 156   | $e^+e^- \rightarrow \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- K^- n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 155       | 1     | 160       |
| 157   | $e^+e^- \rightarrow \mu^+ \nu_\mu K_L \pi^+ \pi^+ \pi^- \pi^- \pi^- \gamma \gamma$   | 156       | 1     | 161       |
| 158   | $e^+e^- \rightarrow K_L \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 157       | 1     | 162       |
| 159   | $e^+e^- \rightarrow e^- \bar{\nu}_e \mu^+ \nu_\mu \pi^+ \pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ K^- K^- \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$                           | 158       | 1     | 163       |
| 160   | $e^+e^- \rightarrow e^+ \nu_e \pi^+ \pi^+ \pi^- \pi^- \pi^- K^+ n \bar{p} \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma \gamma$   | 159       | 1     | 164       |







Table 3: Exclusive event branches matched with  $e^+e^- \rightarrow D^{*+} + \text{anything}$ .

| index | exclusive event branch matched with $e^+e^- \rightarrow D^{*+} + \text{anything}$          | iEvtBrIncEvtBr1 | nEtrs | nCmltEtrs |
|-------|--|-----------------|-------|-----------|
| 1     | $e^+e^- \rightarrow \pi^0 \pi^- D^{*+} \bar{D}^{*0}$                                       | 1               | 3     | 3         |
| 2     | $e^+e^- \rightarrow D^- D^{*+}$  | 0               | 2     | 5         |
| 3     | $e^+e^- \rightarrow \pi^0 D^{*+} \bar{D}^{*-}$   | 2               | 2     | 7         |
| 4     | $e^+e^- \rightarrow D^{*+} \bar{D}^{*-}$   | 13              | 2     | 9         |
| 5     | $e^+e^- \rightarrow \pi^0 \rho^- \omega D^{*+} \bar{D}^{*0}$                               | 26              | 2     | 11        |
| 6     | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- \pi^- D^{*+} \bar{D}^{*0}$                          | 5               | 1     | 12        |
| 7     | $e^+e^- \rightarrow \pi^0 \eta \eta \omega D^{*+} \bar{D}^{*-}$                            | 6               | 1     | 13        |
| 8     | $e^+e^- \rightarrow \pi^- \rho^+ D^{*+} \bar{D}^{*-}$                                      | 7               | 1     | 14        |
| 9     | $e^+e^- \rightarrow D^{*+} nn \bar{n} \bar{\Lambda}_c^-$                                   | 8               | 1     | 15        |
| 10    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^+ \pi^- K^+ K^- D^{*+} \bar{D}^{*-}$                  | 9               | 1     | 16        |
| 11    | $e^+e^- \rightarrow \pi^- K^+ K^- D^{*+} \bar{D}^{*0}$                                     | 10              | 1     | 17        |
| 12    | $e^+e^- \rightarrow \pi^- \eta D^{*+} p \bar{\Lambda}_c^-$                                 | 11              | 1     | 18        |
| 13    | $e^+e^- \rightarrow \pi^- D^{*+} \Delta^+ \bar{\Sigma}_c^{*-}$                             | 12              | 1     | 19        |
| 14    | $e^+e^- \rightarrow \pi^0 D^{*+} D_2^{*-} \bar{n} \Delta^0$                                | 3               | 1     | 20        |
| 15    | $e^+e^- \rightarrow \pi^0 \pi^- \bar{K}^0 K^{*+} D^{*+} \bar{D}^{*-}$                      | 14              | 1     | 21        |
| 16    | $e^+e^- \rightarrow \eta D^{*+} \bar{D}^{*-}$  | 15              | 1     | 22        |
| 17    | $e^+e^- \rightarrow \rho^+ \rho^- \omega D^{*+} \Delta^- \bar{\Sigma}_c^{*0}$              | 16              | 1     | 23        |
| 18    | $e^+e^- \rightarrow \pi^+ \pi^- \pi^- \omega D^{*+} \bar{D}^0$                             | 17              | 1     | 24        |
| 19    | $e^+e^- \rightarrow \pi^0 \pi^0 \rho^0 \pi^+ \pi^- D^- D^{*+}$                             | 18              | 1     | 25        |
| 20    | $e^+e^- \rightarrow \pi^+ \pi^- D^{*+} n \bar{p} \bar{D}_1^{*0}$                           | 19              | 1     | 26        |
| 21    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^- K^+ K^{*-} D^{*+} \bar{D}^{*0}$                     | 20              | 1     | 27        |
| 22    | $e^+e^- \rightarrow K^0 D^{*+} D_s^{*-}$   | 21              | 1     | 28        |
| 23    | $e^+e^- \rightarrow \bar{K}^0 K^* D^{*+} \bar{D}^{*-}$                                     | 22              | 1     | 29        |
| 24    | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- \pi^- D^{*+} \bar{D}^0$                             | 23              | 1     | 30        |
| 25    | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^+ \pi^- \pi^- D^{*+} D_s^{*-} p \bar{\Lambda}$         | 24              | 1     | 31        |
| 26    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \omega D^{*+} \bar{D}^{*-}$                          | 25              | 1     | 32        |
| 27    | $e^+e^- \rightarrow \pi^0 \pi^+ \pi^- \rho^- \eta D^{*+} \bar{D}^{*0}$                     | 4               | 1     | 33        |
| 28    | $e^+e^- \rightarrow \pi^0 \pi^0 \pi^+ \rho^- D^{*+} \bar{D}^{*-}$                          | 27              | 1     | 34        |
| 29    | $e^+e^- \rightarrow \pi^0 \rho^0 \pi^- \rho^- D^{*+} \bar{D}^{*0} \bar{\Sigma}^+ \Sigma^0$ | 28              | 1     | 35        |
| 30    | $e^+e^- \rightarrow \pi^+ \pi^- \omega D^{*+} \bar{D}^{*-}$                                | 29              | 1     | 36        |
| 31    | $e^+e^- \rightarrow \rho^- K^+ K^- \phi D^{*+} \bar{D}^{*0}$                               | 30              | 1     | 37        |
| 32    | $e^+e^- \rightarrow \pi^- \omega K^{*+} D^{*+} D_s^{*-}$                                   | 31              | 1     | 38        |

| index | exclusive event branch matched with $e^+e^- \rightarrow D^{*+} + \text{anything}$ | iEvtBrIncEvtBr1 | nEtrs | nCmltEtrs |
|-------|---|-----------------|-------|-----------|
| 33    | $e^+e^- \rightarrow \pi^- \rho^+ K^* D^{*+} D_s^{*-}$                             | 32              | 1     | 39        |
| 34    | $e^+e^- \rightarrow \omega D^{*+} \bar{D}^{*-}$                                   | 33              | 1     | 40        |
| 35    | $e^+e^- \rightarrow \pi^0 K^0 K^+ K^{*-} D^{*+} D_s^-$                            | 34              | 1     | 41        |
| 36    | $e^+e^- \rightarrow \pi^0 D^{*+} \bar{D}^{*0} n \bar{p}$                          | 35              | 1     | 42        |
| 37    | $e^+e^- \rightarrow \pi^0 \pi^- \eta D^{*+} \bar{D}^{*0}$                         | 36              | 1     | 43        |
| 38    | $e^+e^- \rightarrow \pi^+ \pi^- K^0 K^- K^- K^{*+} D^{*+} \bar{D}^{*0}$           | 37              | 1     | 44        |
| 39    | $e^+e^- \rightarrow \rho^0 \pi^+ \rho^- \eta D^{*+} \bar{D}^{*-}$                 | 38              | 1     | 45        |
| 40    | $e^+e^- \rightarrow \pi^0 \pi^+ \rho^- K^* \bar{K}^* D^{*+} \bar{D}^{*-}$         | 39              | 1     | 46        |
| 41    | $e^+e^- \rightarrow \pi^+ D^{*+} \bar{D}^{*-} n \bar{p}$                          | 40              | 1     | 47        |
| 42    | $e^+e^- \rightarrow \rho^0 \pi^+ \pi^- D^{*+} \bar{D}^{*-}$                       | 41              | 1     | 48        |
| 43    | $e^+e^- \rightarrow \pi^0 \pi^- \omega D^{*+} \bar{D}_1^{'0}$                     | 42              | 1     | 49        |
| 44    | $e^+e^- \rightarrow \pi^0 \rho^- D^{*+} \bar{D}^{*0}$                             | 43              | 1     | 50        |
| 45    | $e^+e^- \rightarrow \pi^+ \pi^- K^0 \bar{K}^0 K^+ K^- D^{*+} \bar{D}^{*-}$        | 44              | 1     | 51        |