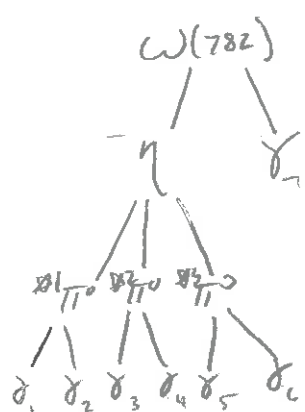


A case with many combos in the subtrees:



$$BR = 4.6 \times 10^{-4}$$

The XML strings:

$$\begin{aligned} & [223, 221, 22, 0.782] [221, 111, 111, 111, 0.547] \\ & [111, 22, 22, 0.135] [111, 22, 22, 0.135] [111, 22, 22, 0.135] \end{aligned}$$

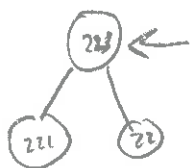
The reconstructed particles (best case scenario)

$$\text{Flags} \rightarrow [0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0]$$

$$\text{Reco} \rightarrow [N_1 \ N_2 \ N_3 \ N_4 \ N_5 \ N_6 \ N_7] \equiv N^*$$

$$N: \text{pdgs} \rightarrow [22, 22, 22, 22, 22, 22, 22, 22]$$

→ Build root constraints $\binom{7}{7}$



get 223 leaves

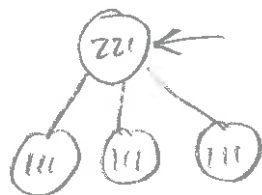
$$\rightarrow \text{we have } [22, 22, 22, 22, 22, 22, 22]$$

generate all possible combinations from unused particles
in $N^* \ T \equiv 0$

$$\text{combos: } [N_1 \ N_2 \ N_3 \ N_4 \ N_5 \ N_6 \ N_7]$$

→ are 223 immediate children of other type
leaves (neutral) NO. don't flag anything

Recurse to 221



get 221 leaves

$$\rightarrow [22, 22, 22, 22, 22, 22]$$

get all combinations from reco set

$$\rightarrow \text{many combos} = \binom{7}{6} = 7 \text{ combos}$$

$$(N_1 \ N_2 \ N_3 \ N_4 \ N_5 \ N_6) \text{ ~~etc~~}$$

$$(N_1 \ N_2 \ N_3 \ N_4 \ N_5 \ N_7)$$

etc