Group meeting
August 23rd, 2024

Instruction responsibilities

- Classes for Fall 2024:
  - PHY 331:
    - 1st lecture completed!
  - PHY 361:
    - 1st lecture completed!
  - Met with new student for independent study
    - Princess Colin

Service responsibilities

- Committee:
  - GlueX Compton Analysis Review Committee:
    - Have author response
    - Need to produce new review

Group responsibilities

- Nothing to report

Timelines

2024

January

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

February

S	M	T	W	T	F	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	1	2

March

S	M	T	W	T	F	S
25	26	27	28	29	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

April

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

May

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

June

S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

July

S	M	T	W	T	F	S
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

August

S	M	T	W	T	F	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Classes start

today

September

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Alan teaches

Registration DNP

October

S	M	T	W	T	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

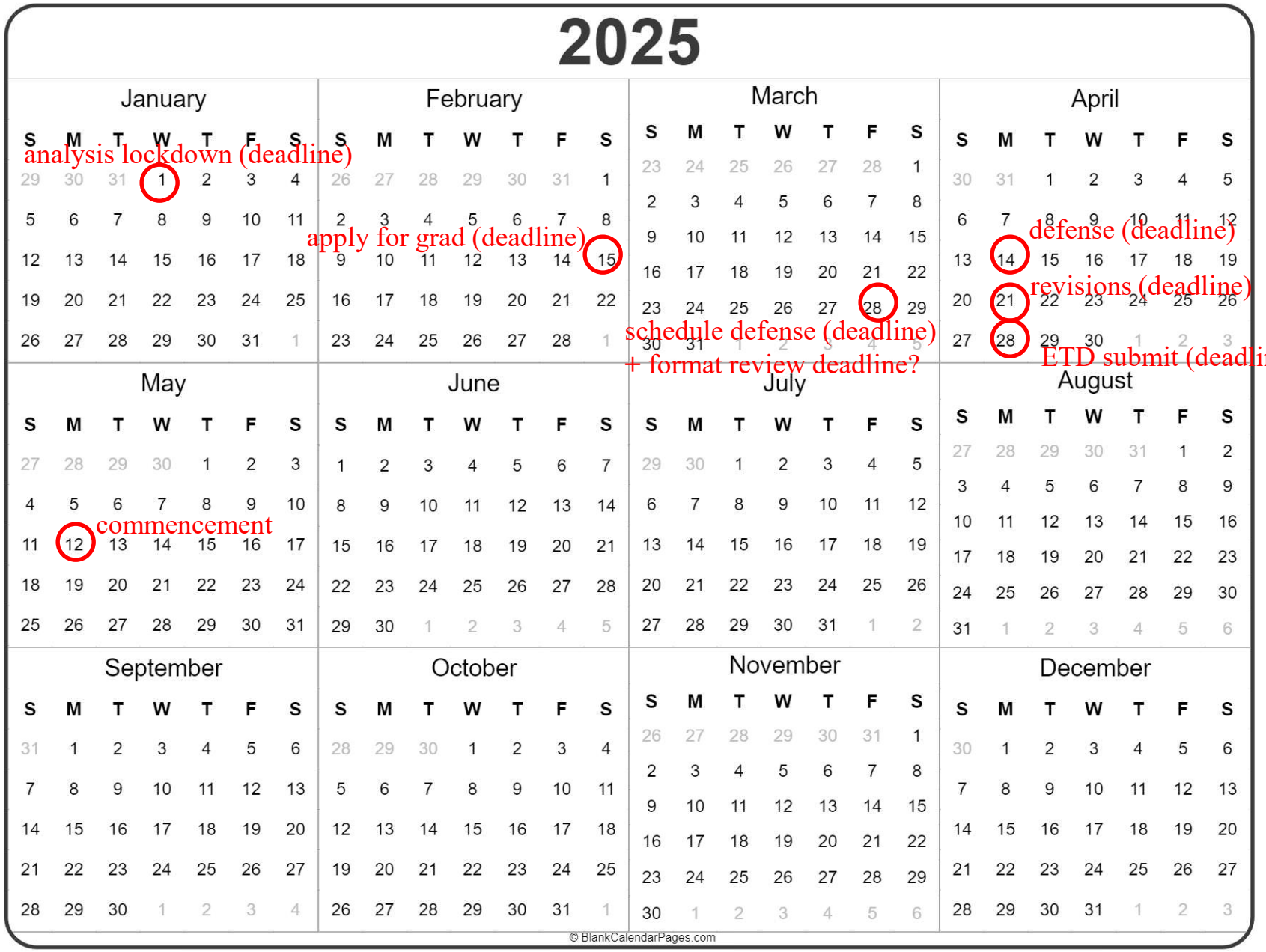
DNP

November

S	M	T	W	T	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4


2025
January
February
March
April
May
June
July
August
September
October
November
December
analysis lockdown (deadline)
apply for grad (deadline)
defense (deadline)
revisions (deadline)
schedule defense (deadline)
+ format review deadline?
ETD submit (deadline)
commencement
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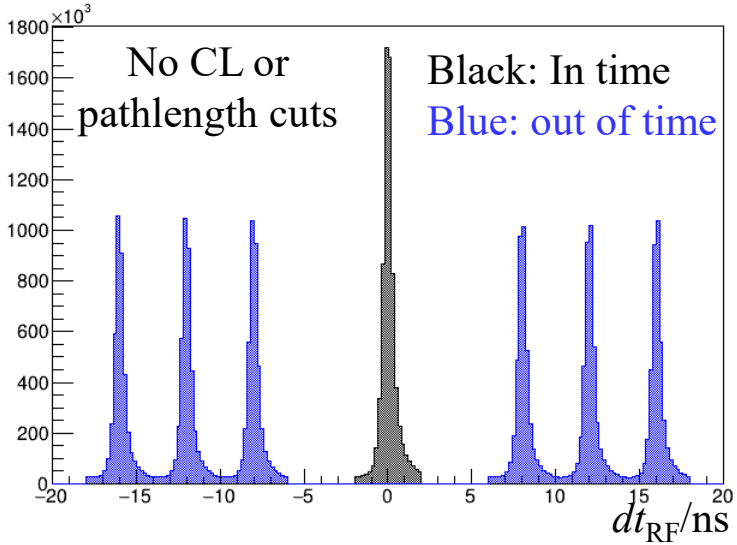
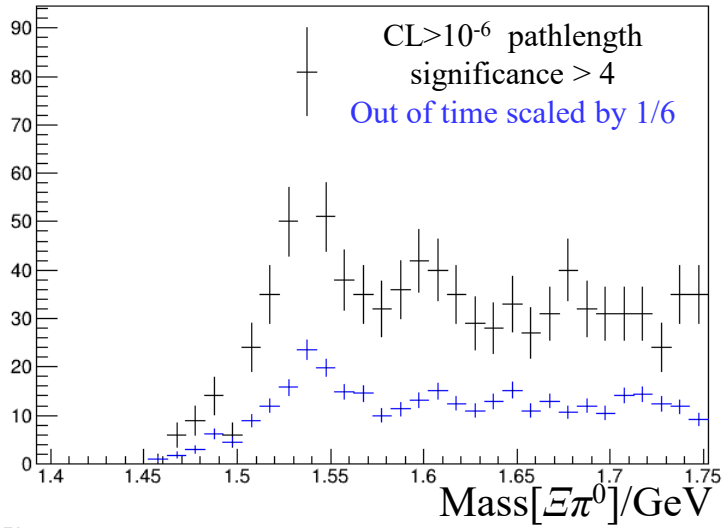
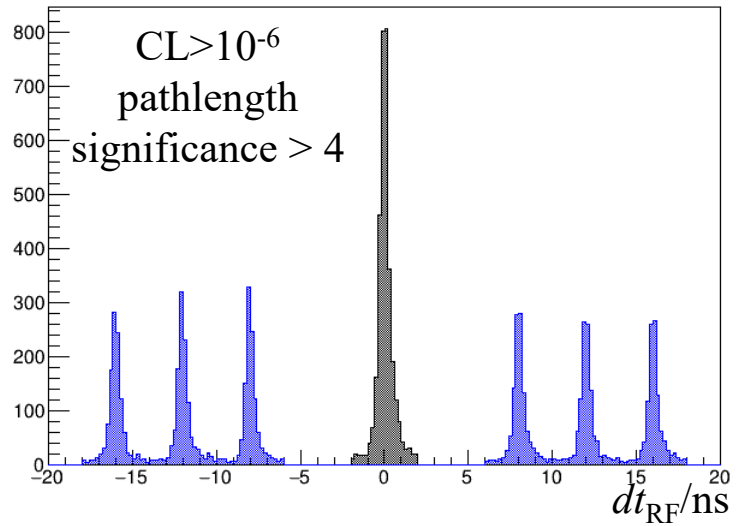
$\Xi^* \rightarrow \Xi\pi^0$ update

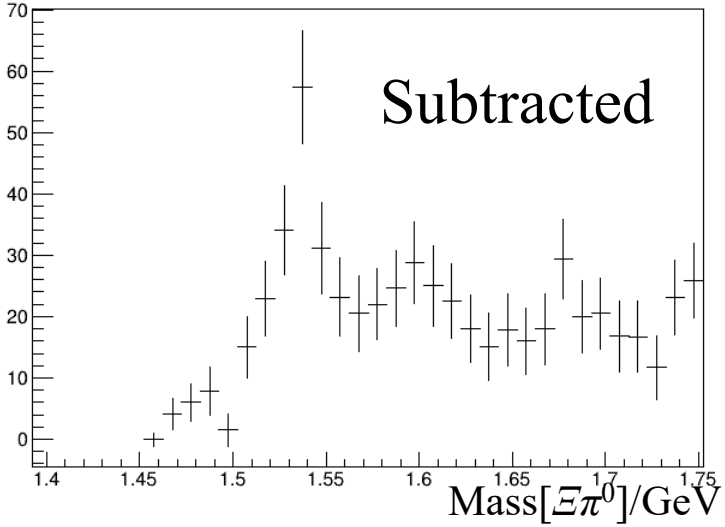
$\Xi^* \rightarrow \Xi\pi^0$ hybrid subtraction

Each photon is associated only with best combo for that photon









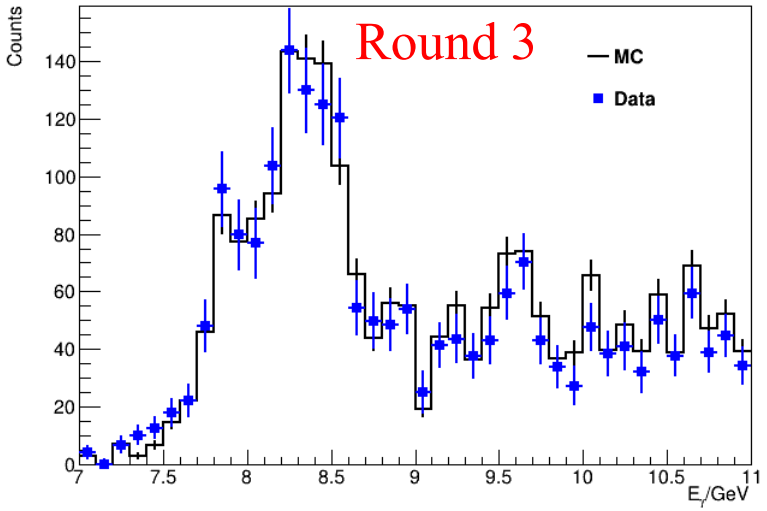
Ξ^* Generator Refinement

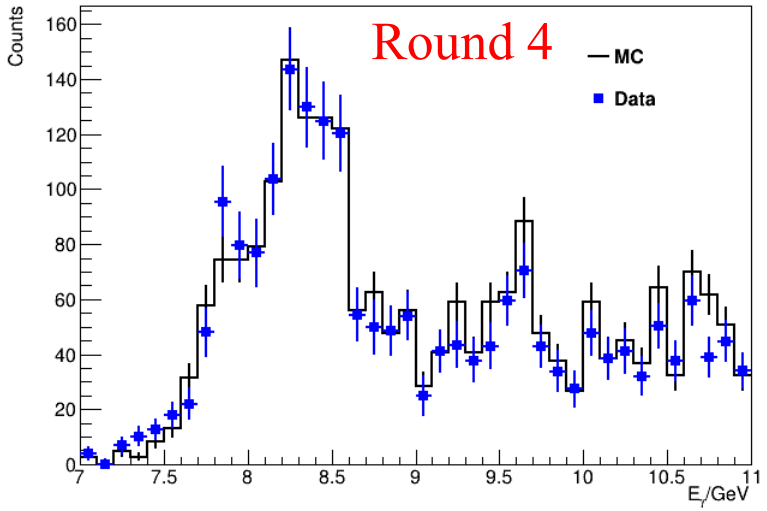
- Starting with code from Brandon build for $\Xi(1530)$ and modifying for general Ξ^*
- Taking the initial reaction as $\gamma\, p \rightarrow K\, Y^*$
- Mandelstam variables have relationship:
  - $s+t+u = m_\gamma^2 + m_p^2 + m_K^2 + m_{Y*}^2$
- We can lock down the kinematics of the initial reaction by specifying s, t and m_{Y*}
- Started with Mandelstam s and t

Ξ^* Comparison of Reconstructed MC to Actual Data

- Three rounds of MC to set *t*-slope (parameter *b* in $Ae^{-b|t|}$) to $1.138/\text{GeV}^2$
- Should have shaped mass[Y^*] before worrying too much about the *t*-slope since mass[Y^*] is set before the *t*-slope in the generator
- Fourth round: First pass at shaping mass[Y^*]

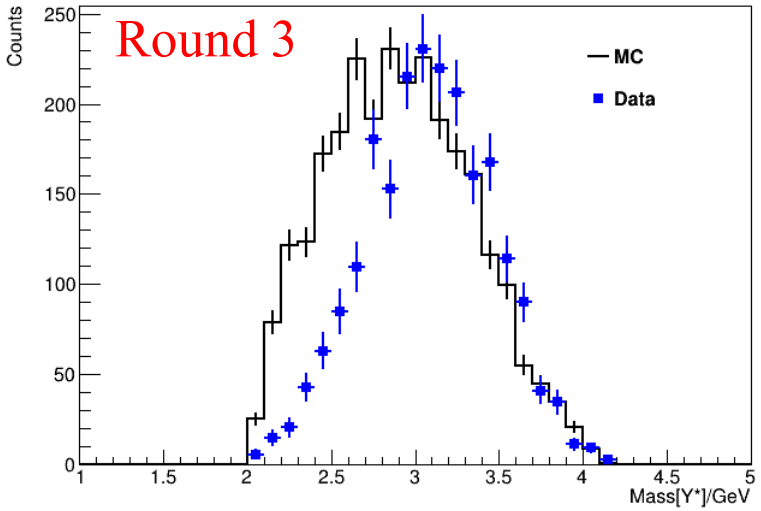
Ξ^* Comparison of Reconstructed MC to Actual Data

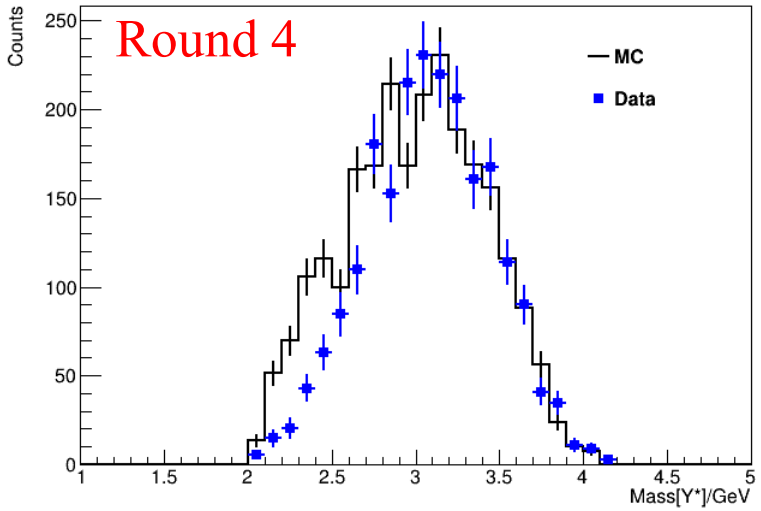




- Distribution in E_γ distribution is good for each round → s is good

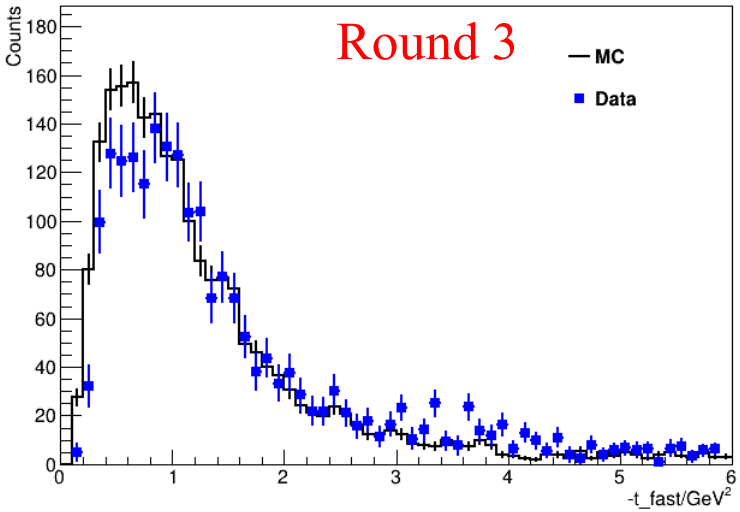
Ξ^* Comparison of Reconstructed MC to Actual Data

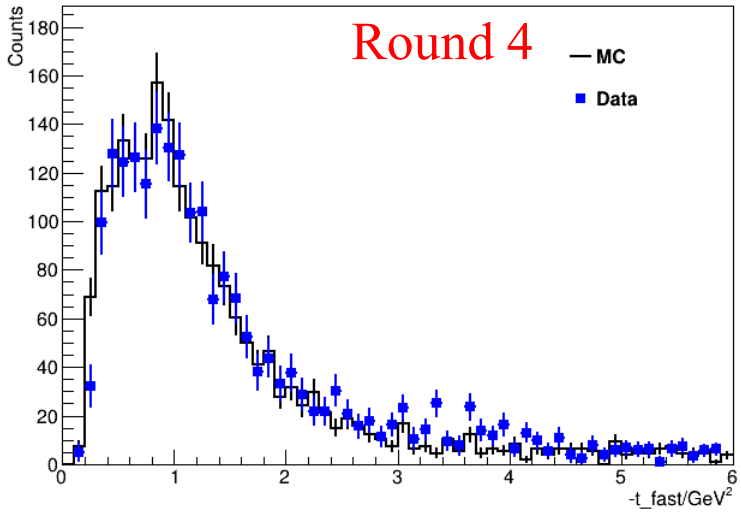




- Mass[Y^*] is getting better, but still needs another round

Ξ^* Comparison of Reconstructed MC to Actual Data



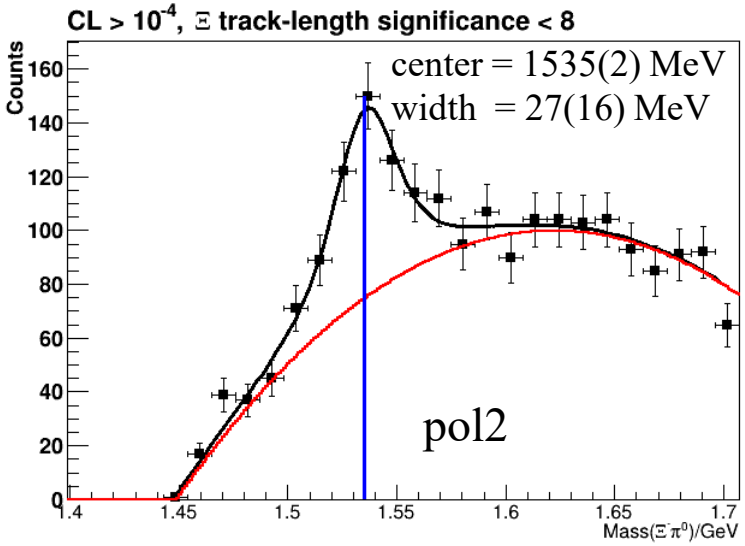


- t_{fast} looks much better after shaping mass[Y^*] ☺
- After final shaping of mass[Y^*] is complete, I might have to change the t-slope one more time

Issue: $\Xi^* \rightarrow \Xi\pi^0$ fitting

- Fits:
  - Voight + 2nd degree poly
  - Voight + [2nd degree poly]*sigmoid
  - Voight + [1st degree poly]*sigmoid

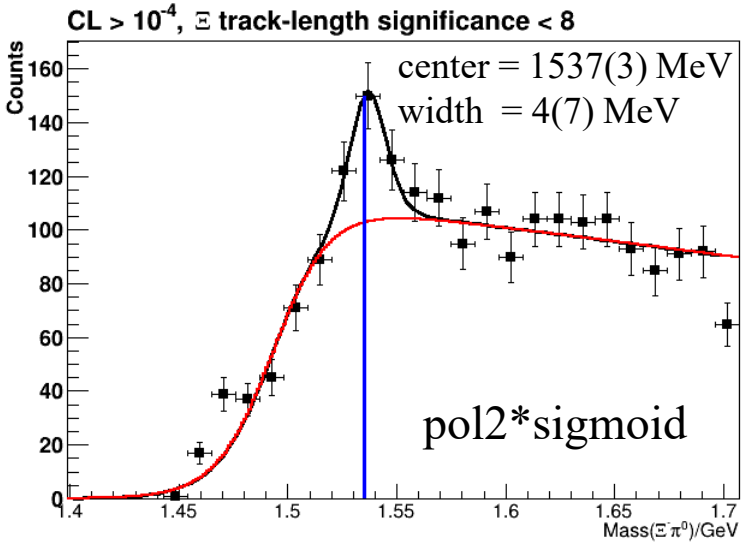
Issue: $\Xi^* \rightarrow \Xi\pi^0$ fitting

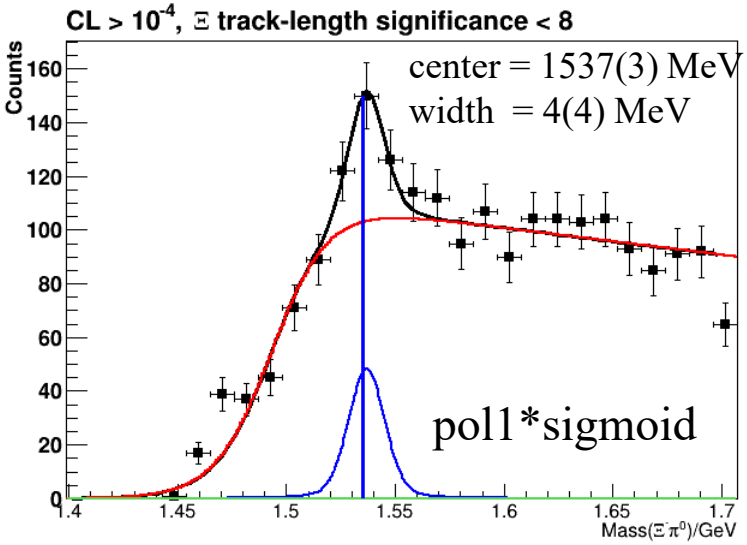


PDG:

- center = 1535.0(6) MeV
- width = 9.1(5) MeV

Note: Each fit looks good, and we do not know what the true background shape is or which background is more correct than the others ☹. We just know that one of the Voights is too wide (by only 1.1 error bars) compared to PDG.





$KK\pi$ update

Nothing to report right now ☹

Title