Group meeting
May 31st, 2024

Instruction responsibilities

- Classes for Fall 2024:
  - PHY 331:
    - Need to make syllabus
  - PHY 361:
    - Need to make syllabus

Service responsibilities

- Committee:
  - GlueX Compton Analysis Review Committee:
    - Waiting for author response

Group responsibilities

- Undergrad: Met with Dylan on Thursday
- Need to start writing DOE report that is due early June

Talks over academic year

KKpi update isobar smearing 8-28-2023 http://meson.hldsite.com/presentations/dugger/kkpi23-8-28.pdf

KKpi update (PWA results) 9-11-2023 http://meson.hldsite.com/presentations/dugger/kkpi23-09-11.pdf

KKpi update (PWA with simultaneous fitting) 10-23-2023 http://meson.hldsite.com/presentations/dugger/kkpi23-10-23.pdf

KKpi update (a_0 parameterization) 1-17-2024 http://meson.hldsite.com/presentations/dugger/kkpi24-01-15.pdf

KKpi update (PWA comparison of real to fake data) 1-31-2024 http://meson.hldsite.com/presentations/dugger/kkpi24-01-31.pdf

KKpi update (isobar contributions to PWA for low mass KKpi) 2-28-2024 http://meson.hldsite.com/presentations/dugger/kkpi24-02-28.pdf

KKpi update (phase space KKpi contribution to PWA) 3-13-2024 https://meson.hldsite.com/presentations/dugger/kkpi24-03-13.pdf

KKpi update (K*K and phase space KKpi at low mass) 3-27-2024 https://meson.hldsite.com/presentations/dugger/kkpi24-03-13.pdf

KKpi update (test: phase locking) 4-24-2024 https://meson.hldsite.com/presentations/dugger/kkpi24-04-24.pdf

Alan :
KKpi update (testing likelihood ratios as way to reduce waveset) 4-24-2024 https://meson.hldsite.com/presentations/Gardner/gardner24-04-24.pdf

Analysis

TPOL

Checking 2022 data

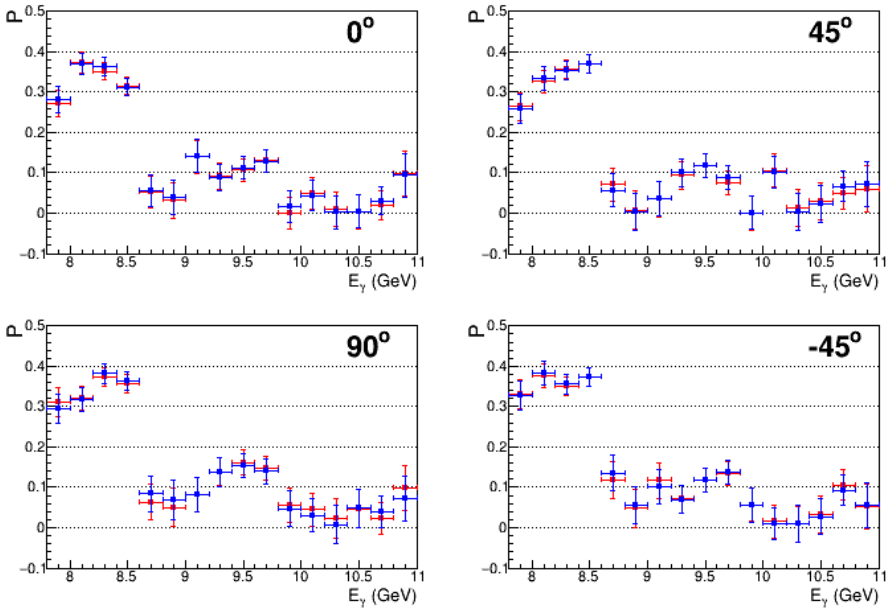
Biggest concern:

- Using the SEB tree instead of the Nathan tree
  - SEB tree has different variables than the Nathan tree
  - SEB is the plugin used for cooking
  - Nathan tree has been the version I have always used in the past

Important tests

- Make sure that the conversion layer for SEB to Nathan variables work
- Compare prior TPOL analysis using Nathan trees agree with a TPOL analysis utilizing SEB trees

Comparison of results from different TPOL trees using 2019-11 data (batch 11-12)



Red = SEB

Blue = Nathan

SEB

```
**************************************************************
Polarization values for E_gamma between 8.0 and 8.6 GeV
--------------------------------------------------------------
       Beam orientation        Polarization
         0 degrees:          0.3471 +/- 0.0143
        45 degrees:          0.3539 +/- 0.0146
        90 degrees:          0.3506 +/- 0.0158
       135 degrees:          0.3650 +/- 0.0145
**************************************************************
```

Nathan

```
**************************************************************
Polarization values for E_gamma between 8.0 and 8.6 GeV
--------------------------------------------------------------
       Beam orientation        Polarization
         0 degrees:          0.3483 +/- 0.0142
        45 degrees:          0.3540 +/- 0.0142
        90 degrees:          0.3577 +/- 0.0158
       135 degrees:          0.3679 +/- 0.0145
**************************************************************
```

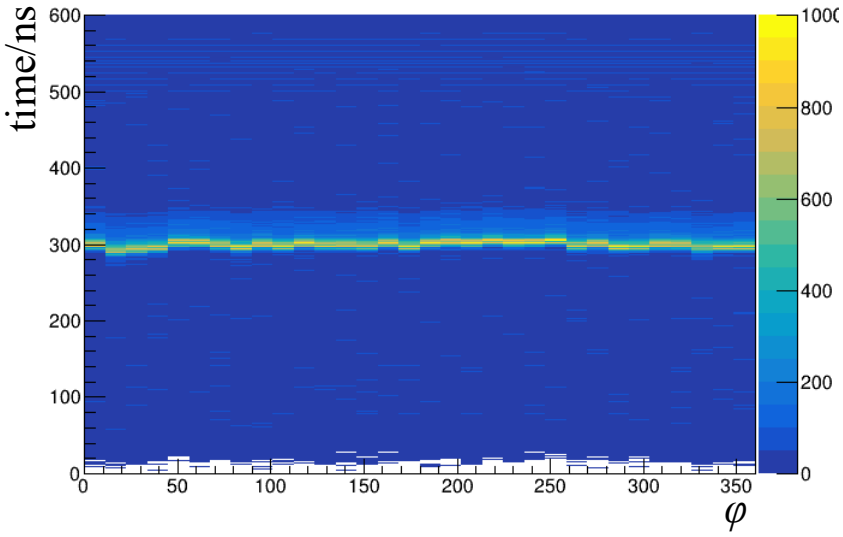
Comparing 2022-5 tree to 2019-11

- Looked at 74 runs (all run numbers that end with 2) and processed it through the waveform fitting and subsequent TPOL histogram creation.

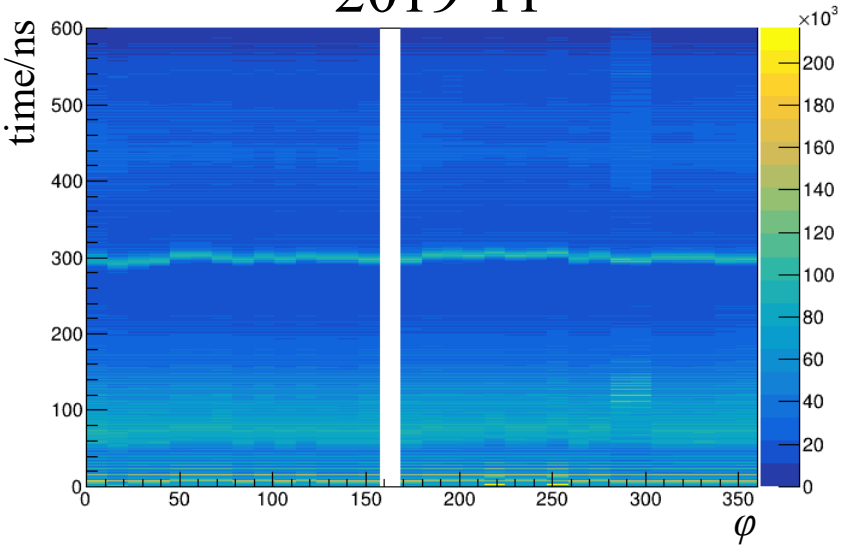
Comparing 2022-5 to 2019-11

- Comparison of time versus azimuthal angle φ

2022-5



2019-11

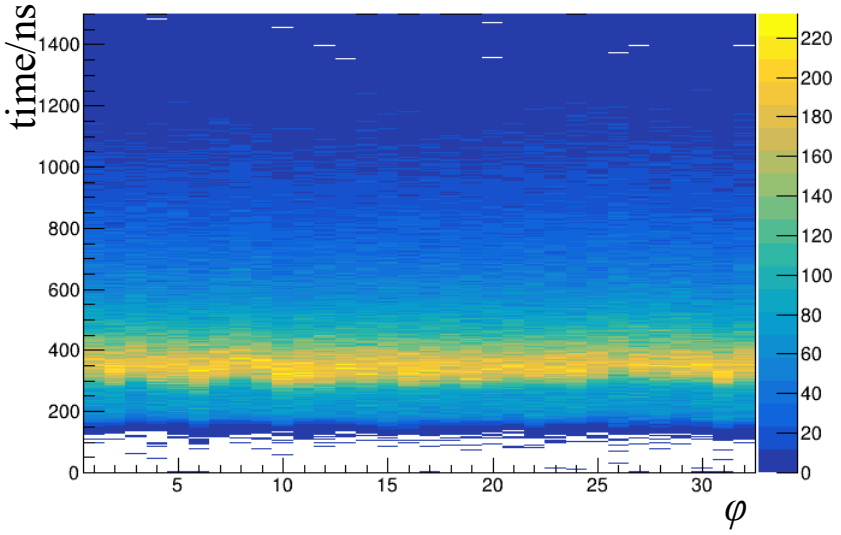


- Looks like problem sector came back to life ☺
- The 2022-5 data looks better than 2019-11 ☺

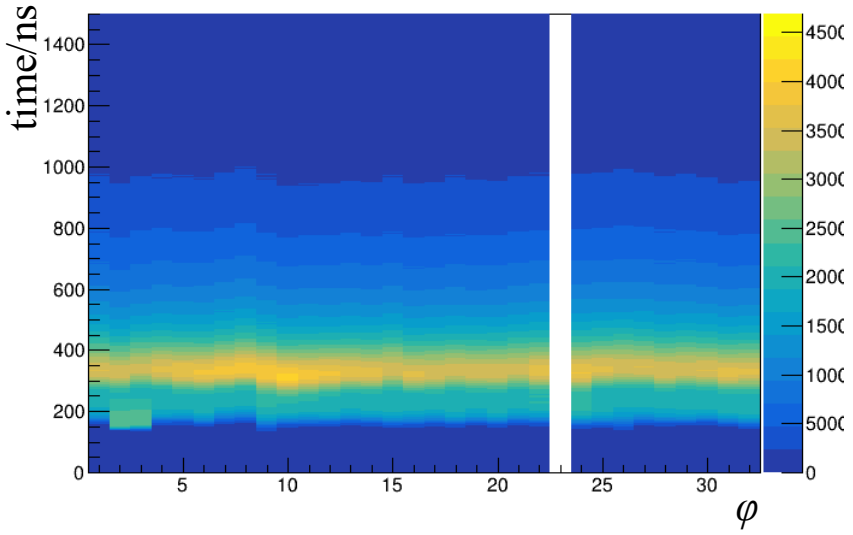
Comparing 2022-5 to 2019-11

- Comparison of energy deposition versus azimuthal angle φ

2022-5



2019-11



- I do not see anything to be concerned about ☺

χ^2 comparison between different kinematic fits

- Created fake data for:
  - $\gamma\, p \rightarrow K^+K^+\Xi^-\pi^0$: **Primary reaction**

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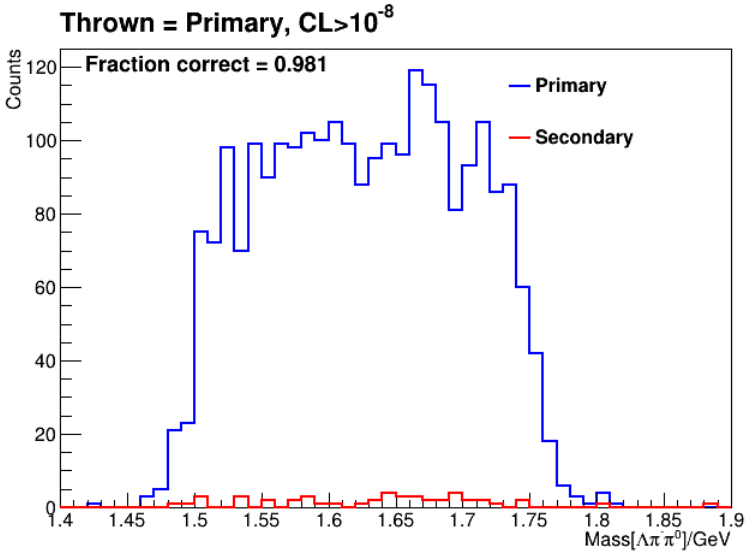
  - Merged the files using code from Alex Barnes to make χ^2 comparisons

Comparison of Primary and Secondary



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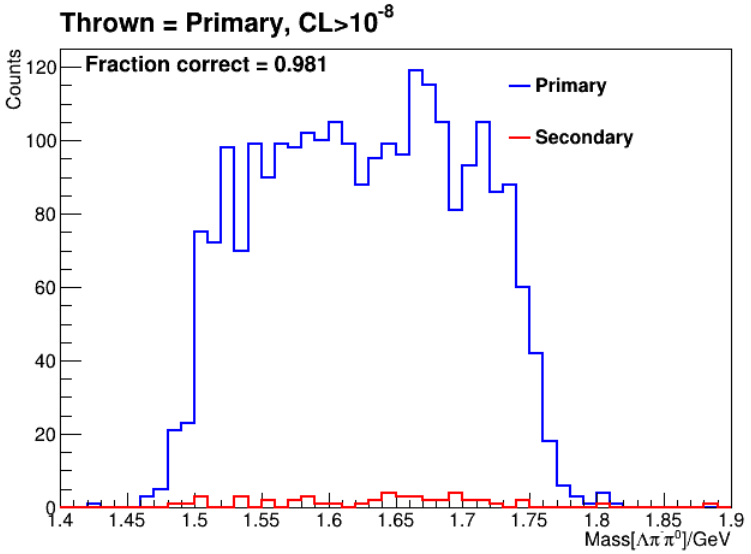

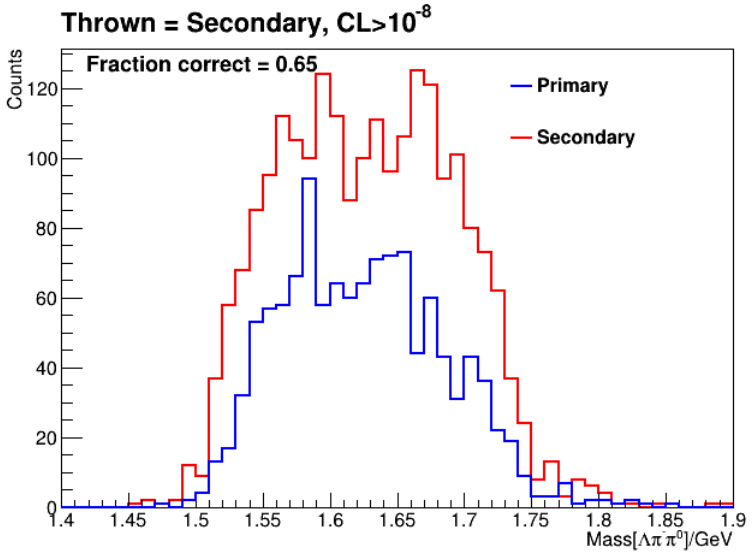

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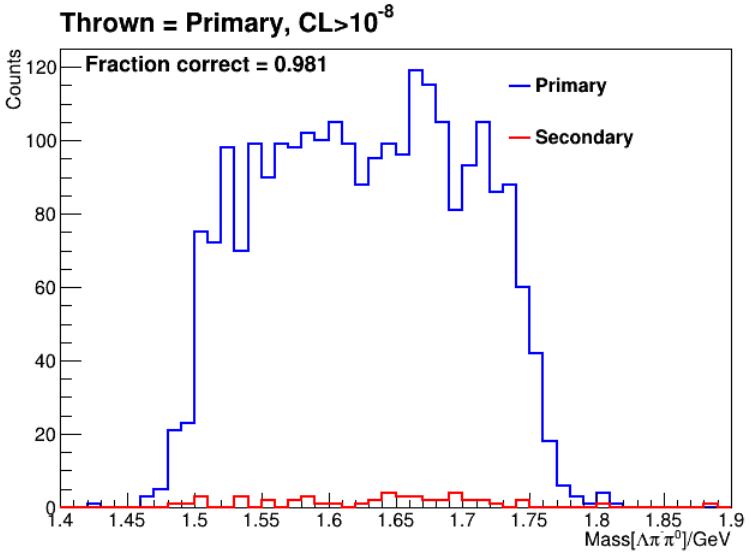

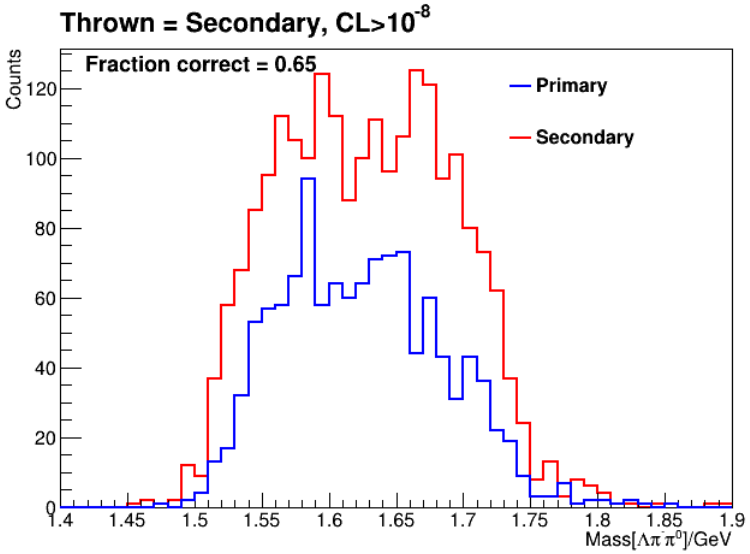

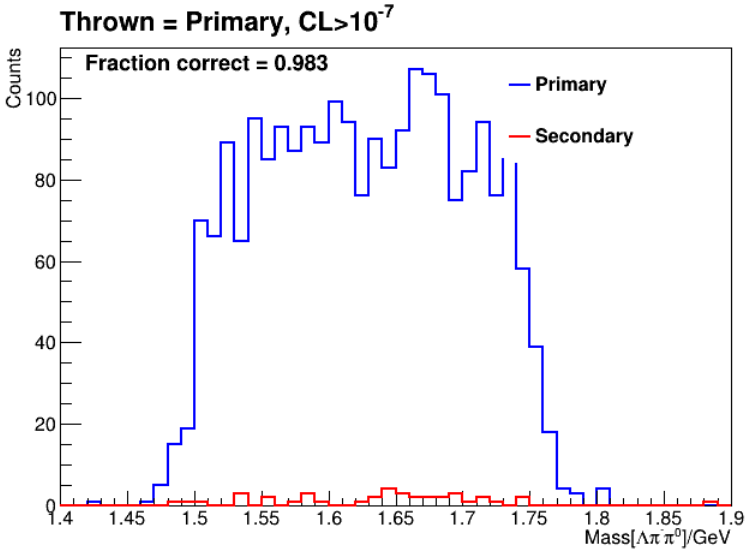

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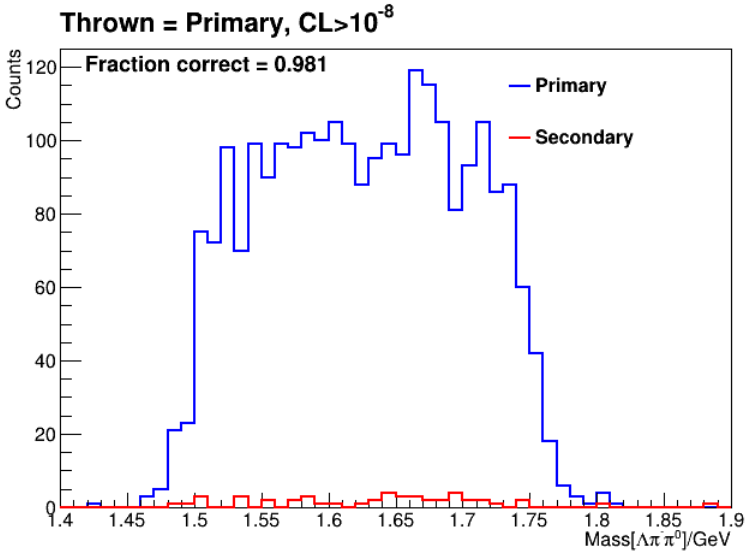

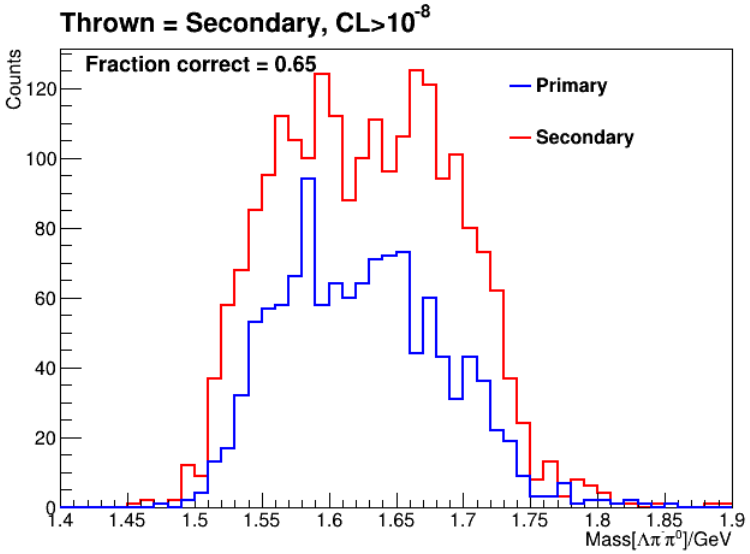

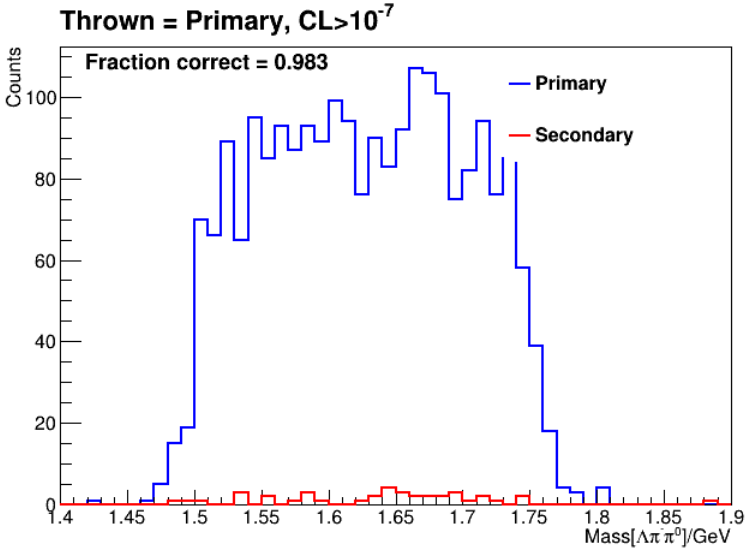

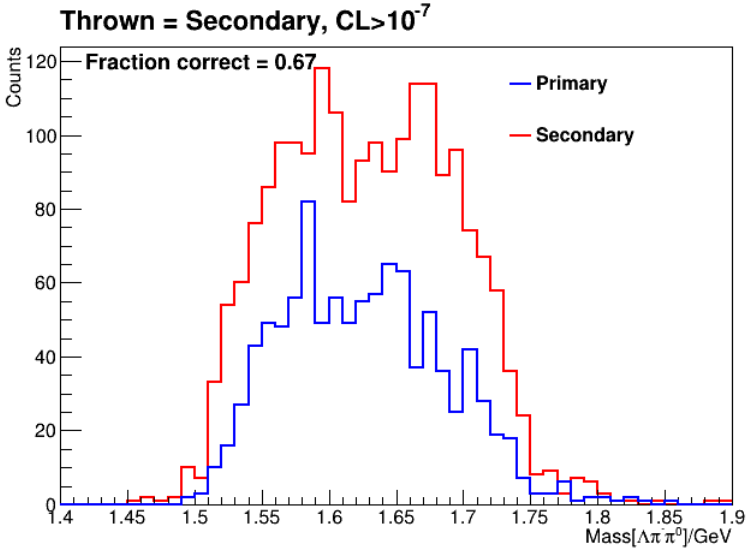

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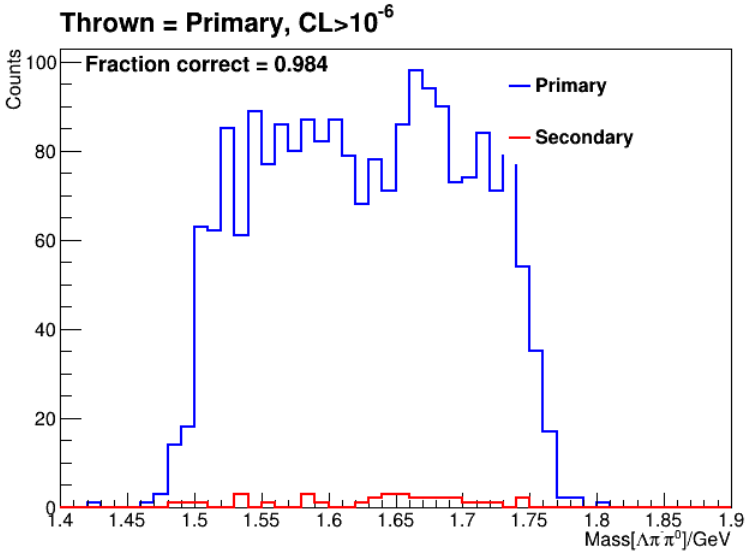

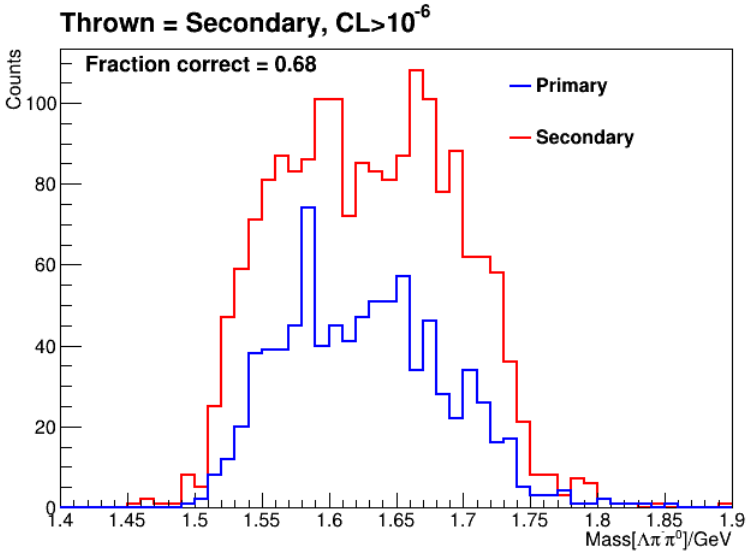

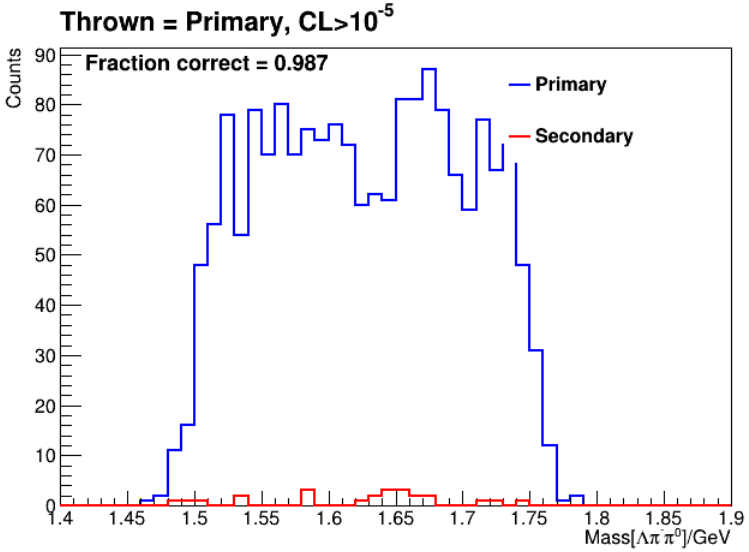

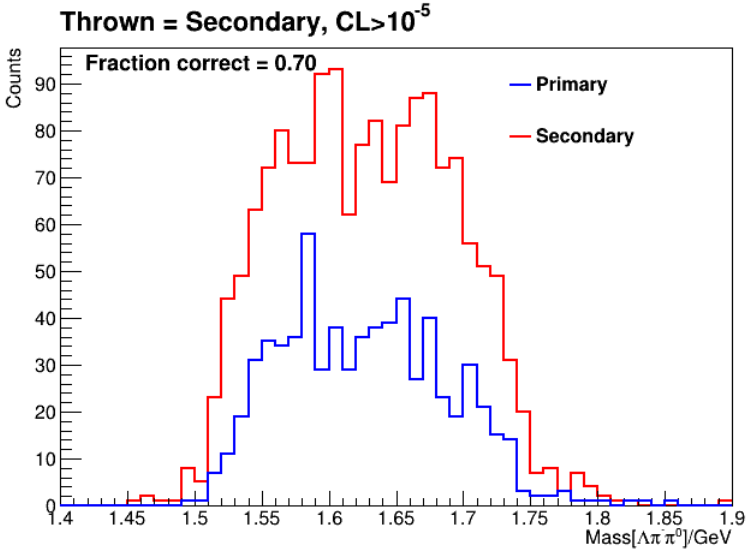

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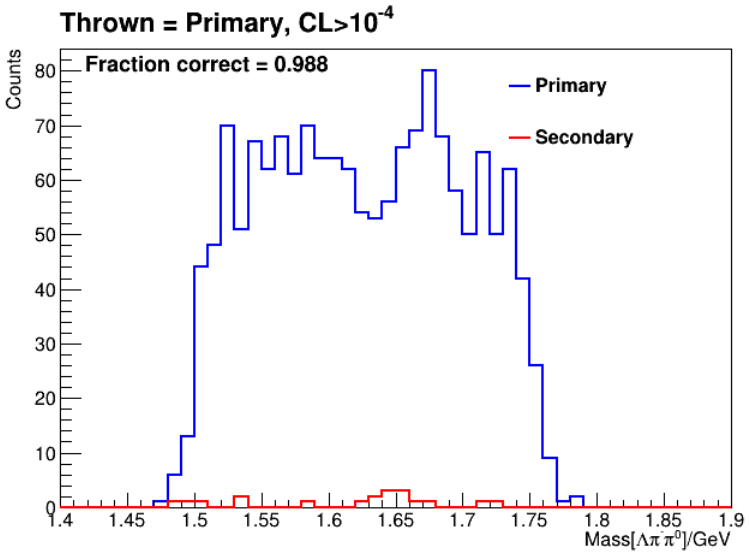

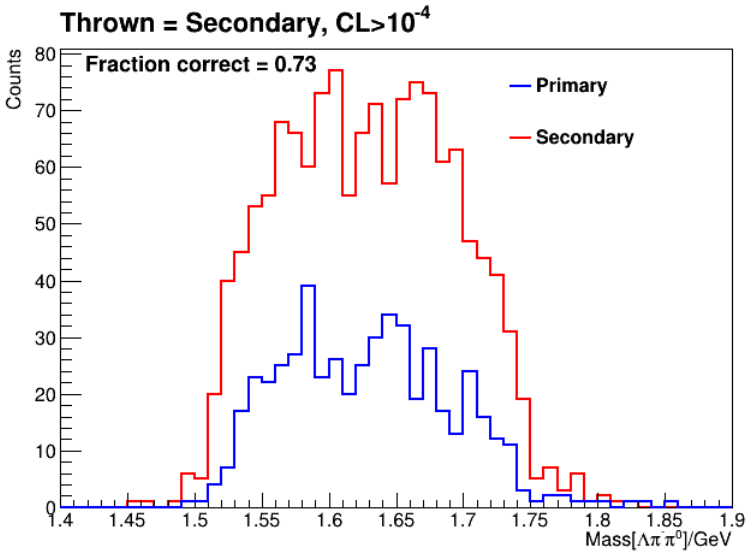

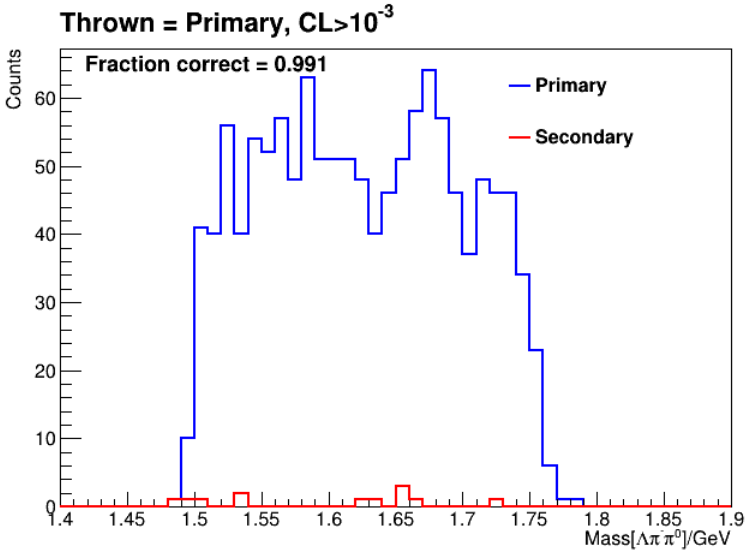

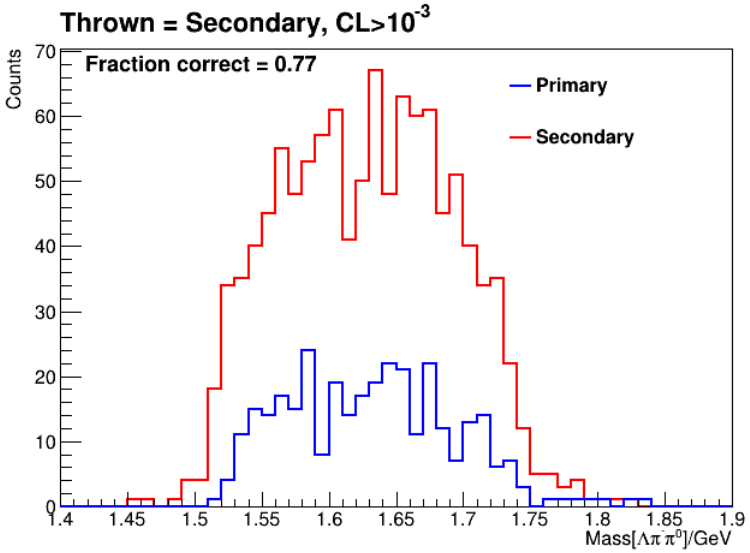

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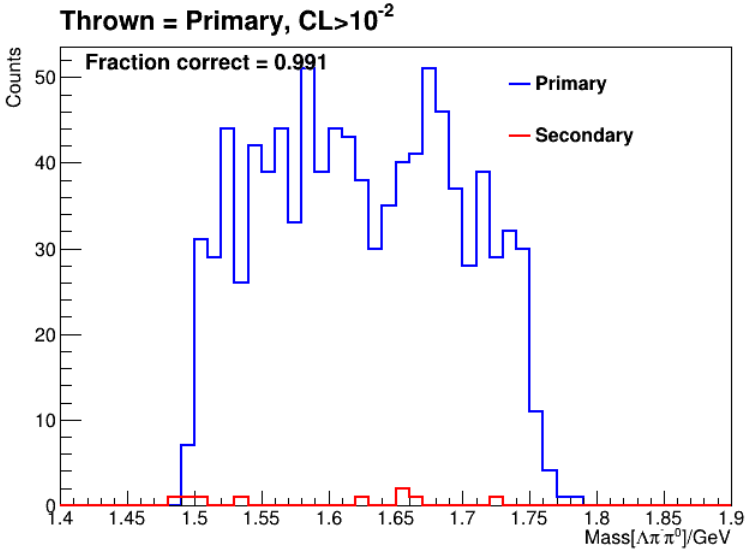

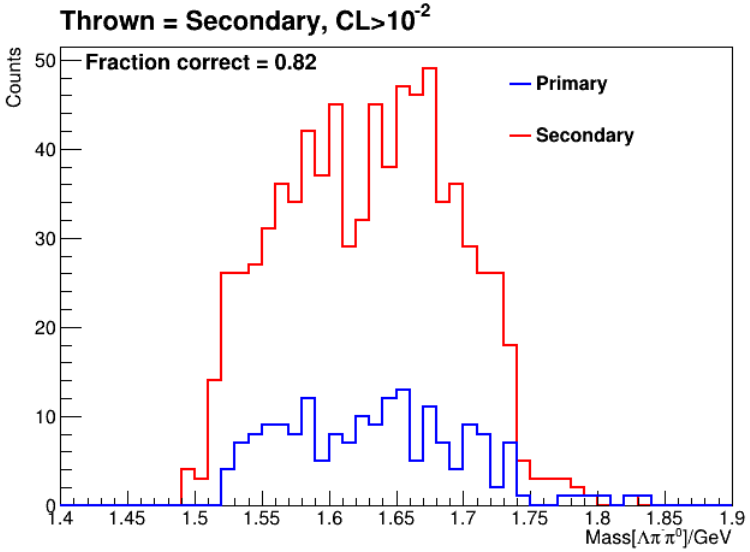

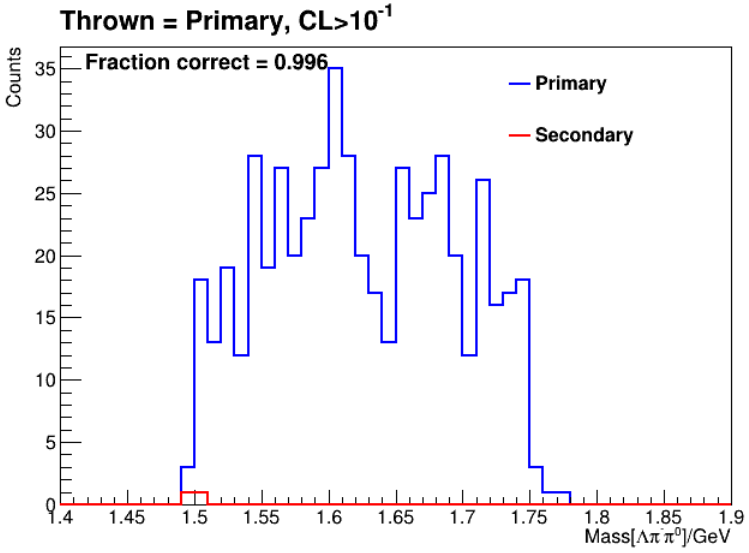

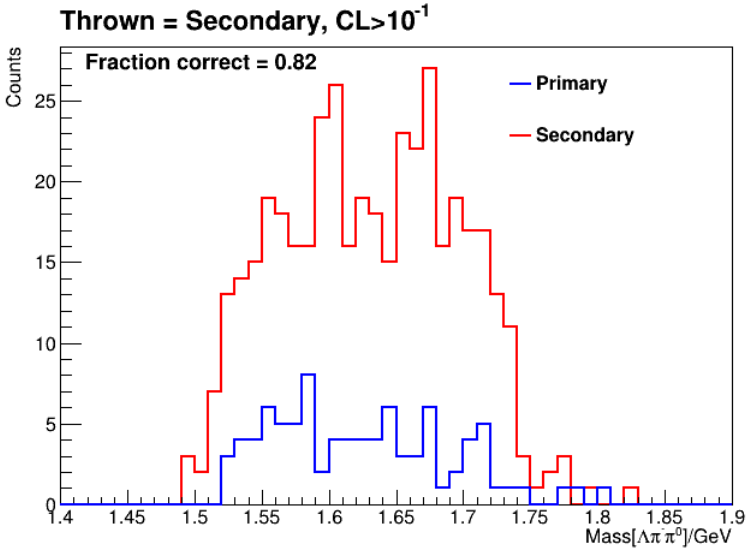

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