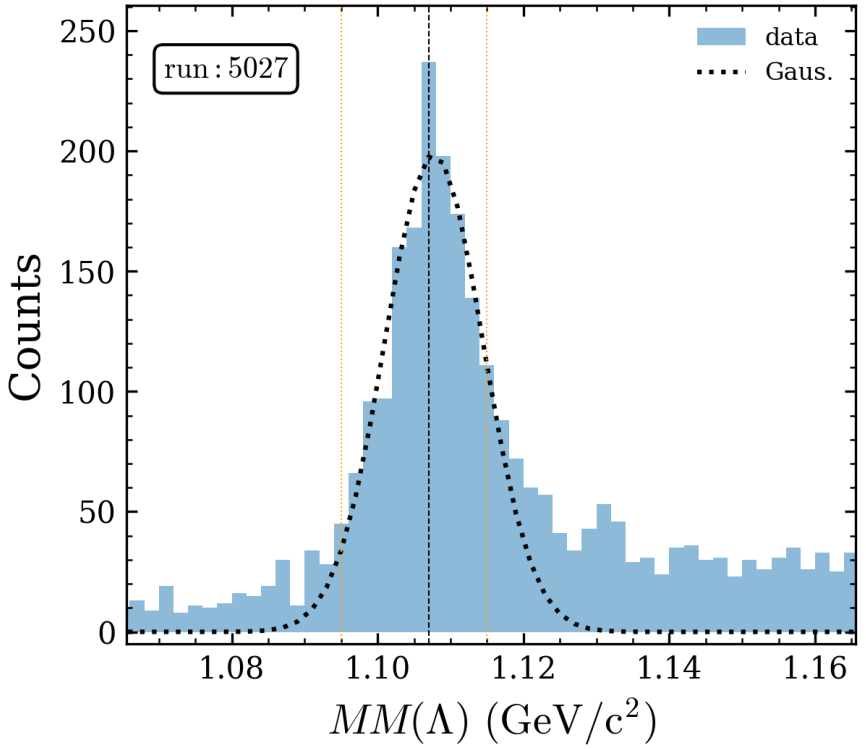
Missing mass shifting

Q = 3.0, W = 3.14, left, high epsilon

Raw data = /lustre24/expphy/cache/hallc/kaonlt/Pass3_Dec_2023/ROOTfiles/Analysis/KaonLT

Steps

- Apply kaon cuts on raw data
- Fit the Λ peak with gaussian
- Shift to Λ peak to 1.1156 GeV/c^2



Missing mass shifting

Q = 3.0, W = 3.14, left, high epsilon

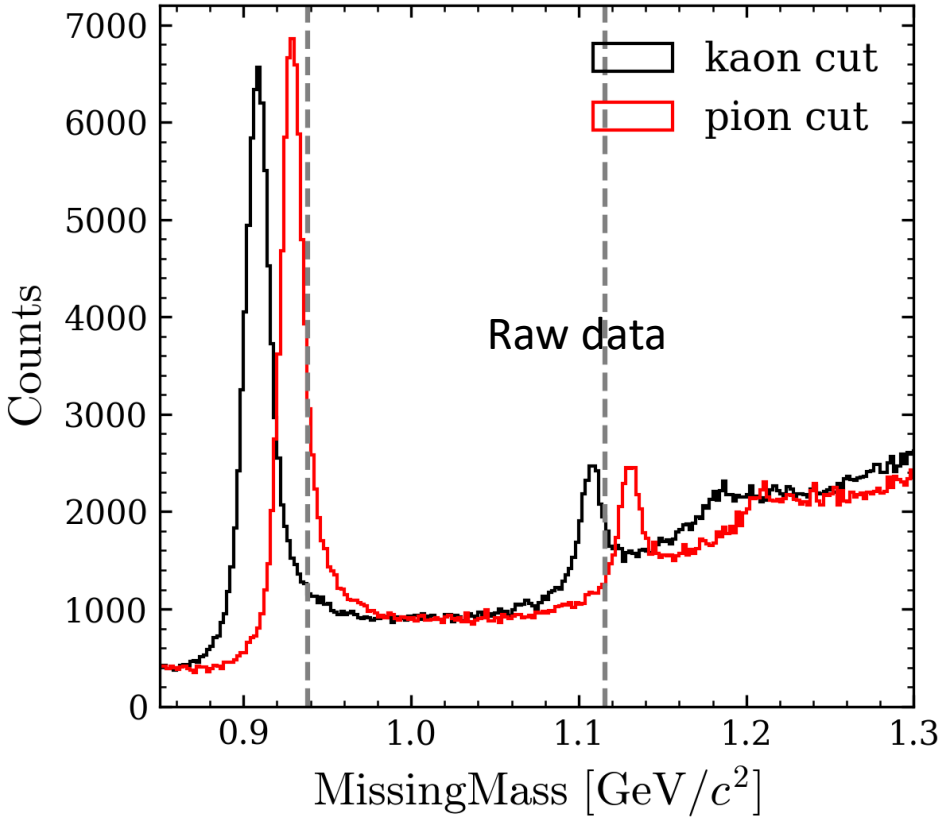
Raw data = /lustre24/expphy/cache/hallc/kaonlt/Pass3_Dec_2023/ROOTfiles/Analysis/KaonLT

Steps

- Apply kaon cuts on raw data
- Fit the Λ peak with gaussian Raw data
- Shift to Λ peak to 1.1156 GeV/c^2

- Repeat above for pion
  - Apply pion cuts on raw data
  - Fit the **Λ peak** with gaussian
  - Shift to Λ peak to 1.1156 GeV/c^2

- Compare the pion peak and subtract

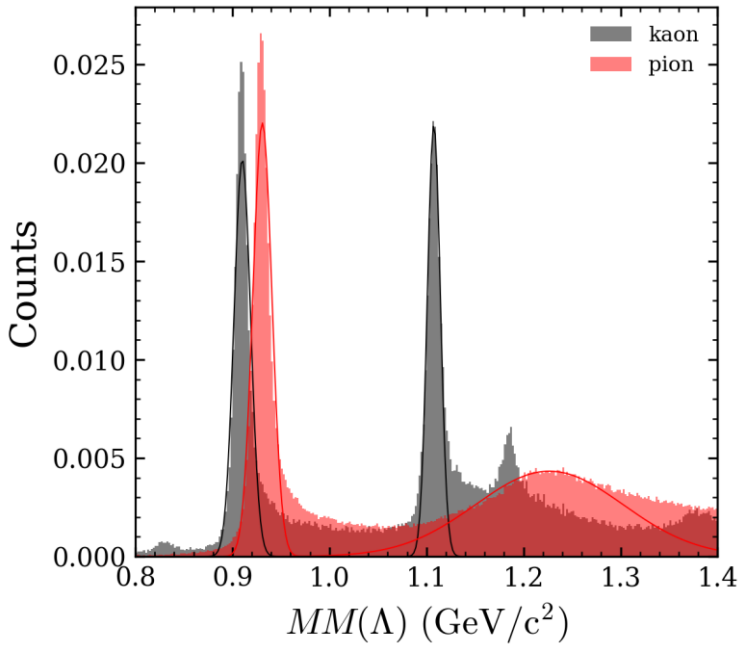


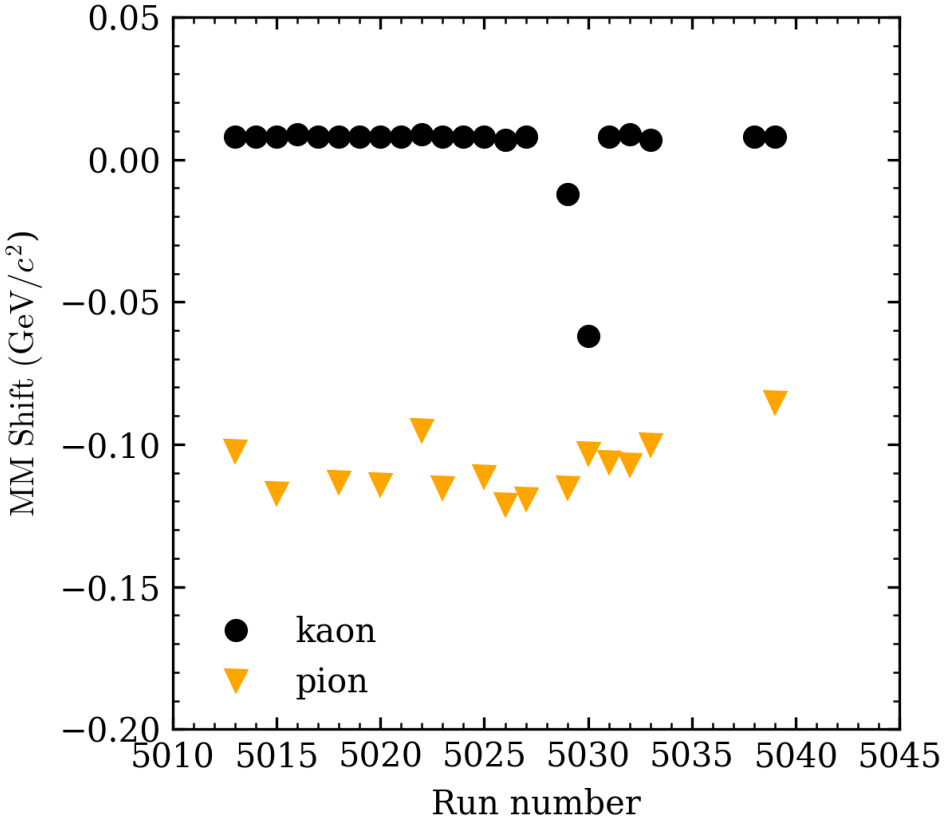
- ***However, the wrong branch is used here. It should always be `MM_K`.***

Missing mass shifting

Q = 3.0, W = 3.14, left, high epsilon

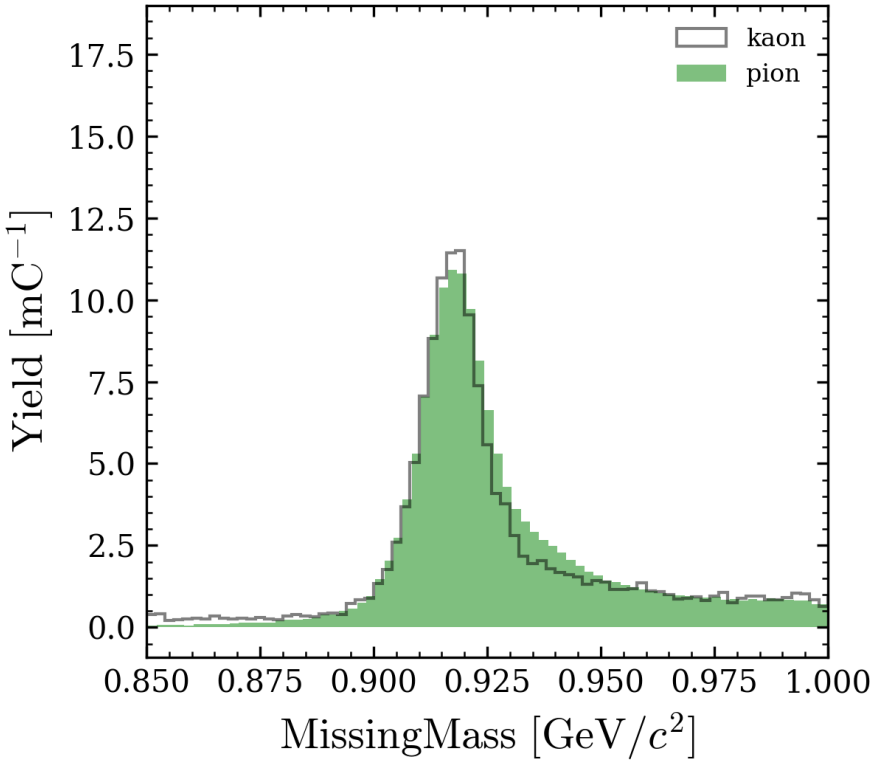
- Shift is stable for kaon
- Disregard the orange points
- Ok to fit missing mass peak for entire setting

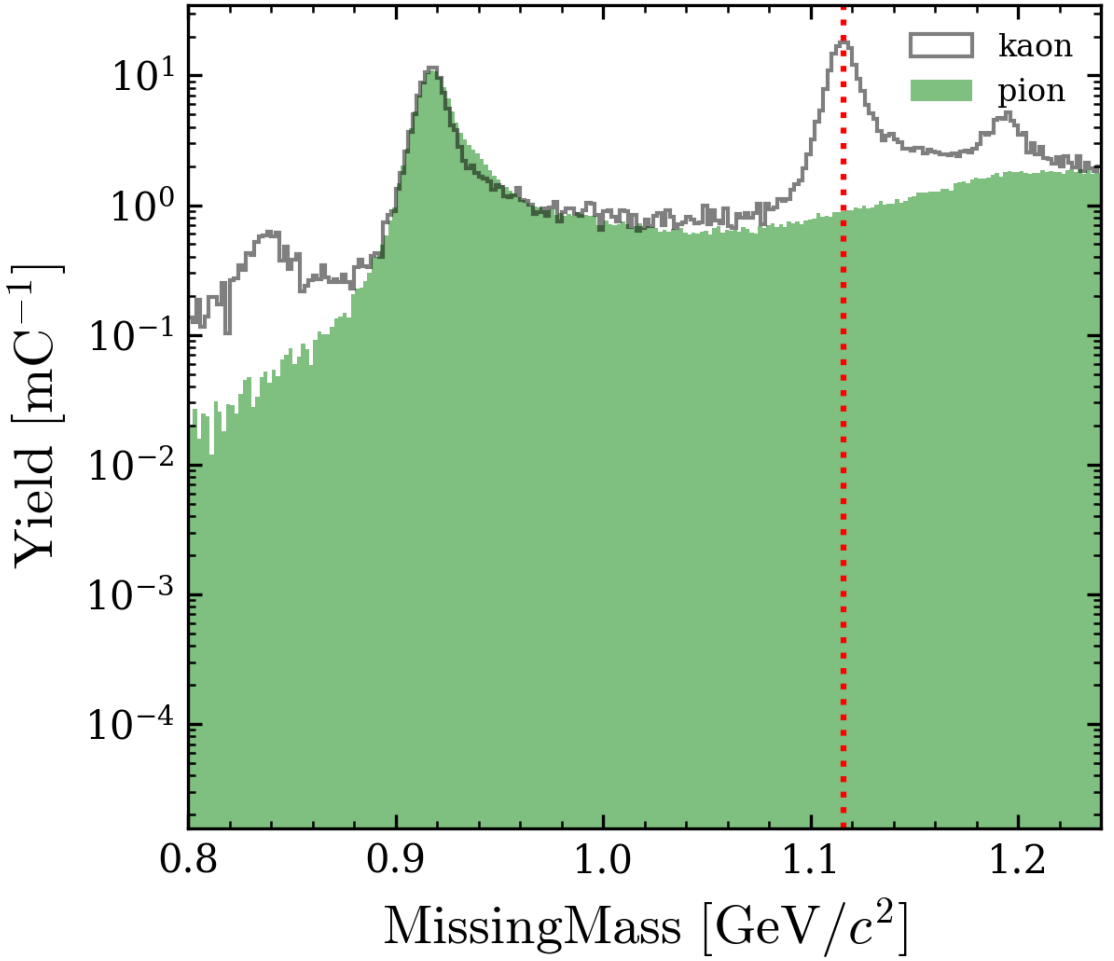




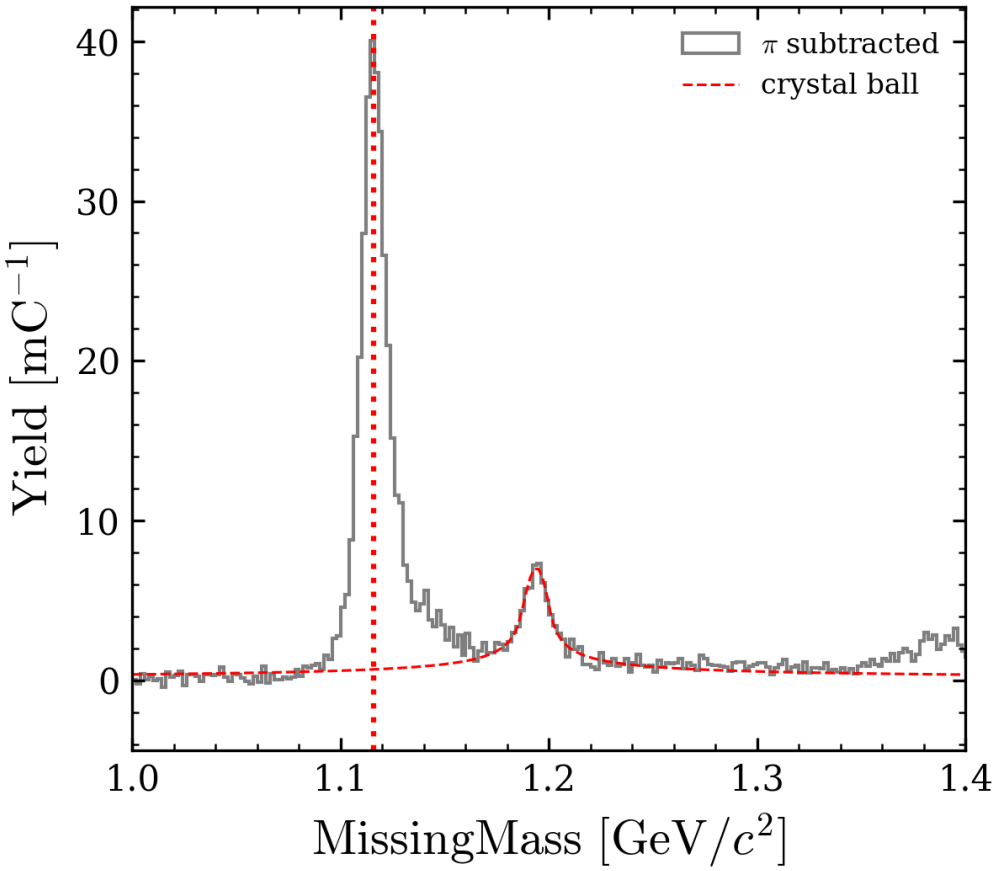
Over-subtraction

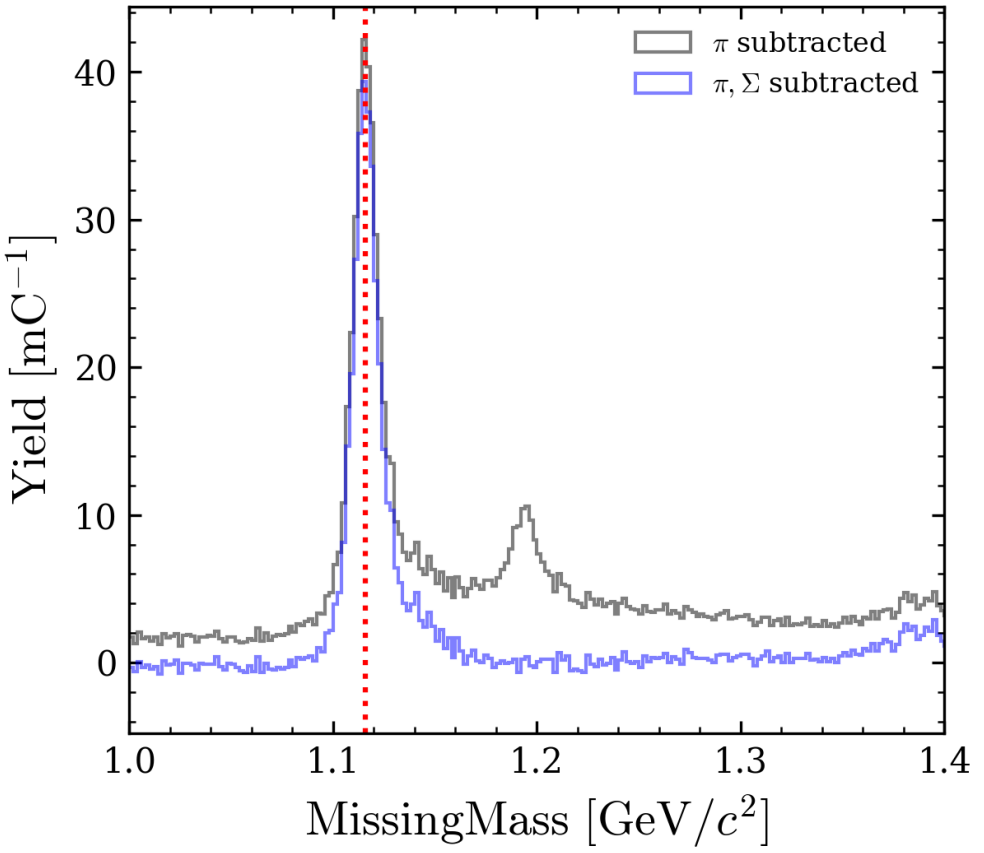
- norm by integral→over-subtraction
- Extra scaling the pion ? (current approach)
- Fit crystalball, smear with gaus take the ratio of the integral





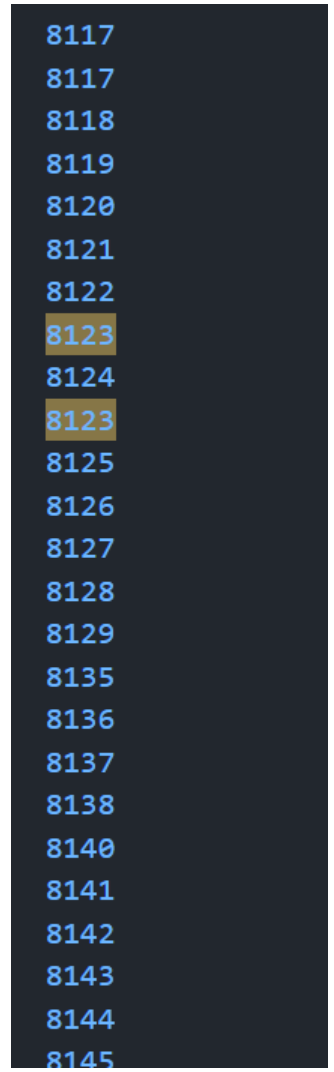
Fit the Sigma peak with crystalball and subtract





hallc_replay_lt/UTIL_KAONLT/run_list/KaonLT/Q3p0W3p14left_lowe

Occasional repeated run number in the list.
If you are using these files, make sure you `list(set(runs))`



Need to run replay again?

`/expphy/cache/hallc/kaonlt/Pass3_Dec_2023/ROOTfiles/Analysis/KaonLT`. Once corrected, rerun the `apply_cuts.py` and `shift_missing_mass.py`. Currently, the problematic runs are

```
4892, 4893, 4896, 4897, 4900, 4906, 4914, 4916, 4917, 4918, 4919, 4922, 4924,
4925, 4926, 4927, 4928, 4930, 4931, 4932, 4933, 4934, 4936, 4937, 4938, 4939,
4945, 4946, 4947, 4952, 4955, 4956, 4957, 4958, 4959, 5042, 5046, 5047, 5050,
5064, 5067, 5068, 5072, 5076, 5078, 5080, 5086, 5090, 5091, 5092, 5093, 5094,
5096, 5097, 5098, 5100, 5101, 5102, 5103, 5104, 5105, 5106, 5111, 5115, 5116,
5118, 5119, 5120, 5122, 5304, 5306, 5307, 5308, 5309, 5310, 5312, 5313, 5314,
5315, 5316, 5317, 5318, 5319, 5320, 5321, 5322, 5323, 5324, 5325, 5326, 5328,
5329, 5330, 5331, 5333, 5334
```