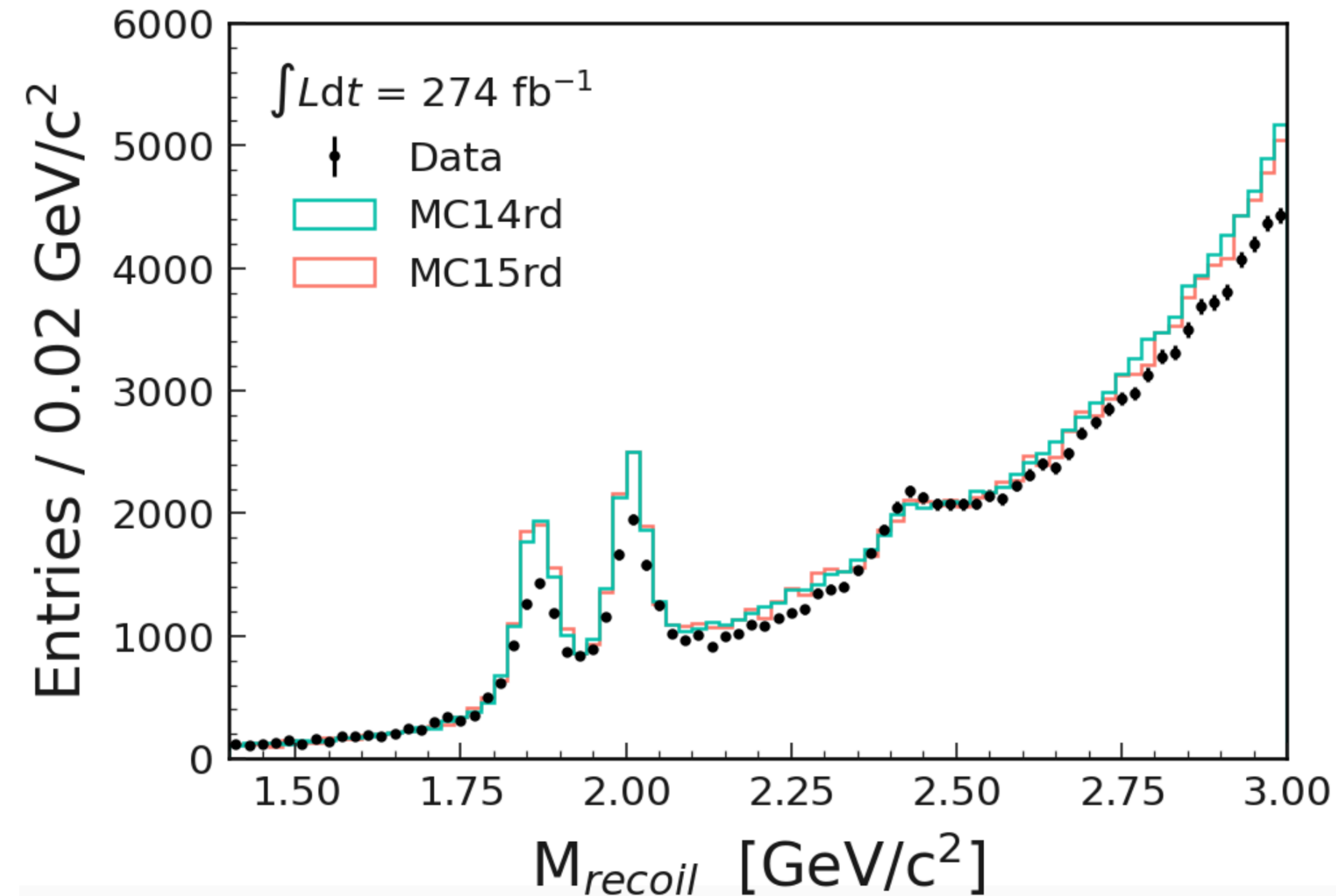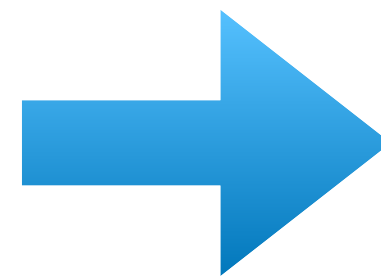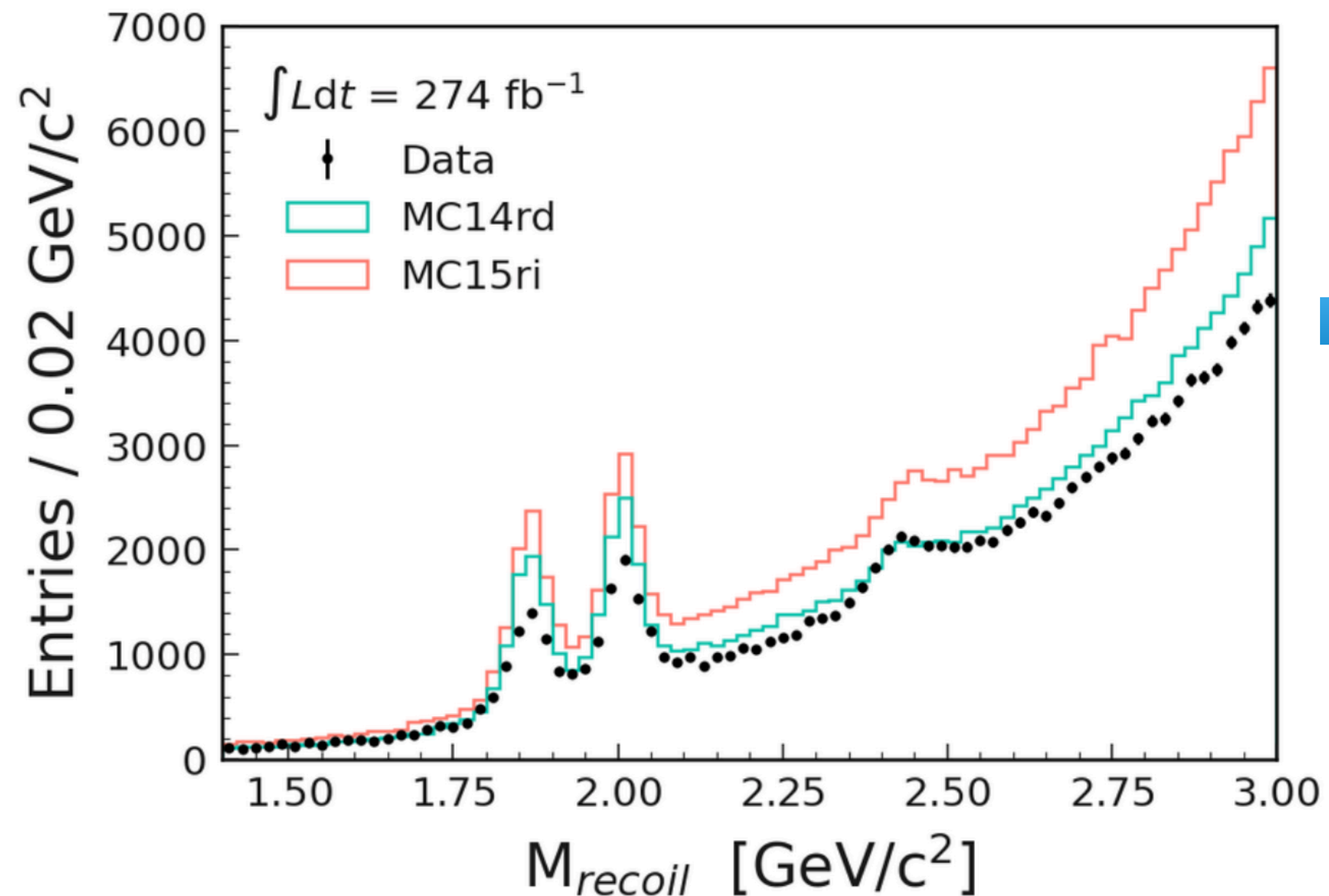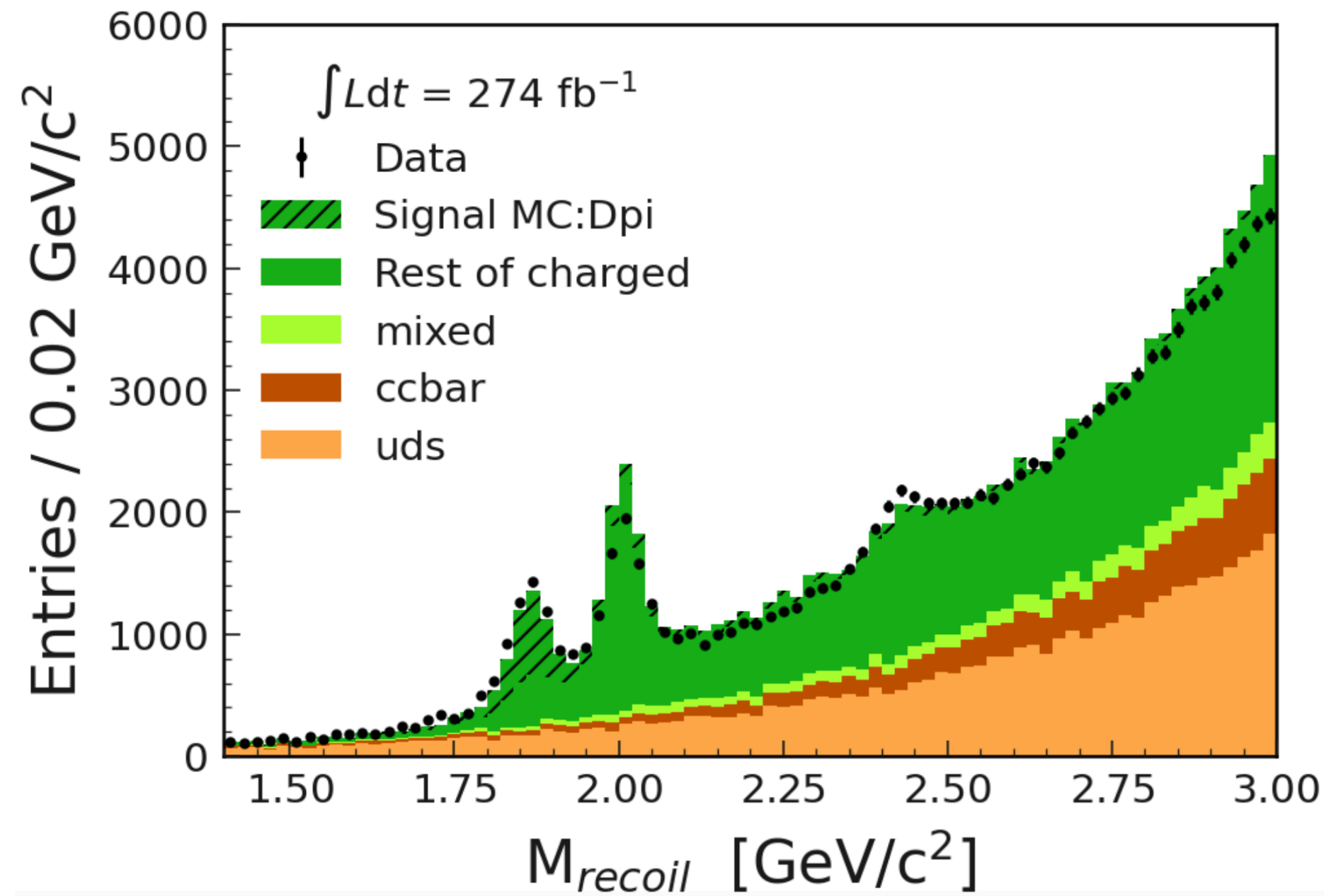# FEI performance: MC15

TS Analysis meeting

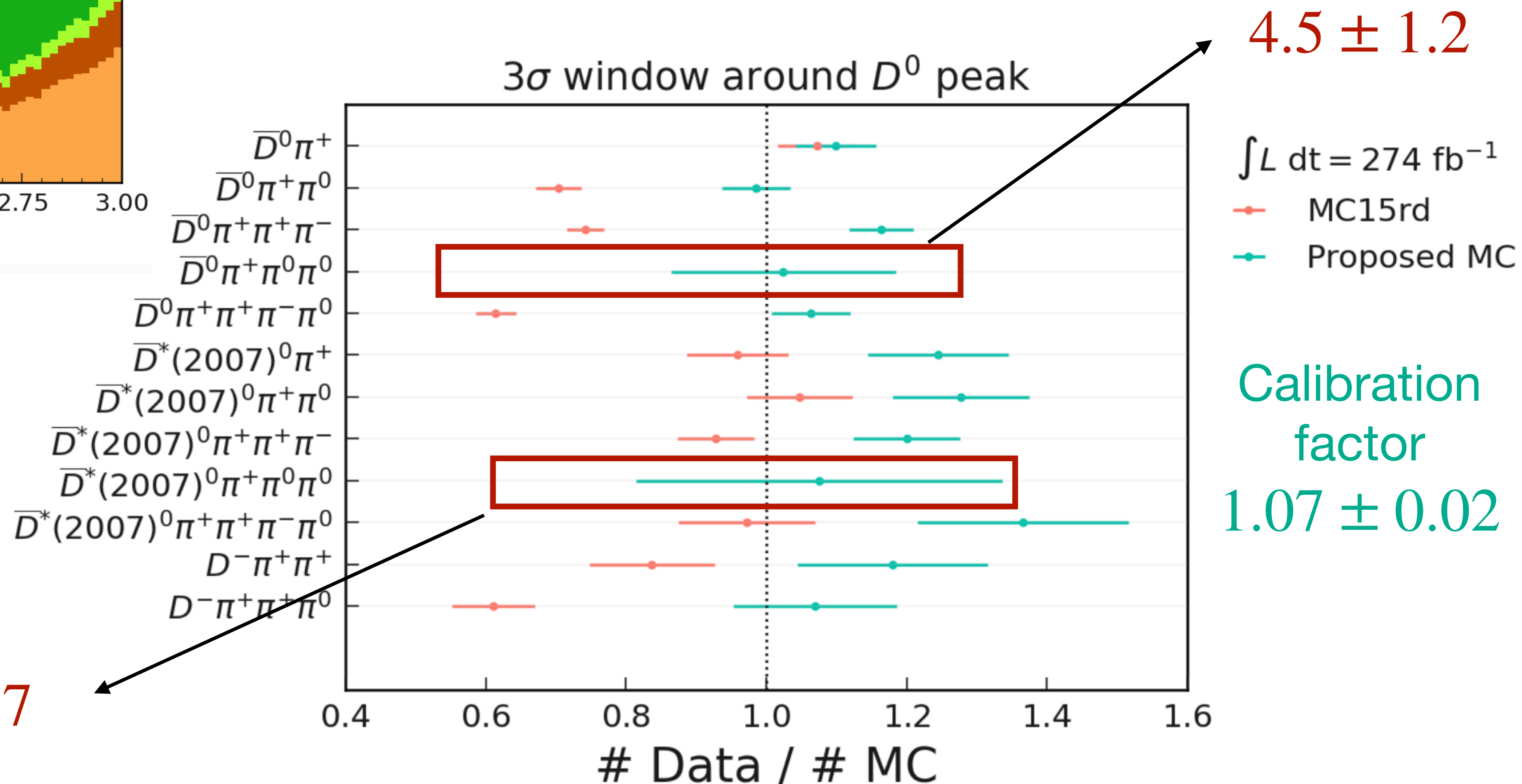Niharika Rout, 28th Oct 2022

The long-standing issue

- MC14rd and MC15rd samples behave the same way

- The FEI training treats differently to MC15ri and MC15rd samples
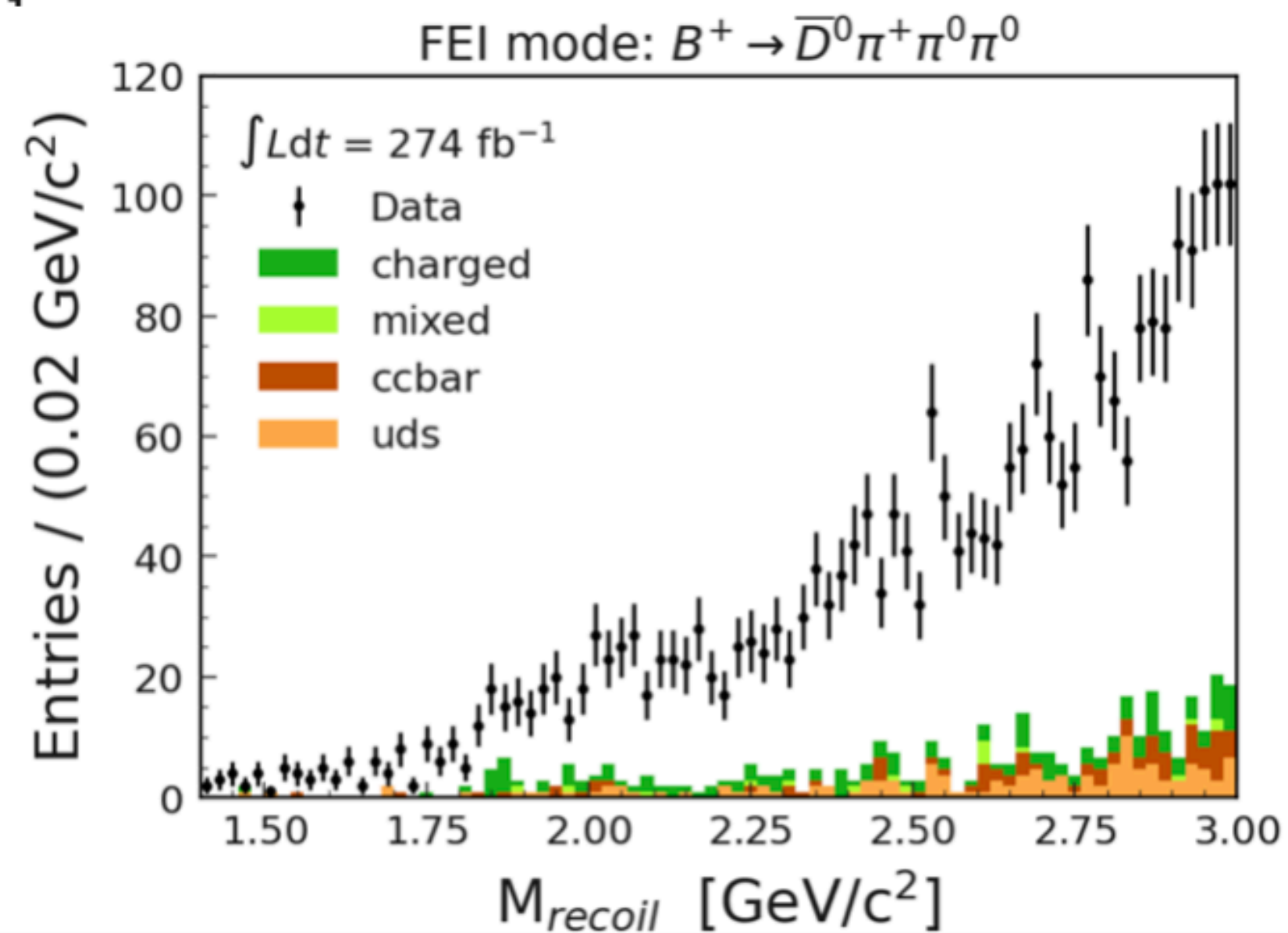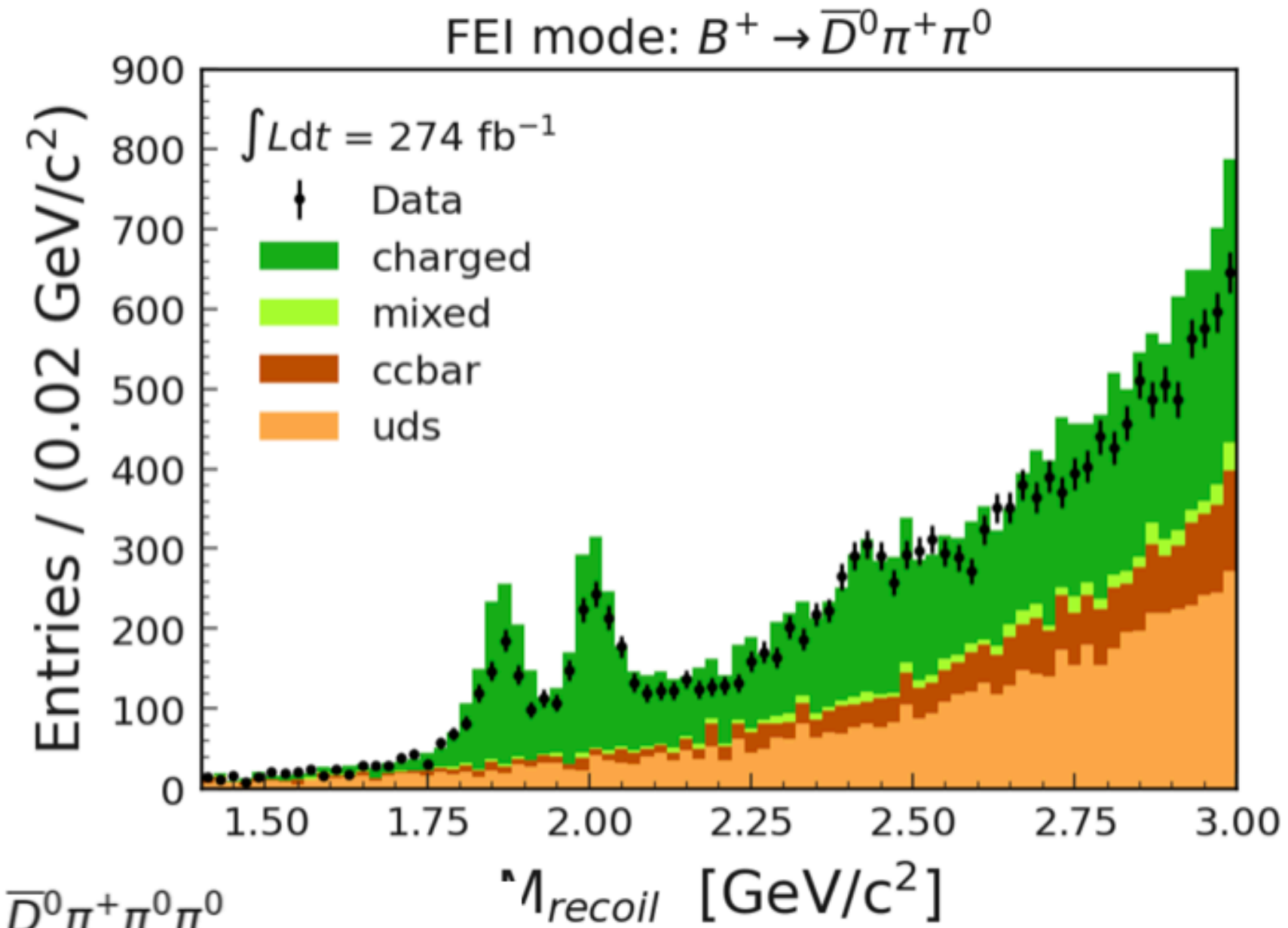
The calibration factors

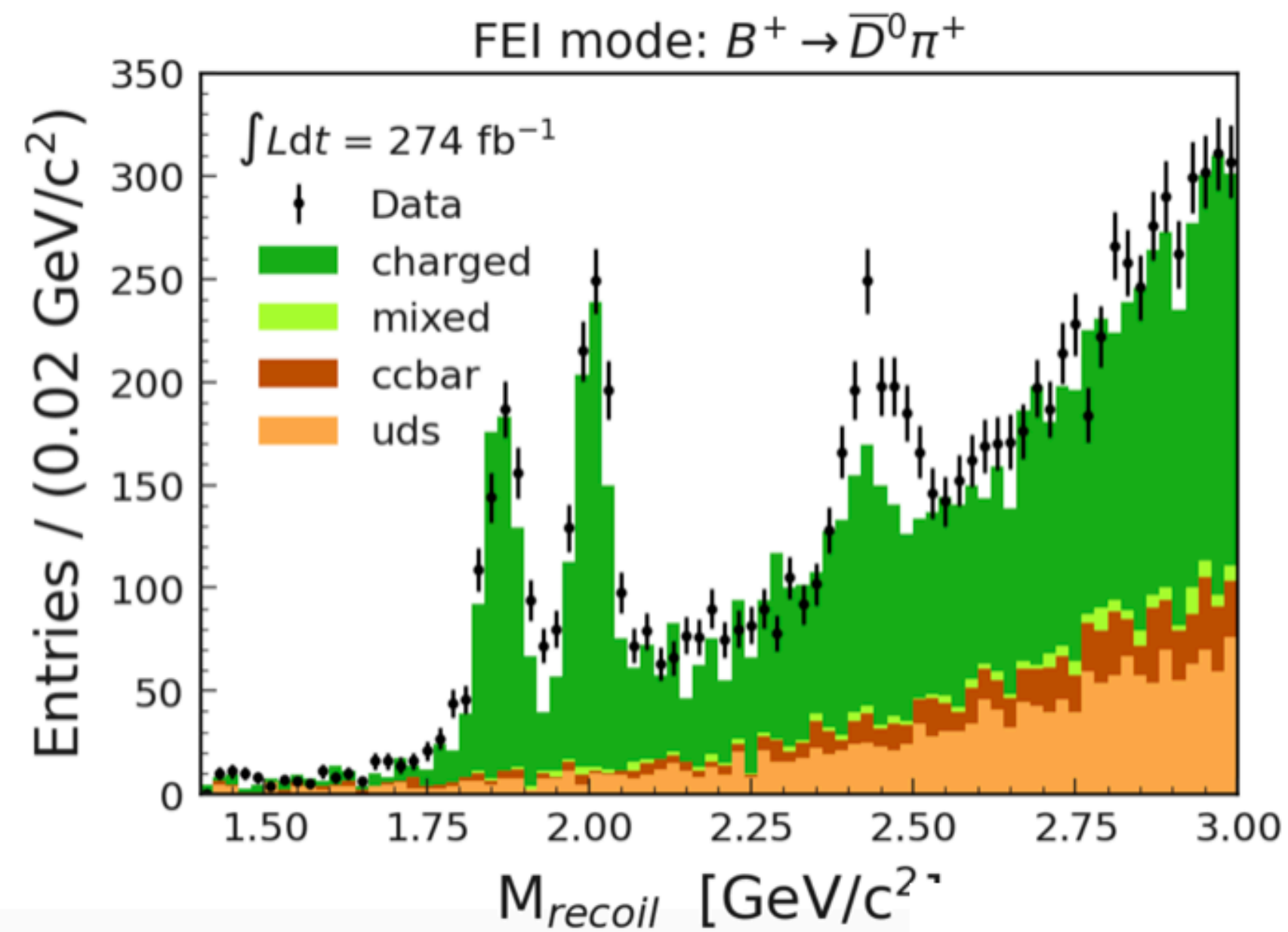- Implemented the corrections to the decay table and generated $D\pi$ signal MC

- No events in MC15rd for two π^0 modes

4.5 ± 1.2

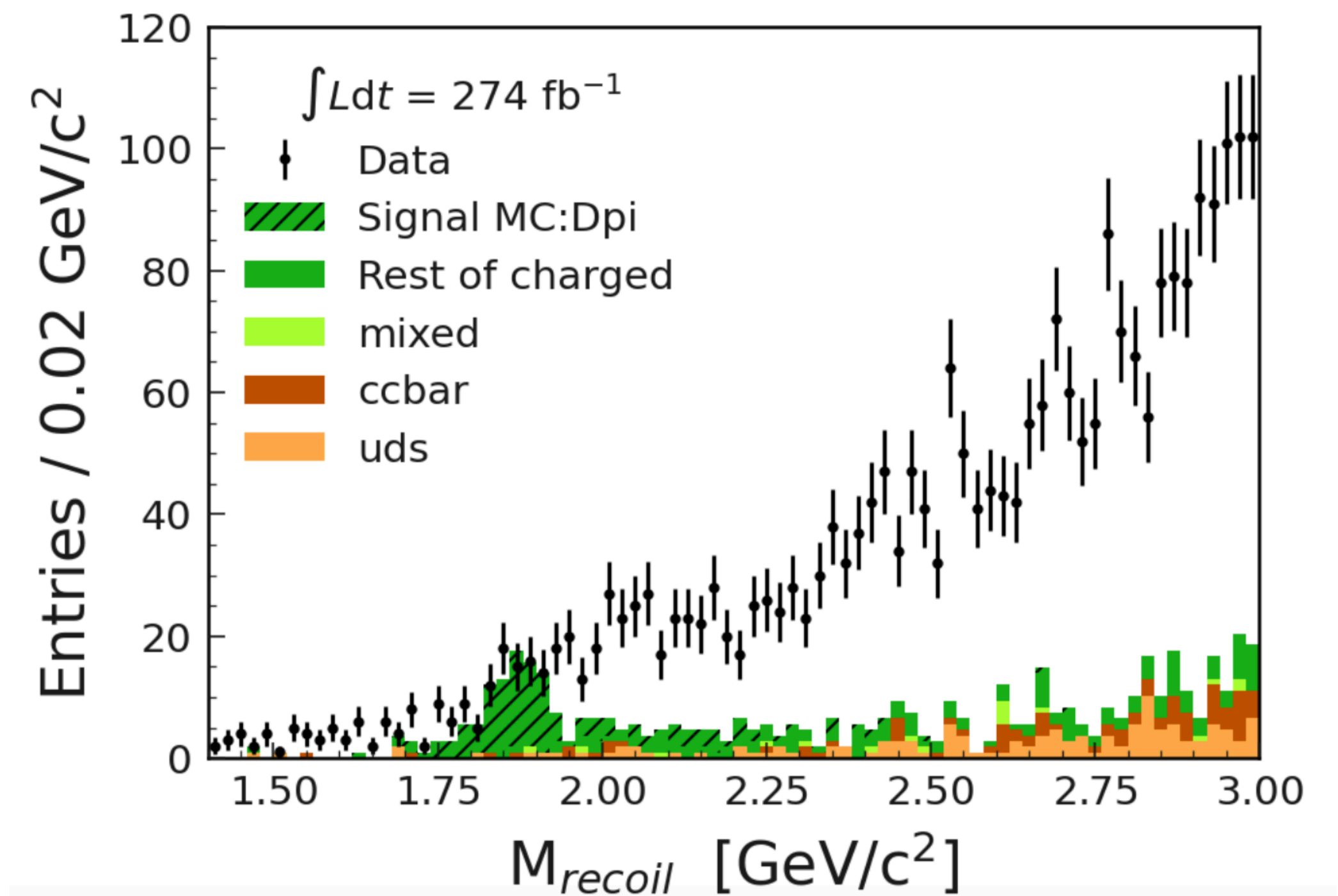12 ± 7

Calibration factor
1.07 ± 0.02

Investigation for two π^0 modes

FEI mode: $B^+ \to \overline{D}^0 \pi^+$

FEI mode: $B^+ \to \overline{D}^0 \pi^+ \pi^0$

FEI mode: $B^+ \to \overline{D}^0 \pi^+ \pi^0 \pi^0$

$\int L dt = 274 \text{ fb}^{-1}$

- Data
- charged
- mixed
- ccbar
- uds

M_{recoil} [GeV/c^2]

- No events in MC15rd for two π^0 modes → for all the components!

- Data is fine!

Investigation for two π^0 modes

FEI mode: $B^+ \to \overline{D}^0\pi^+\pi^0\pi^0$
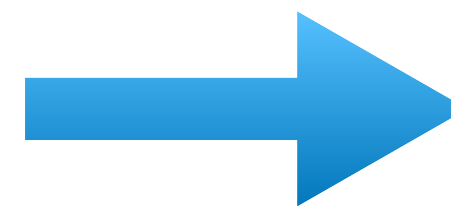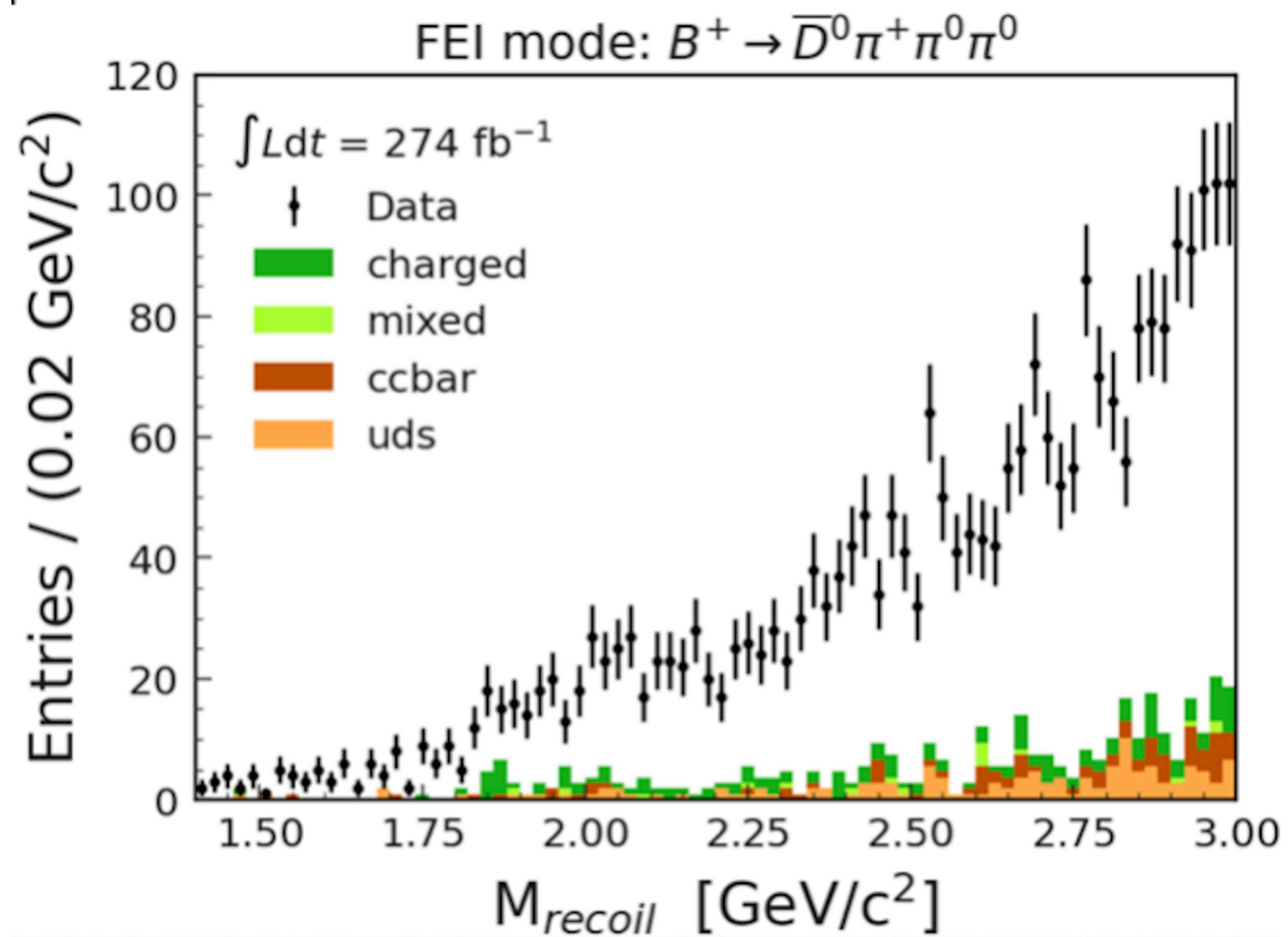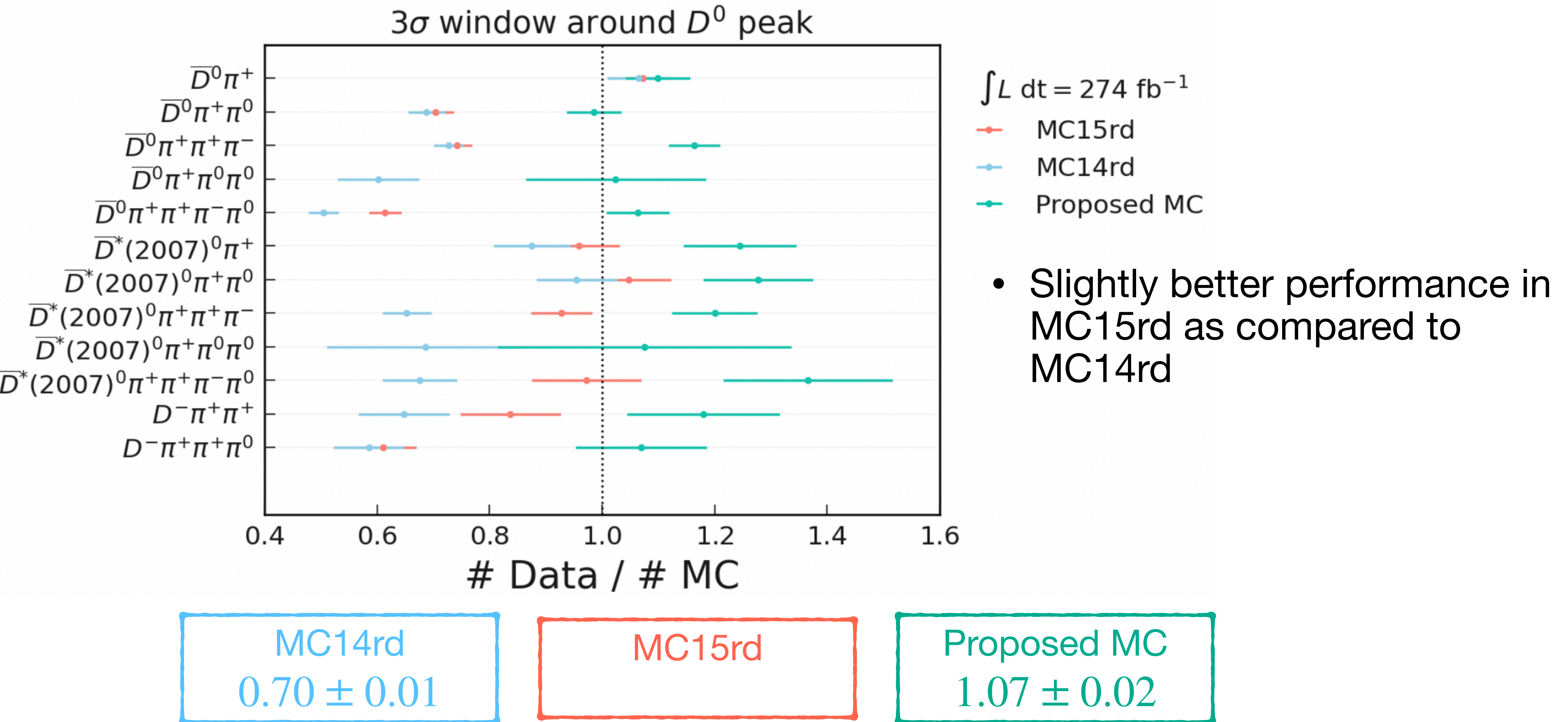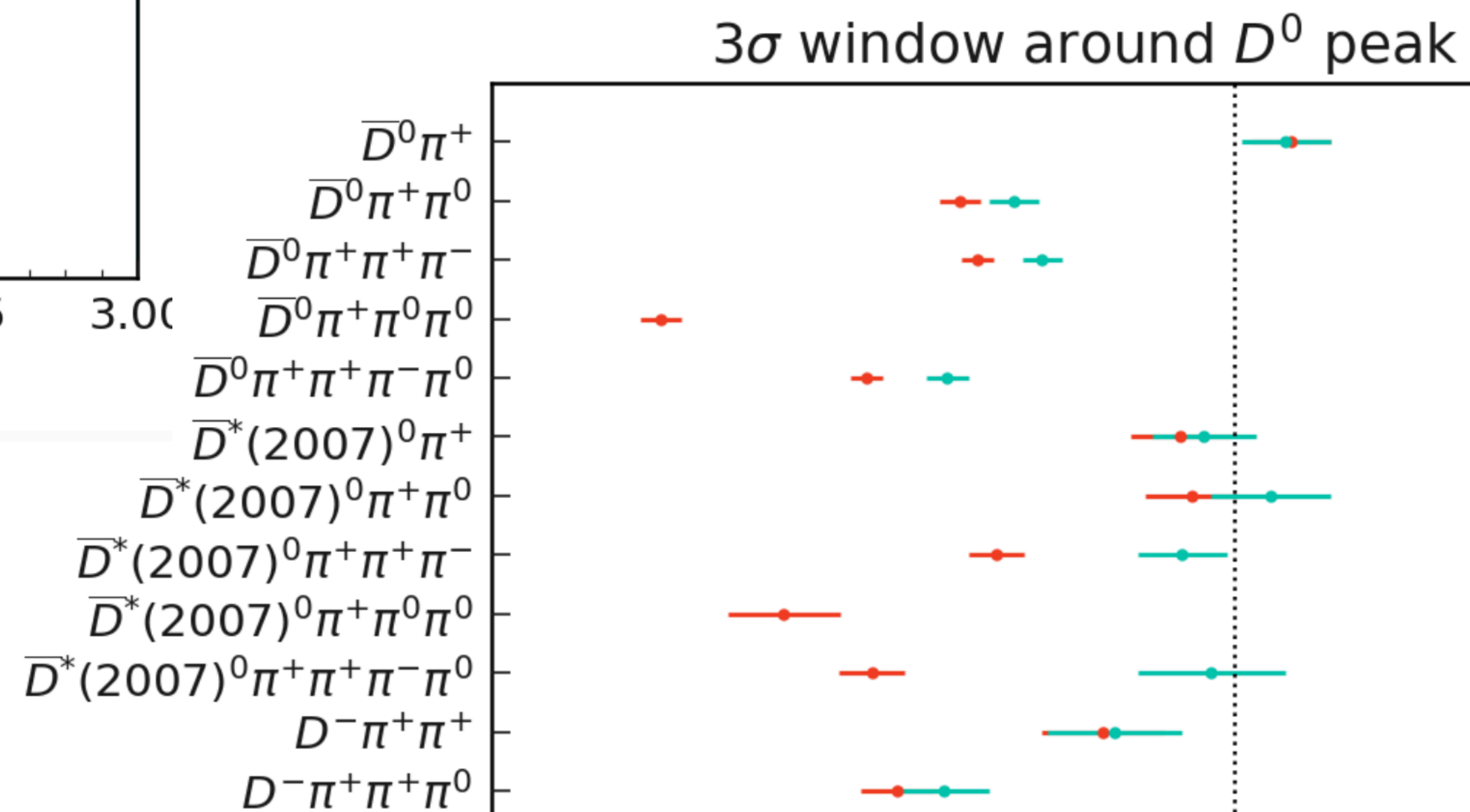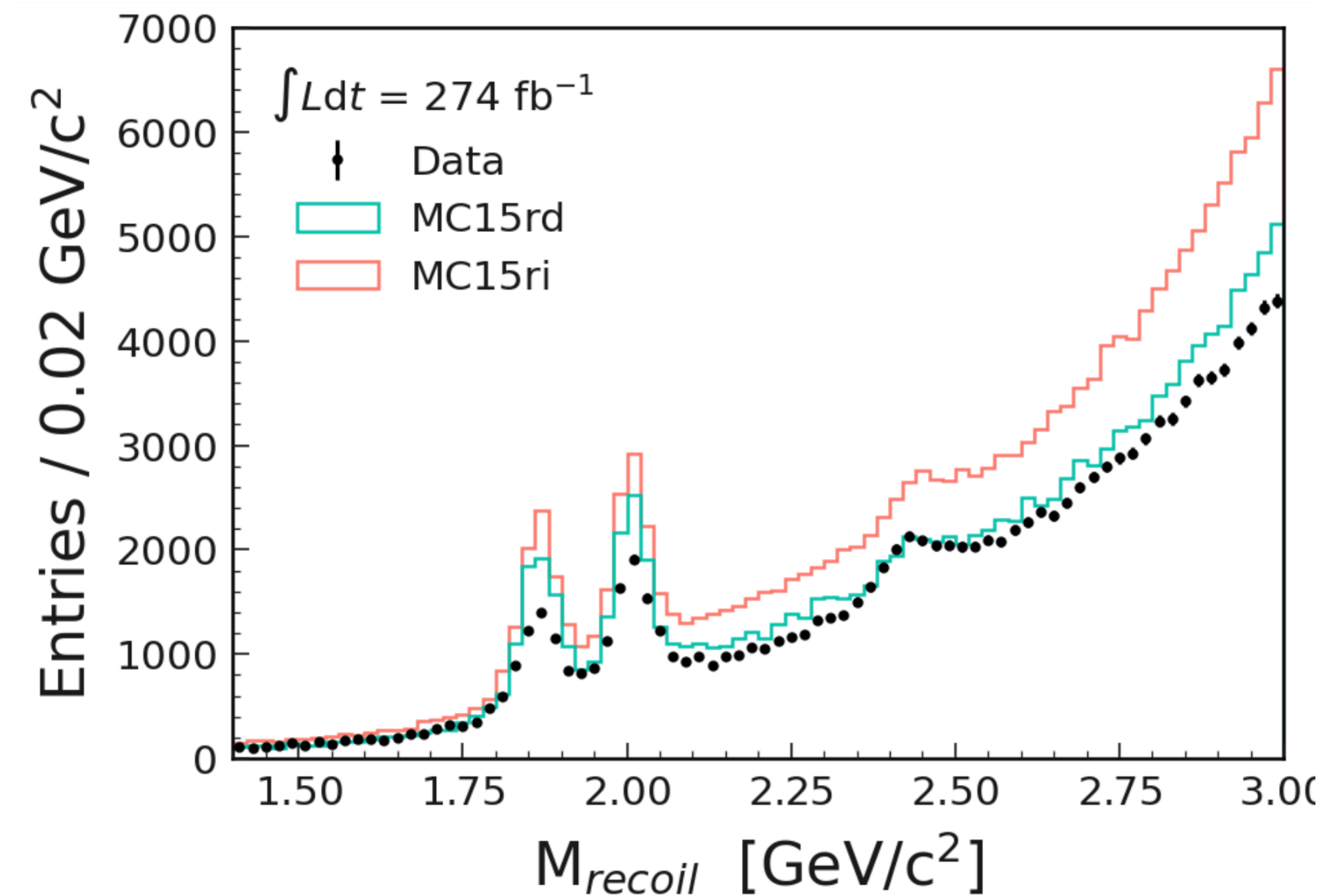
Need suggestions

- Generated with signal MC

- MC15ri tag is used

- Also checked with MC15rd tag: no difference

Some other checks

3σ window around D^0 peak

$\int L\, dt = 274\ fb^{-1}$

— MC15rd
— MC14rd
— Proposed MC

- Slightly better performance in MC15rd as compared to MC14rd

MC14rd
0.70 ± 0.01

MC15rd

Proposed MC
1.07 ± 0.02

MC15ri vs MC15rd

Next steps

- Currently updating the note → In progress

- Systematics: best candidate selection, luminosity scale factor…..

- Any other sources?