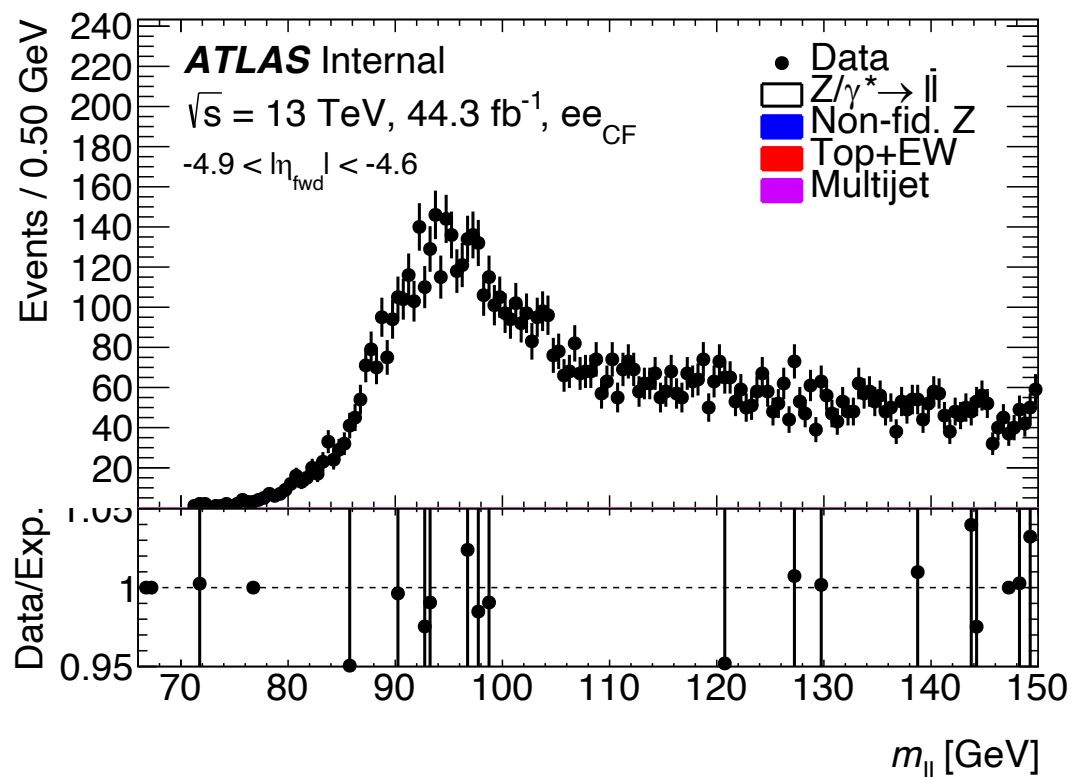


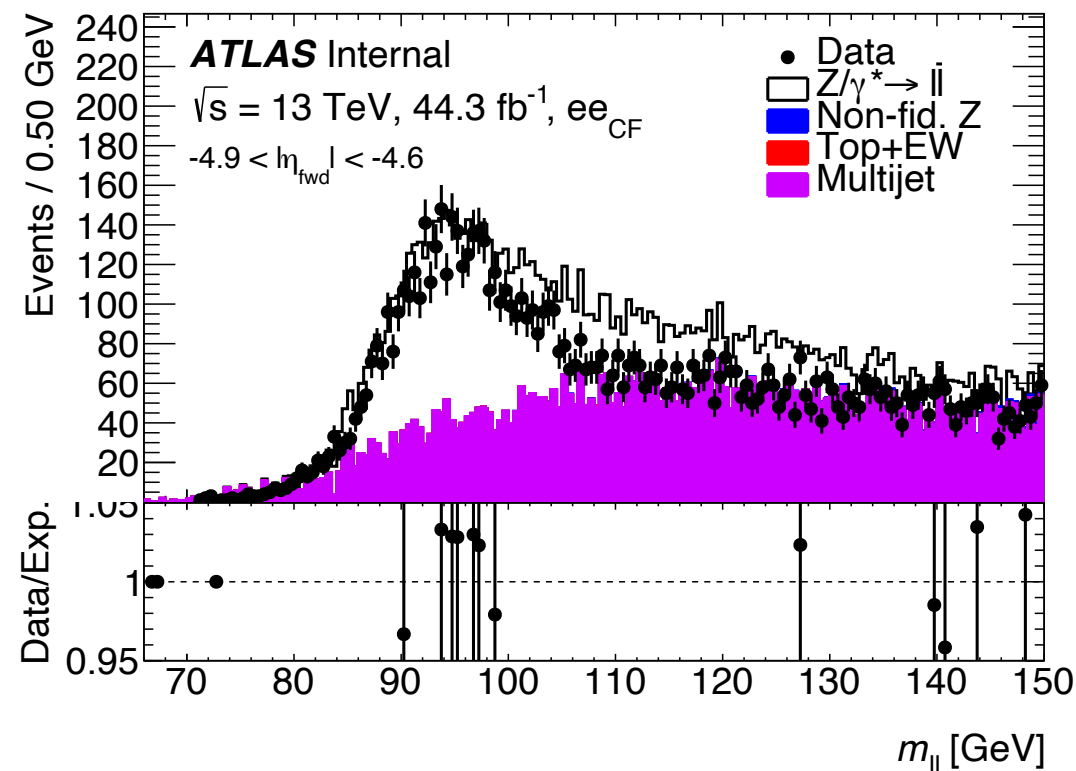
Calibration Strategy

- Use an initial version of the multijet provided by Lukas to derive the calibration.
- Update the multijet based on the new calibration.
- Update the calibration based on the newer multijet.
- Optional: update the MJ once more but not currently done.
- Calibration binning 0.1 bin size in the EMEC, 3.35, 3.6, 4.0, 4.3, 4.6, 4.9 in the FCal (and corresponding negative bins).
- Shown are 2017 plots in the FCal and the bad EMEC bins for the initial multijet and updated multijet

-4.9 - -4.6



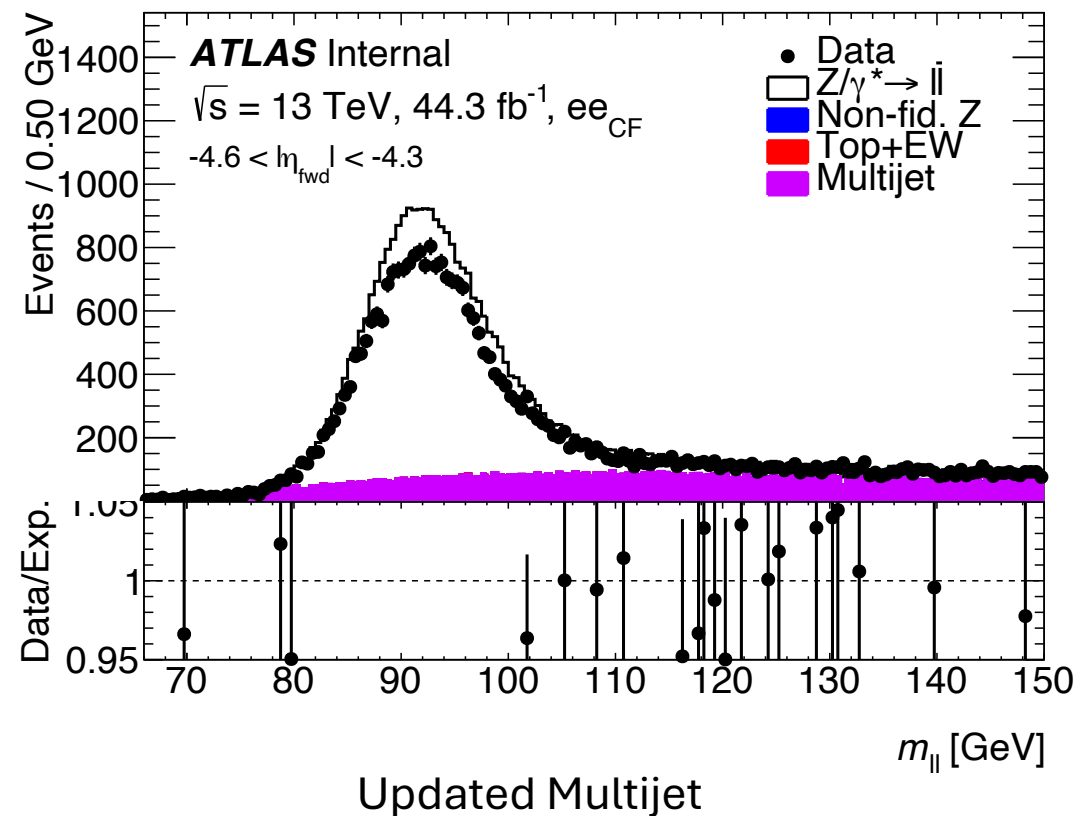
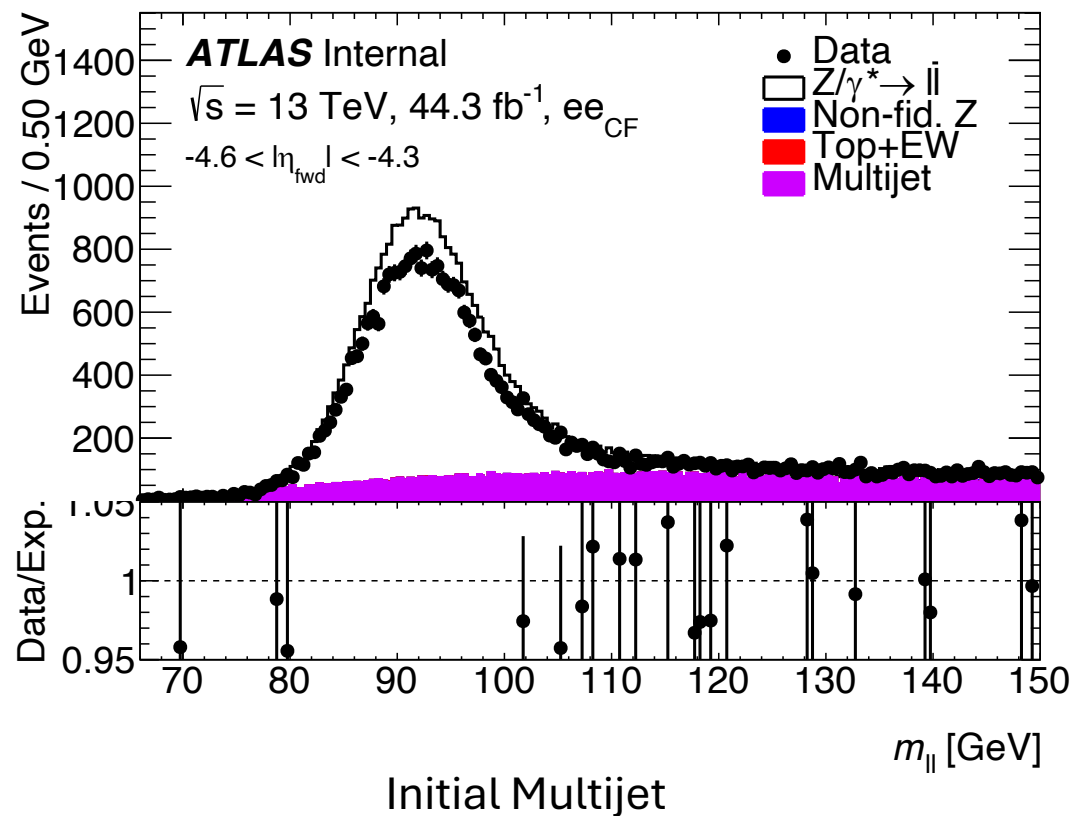
Initial Multijet



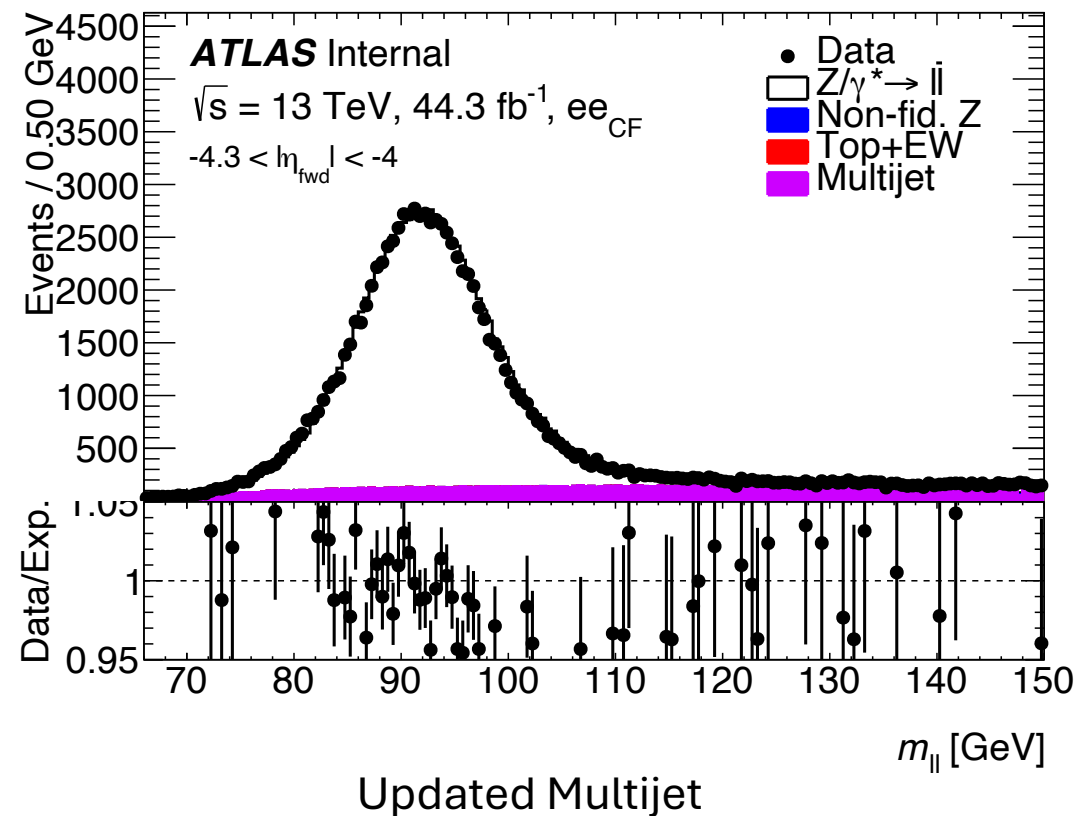
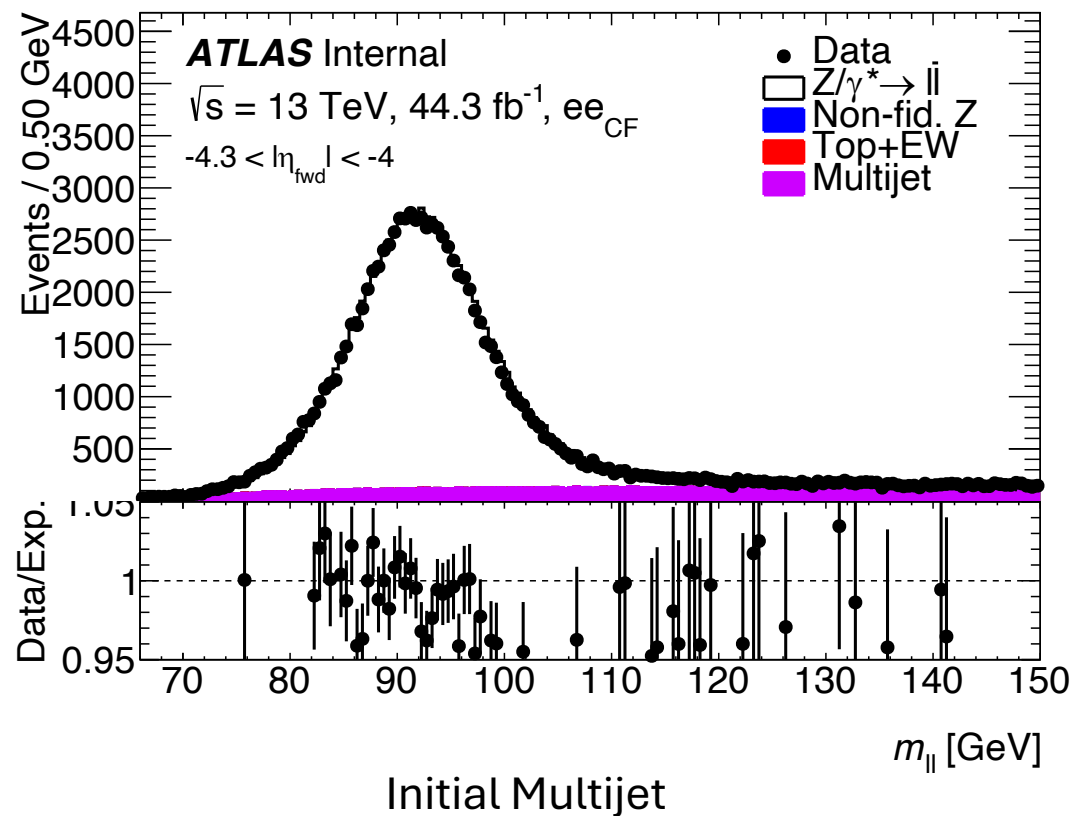
Updated Multijet

Not sure why the MC/MJ isn't properly filled here.

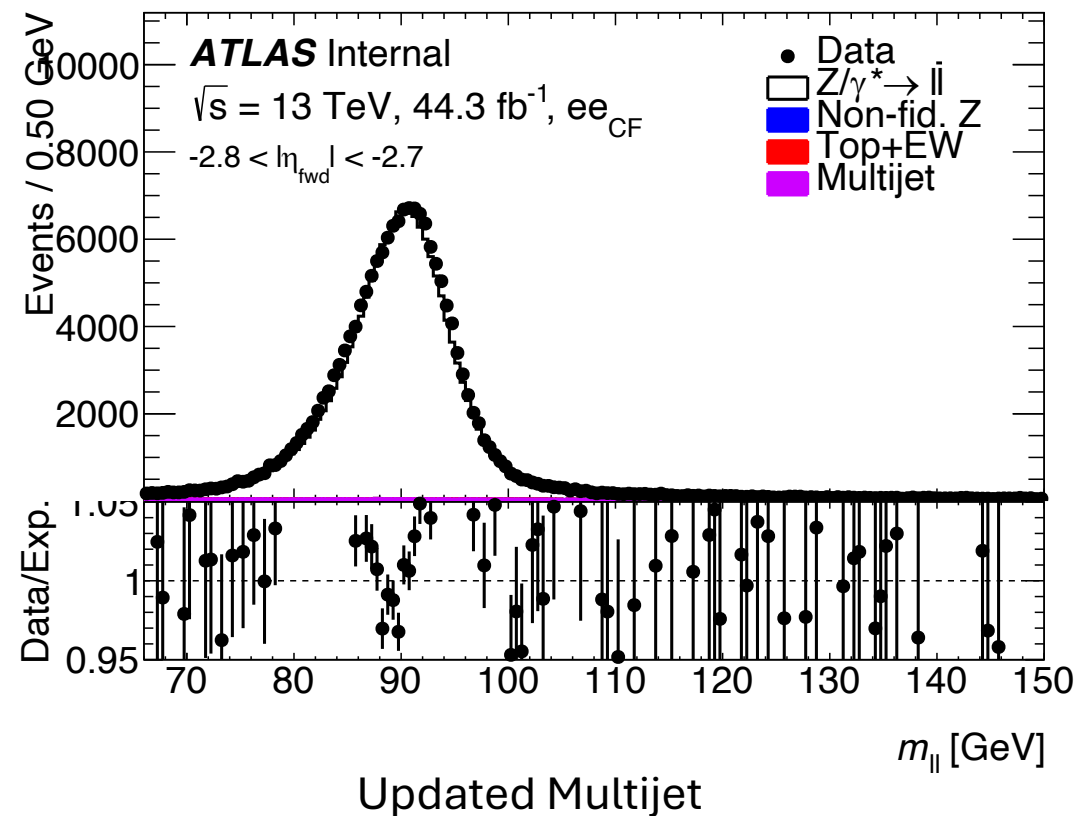
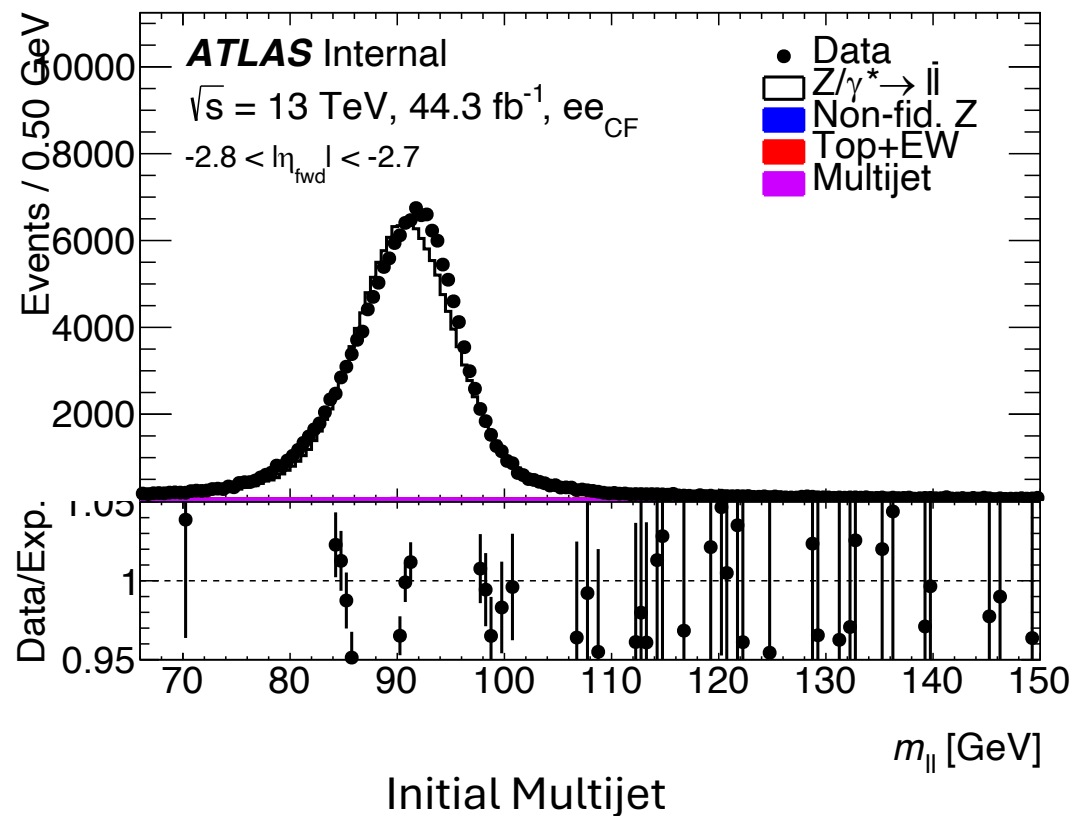
-4.6 - -4.3



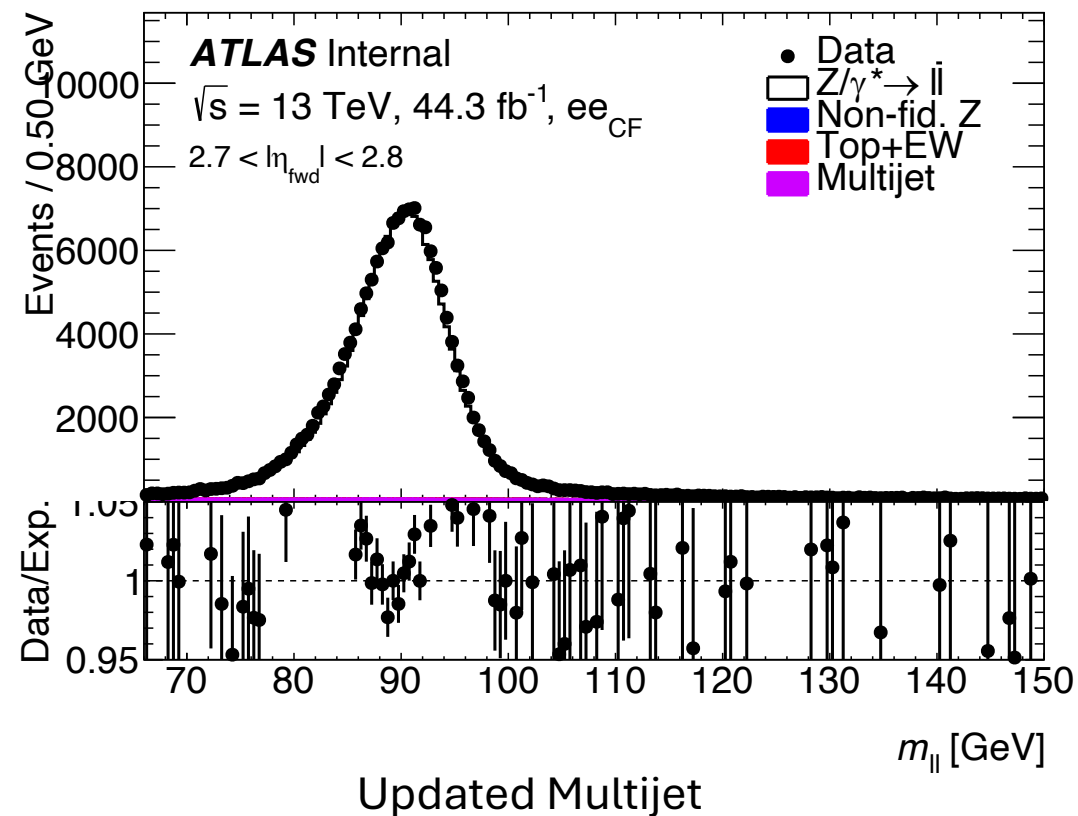
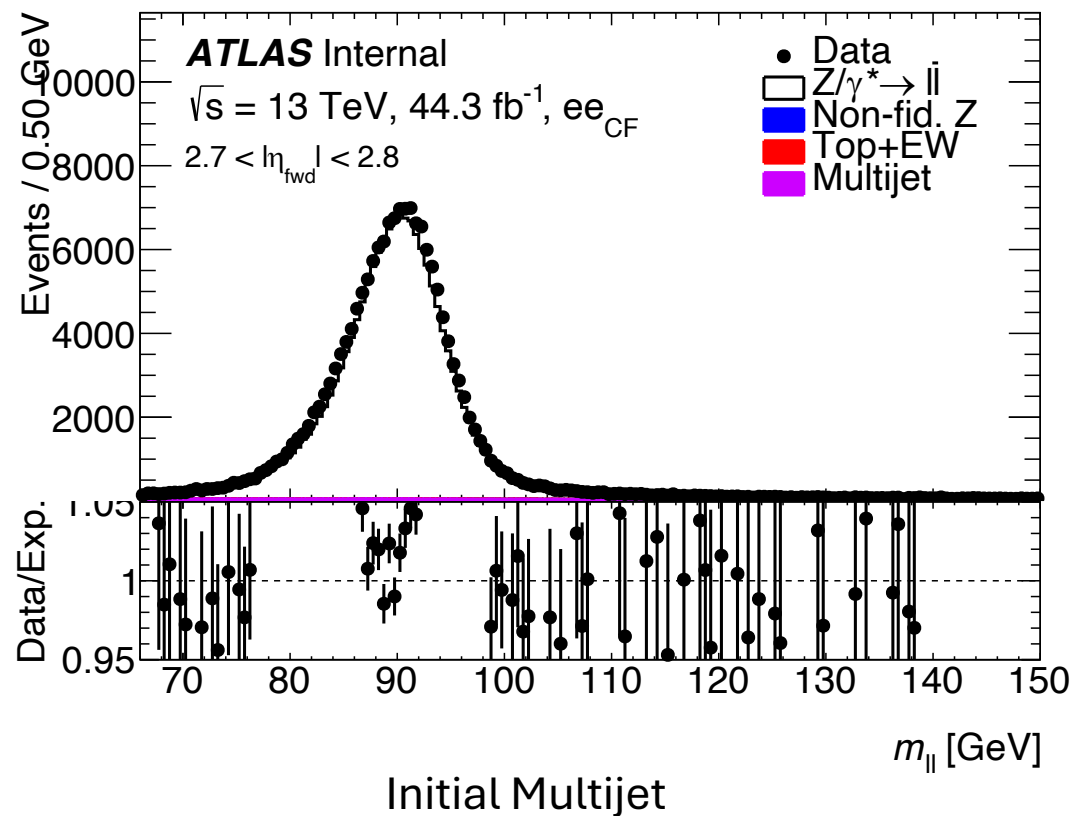
-4.3 - -4.0



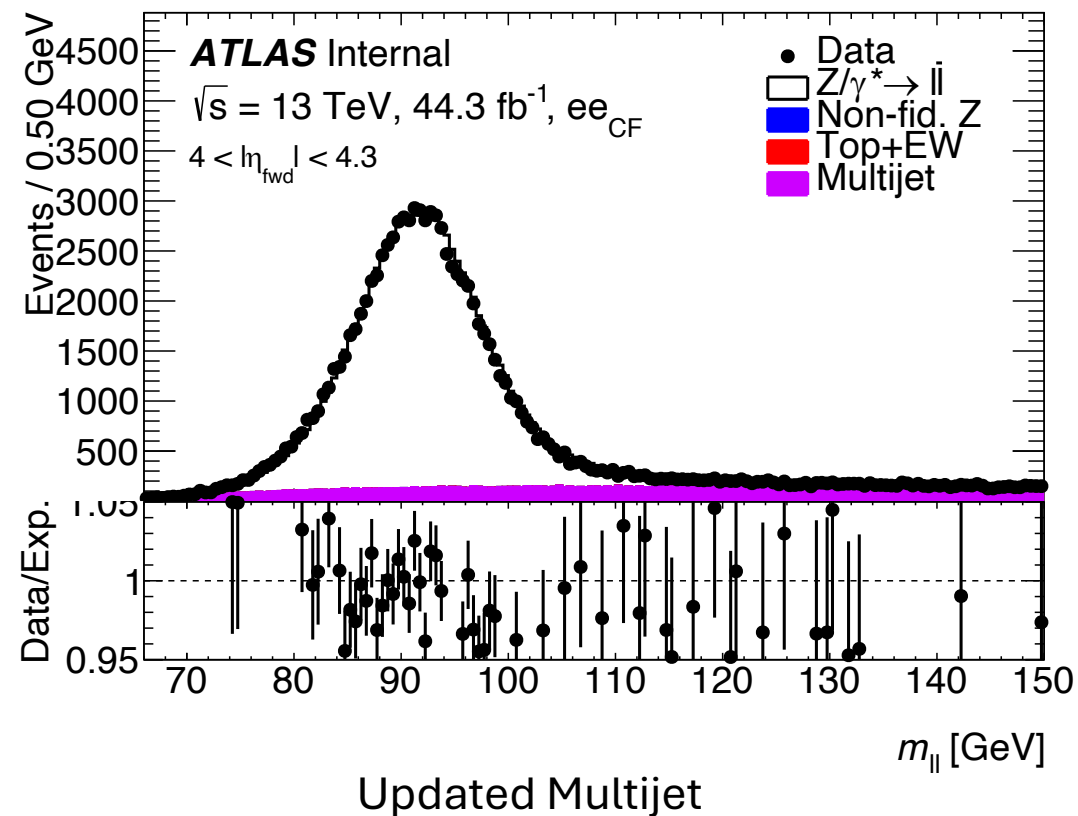
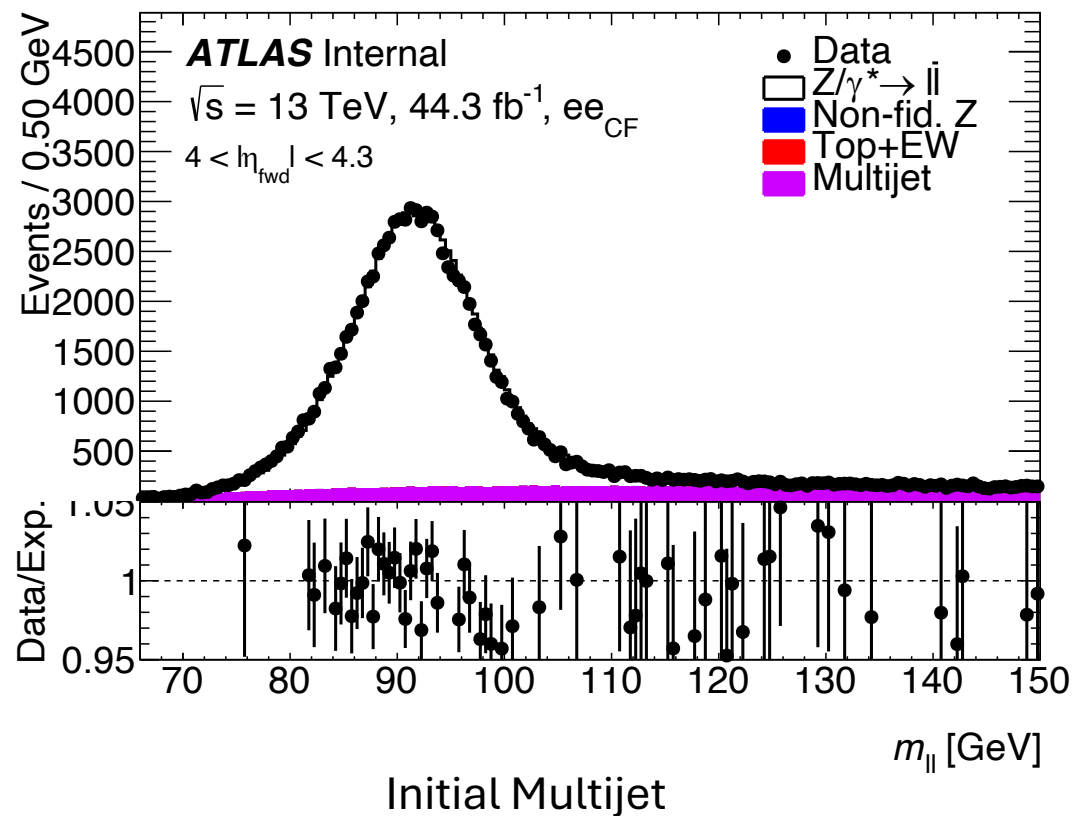
-2.8 - -2.7



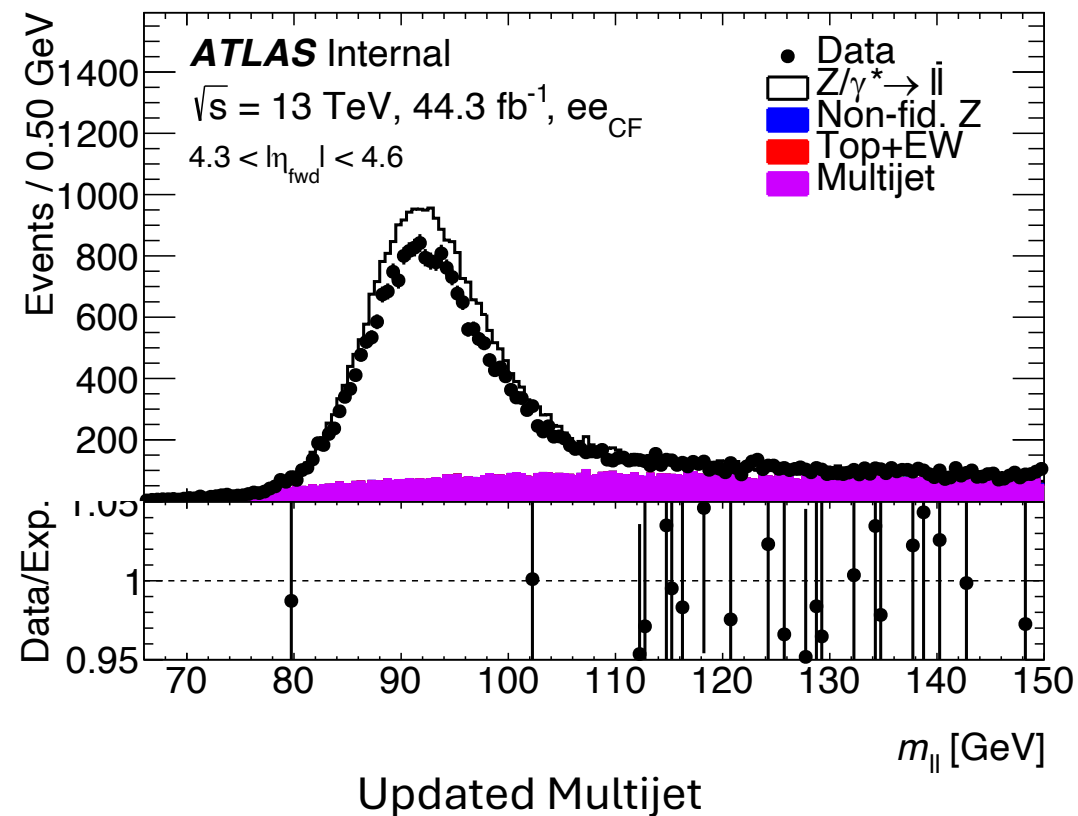
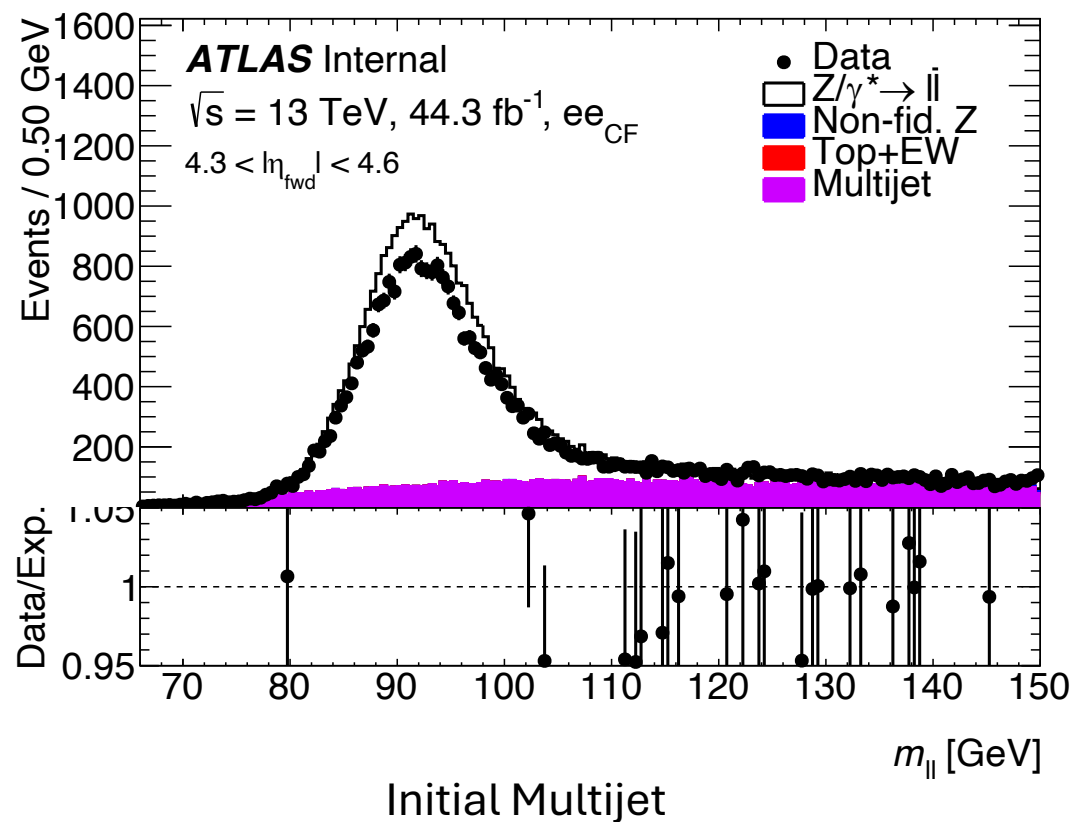
2.7 – 2.8



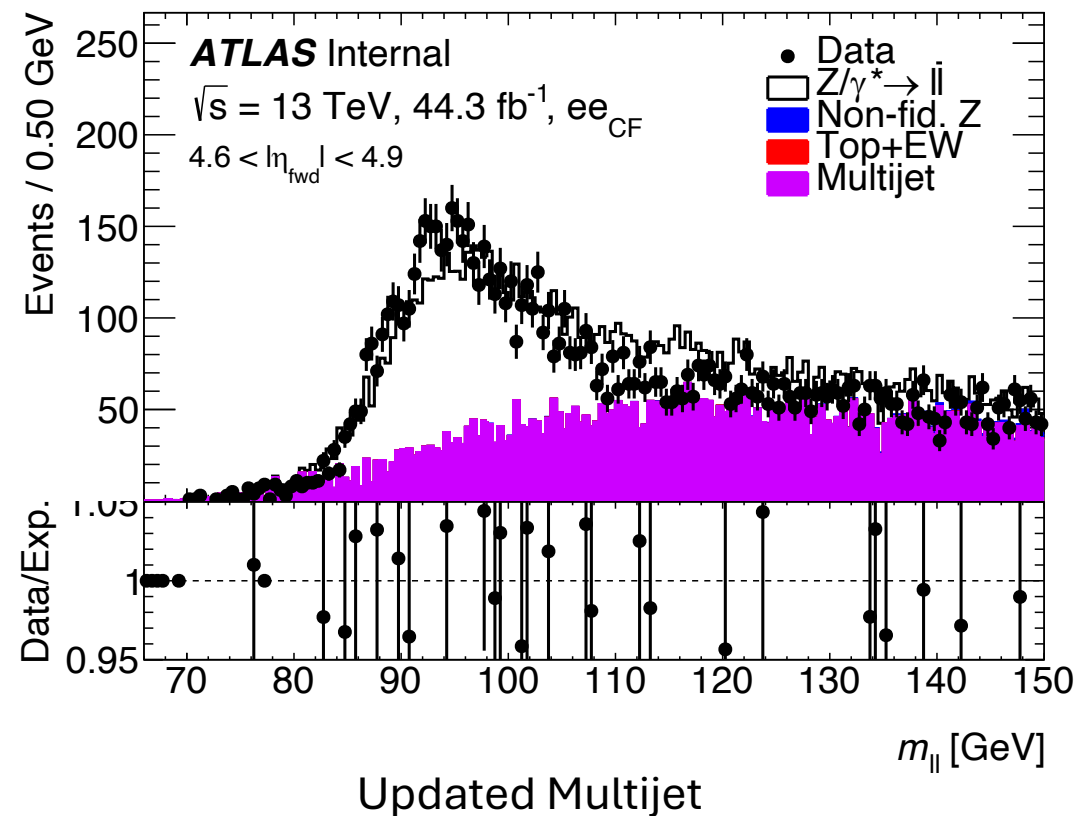
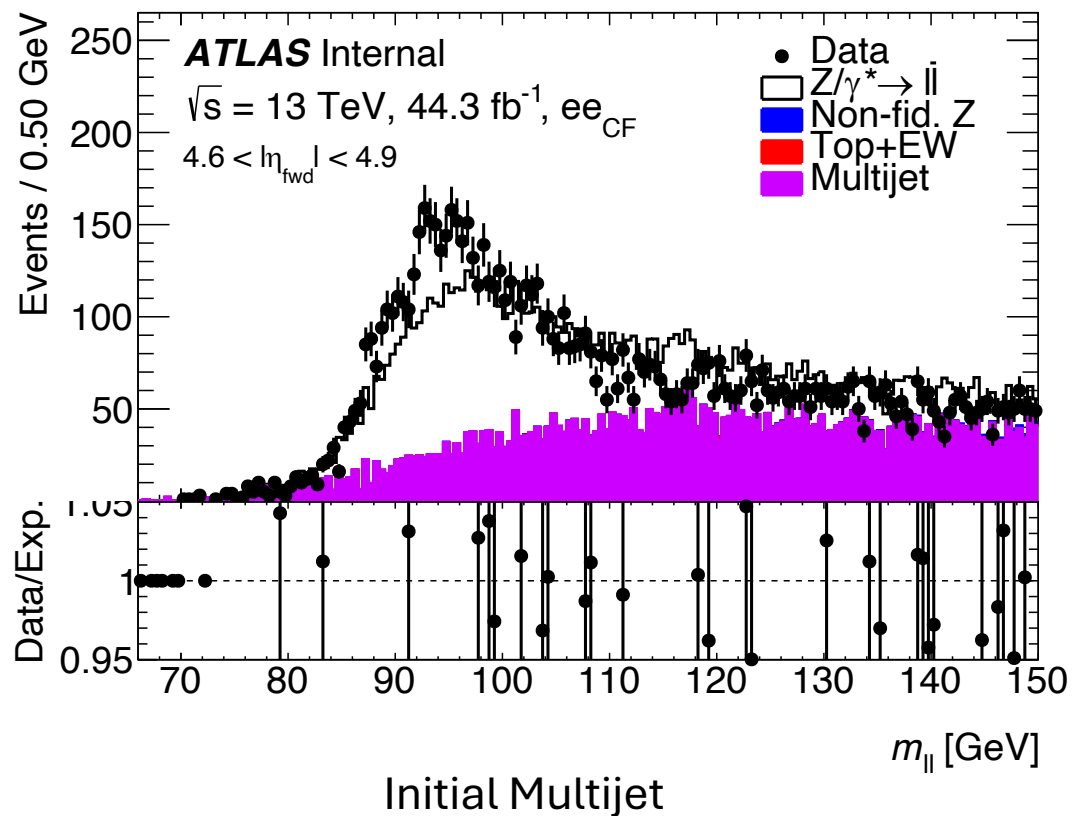
4 – 4.3



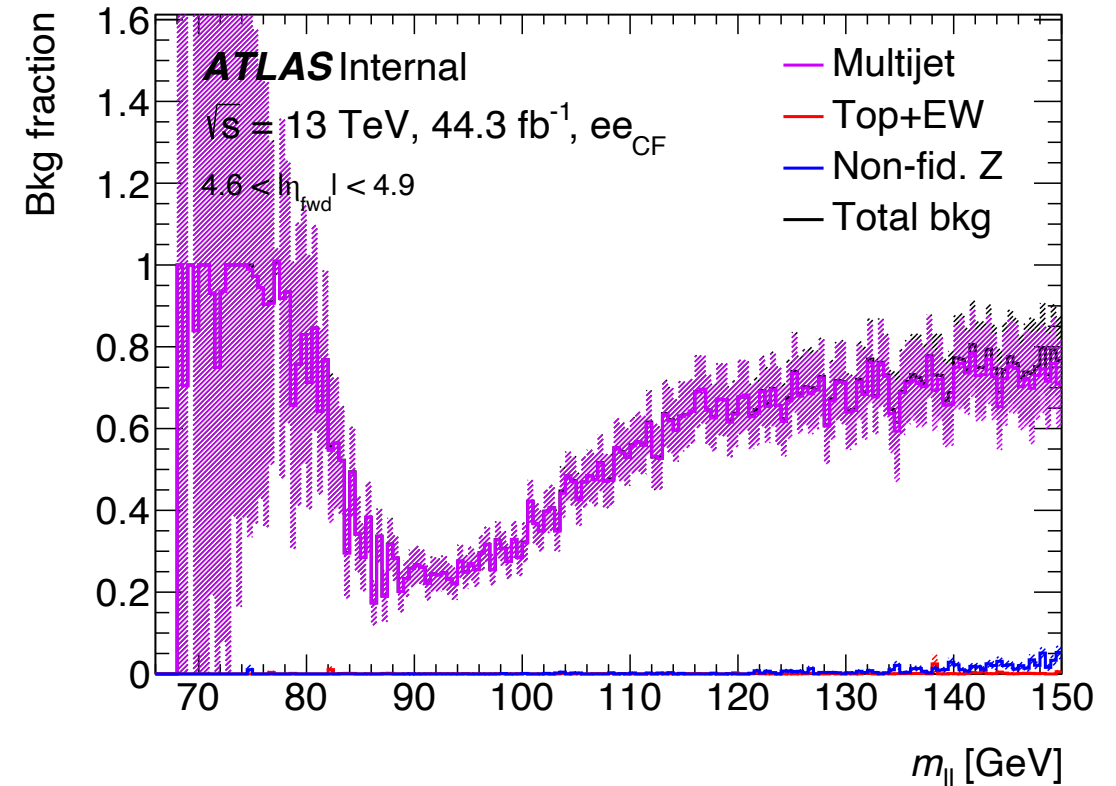
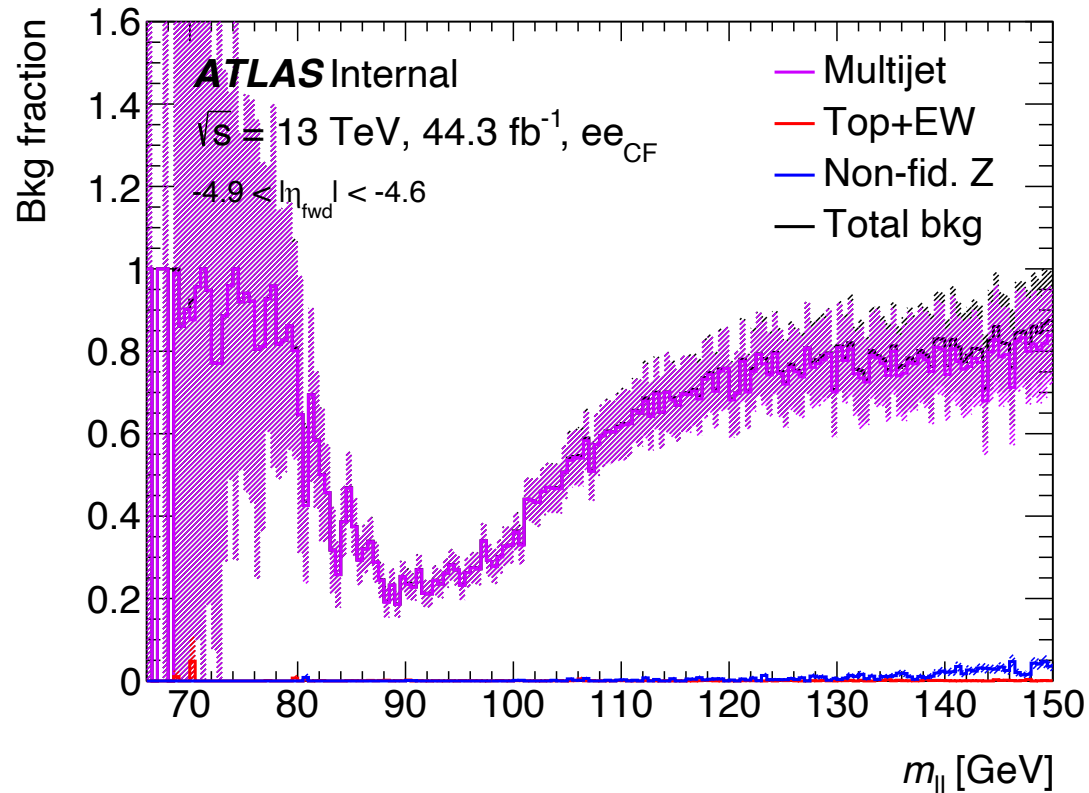
4.3 - 4.6



4.6 - 4.9

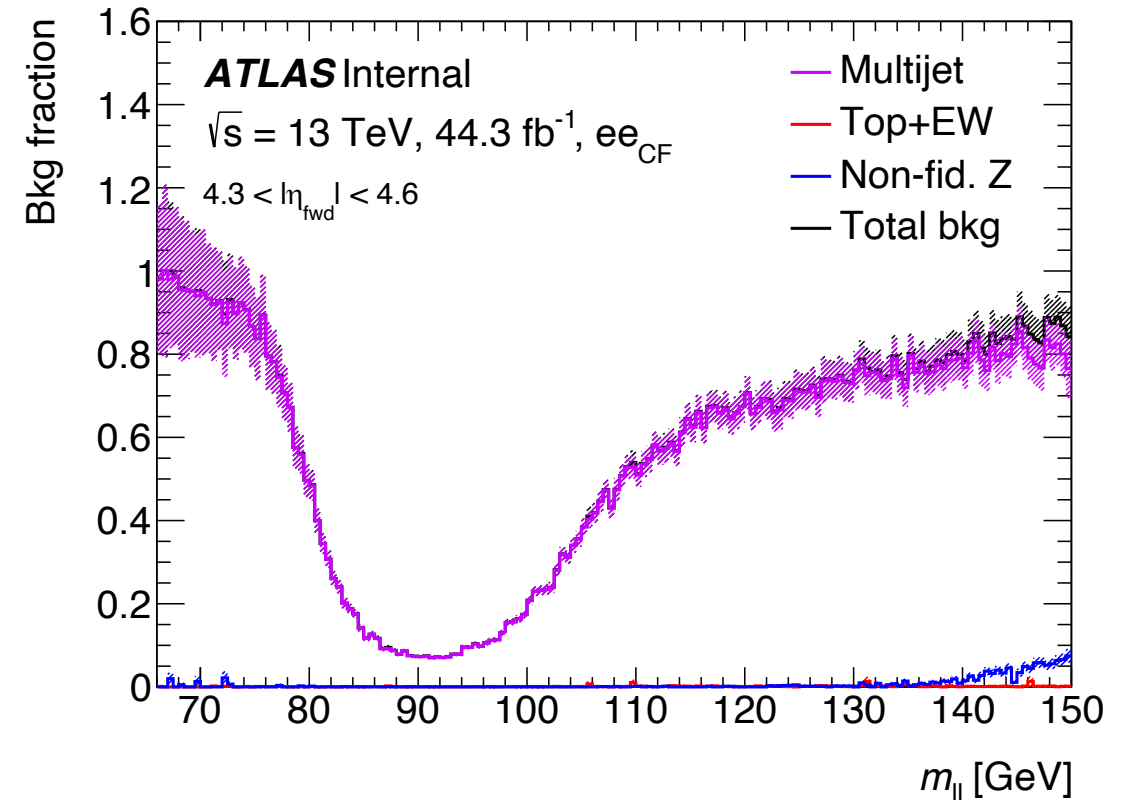
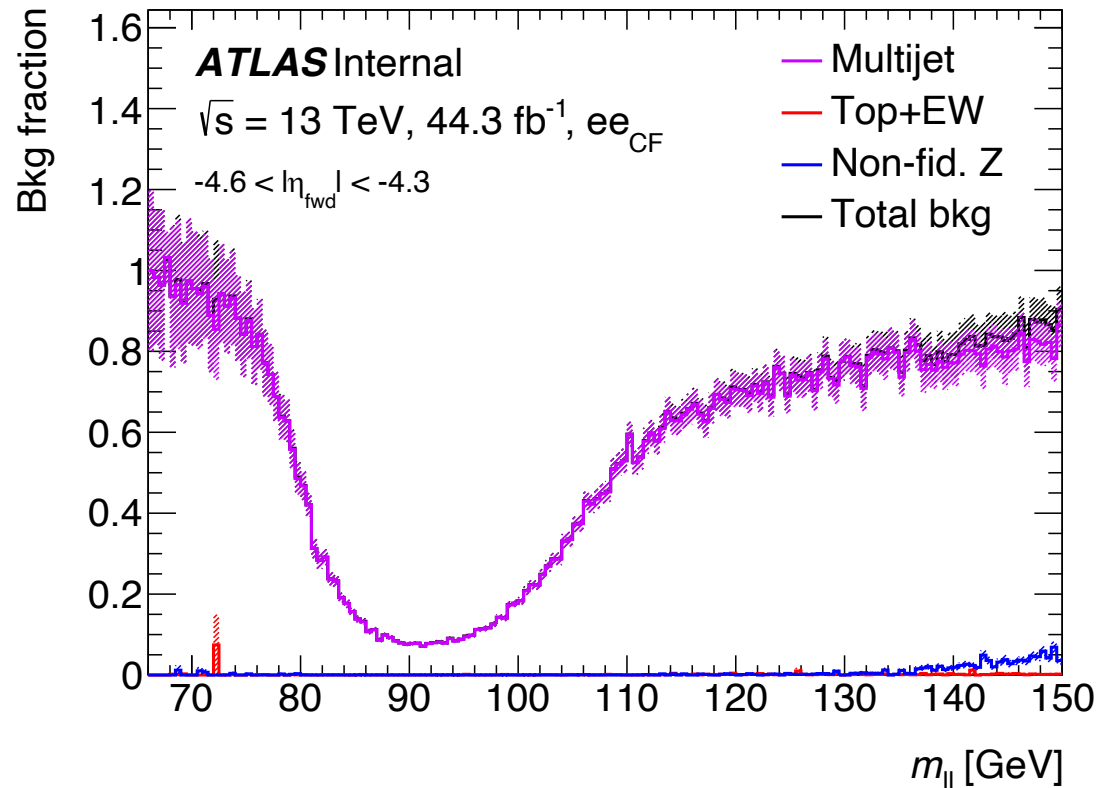


FCal Background Composition Plots – Updated MJ



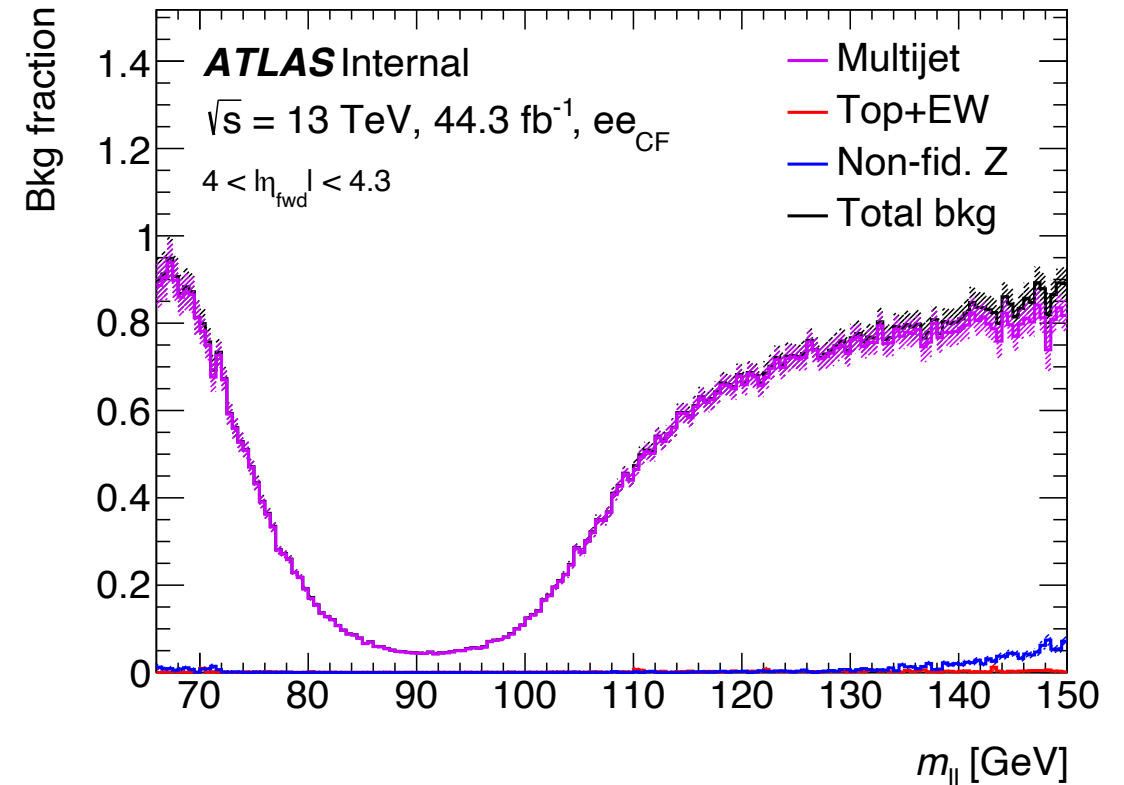
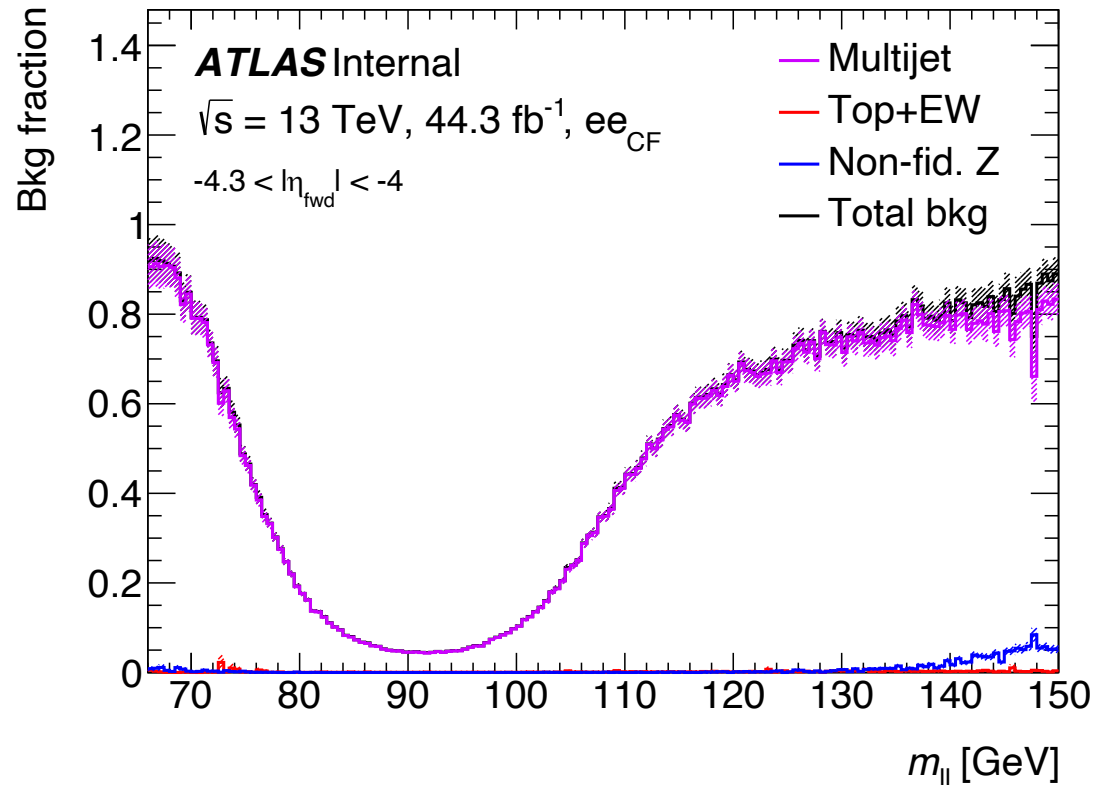
- S2w mass binning is currently 70, 80, 100, 125 – looking to extend to replace 125 with 150
- Extremely high background levels in the low/high mass sidebands!

FCal Background Composition Plots – Updated MJ



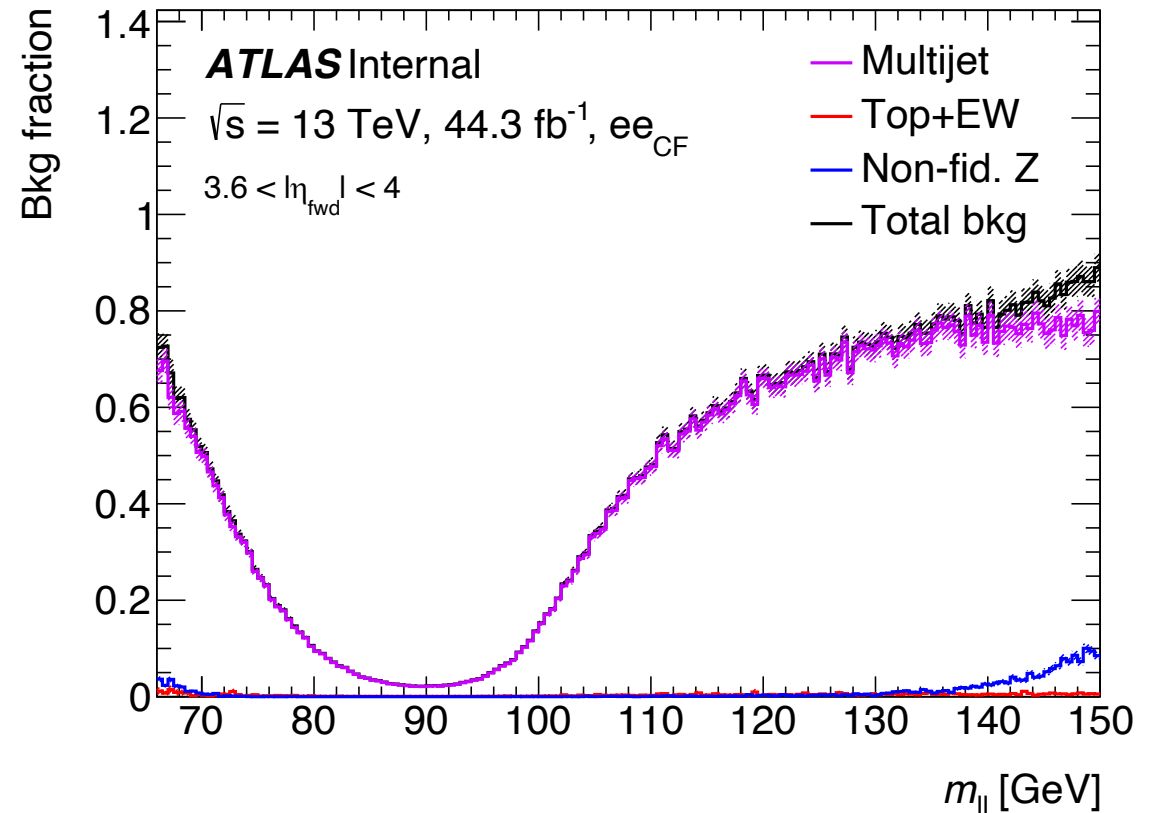
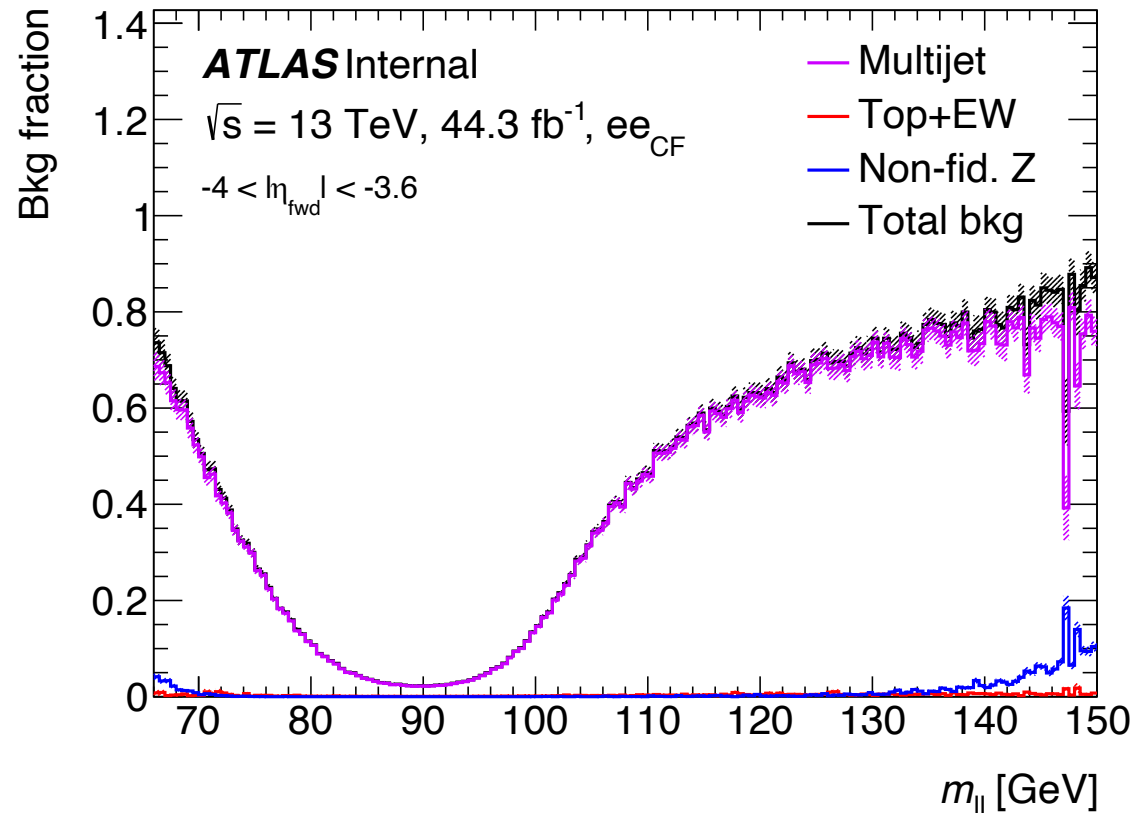
- S2w mass binning is currently 70, 80, 100, 125 – looking to extend to replace 125 with 150
- Extremely high background levels in the low/high mass sidebands!

FCal Background Composition Plots – Updated MJ



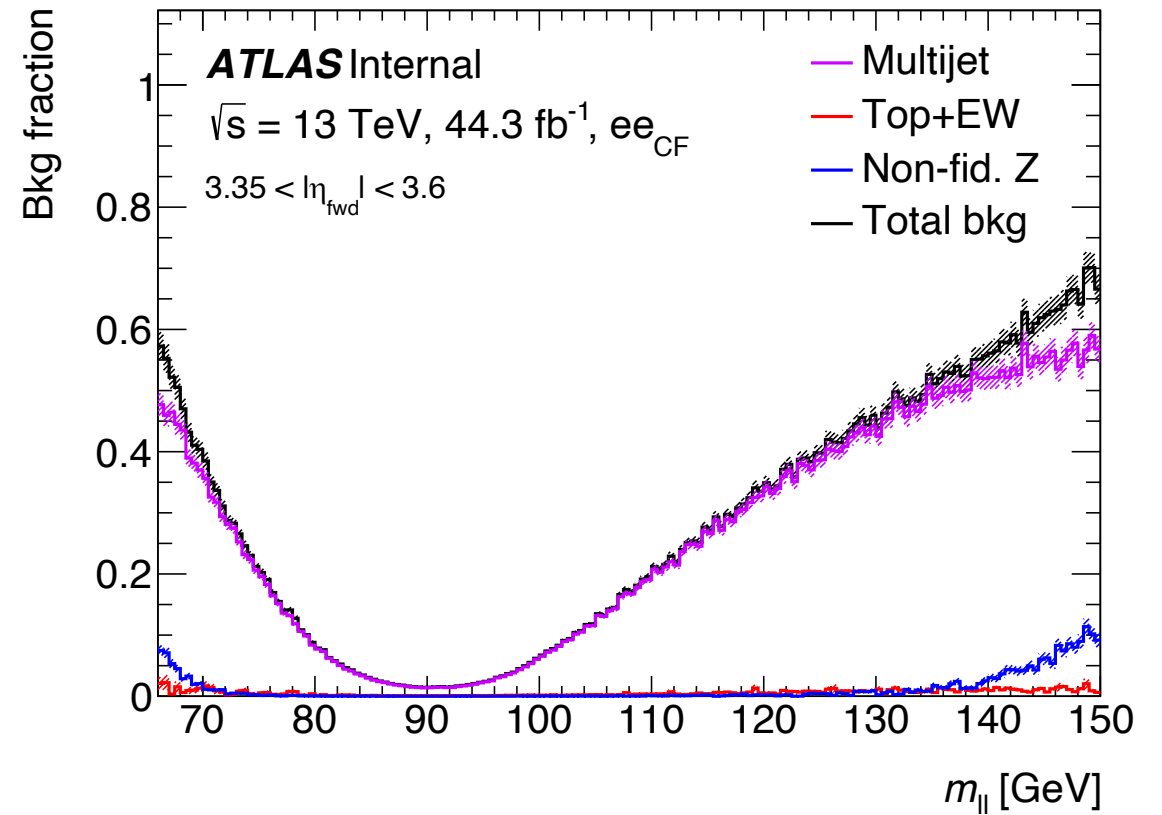
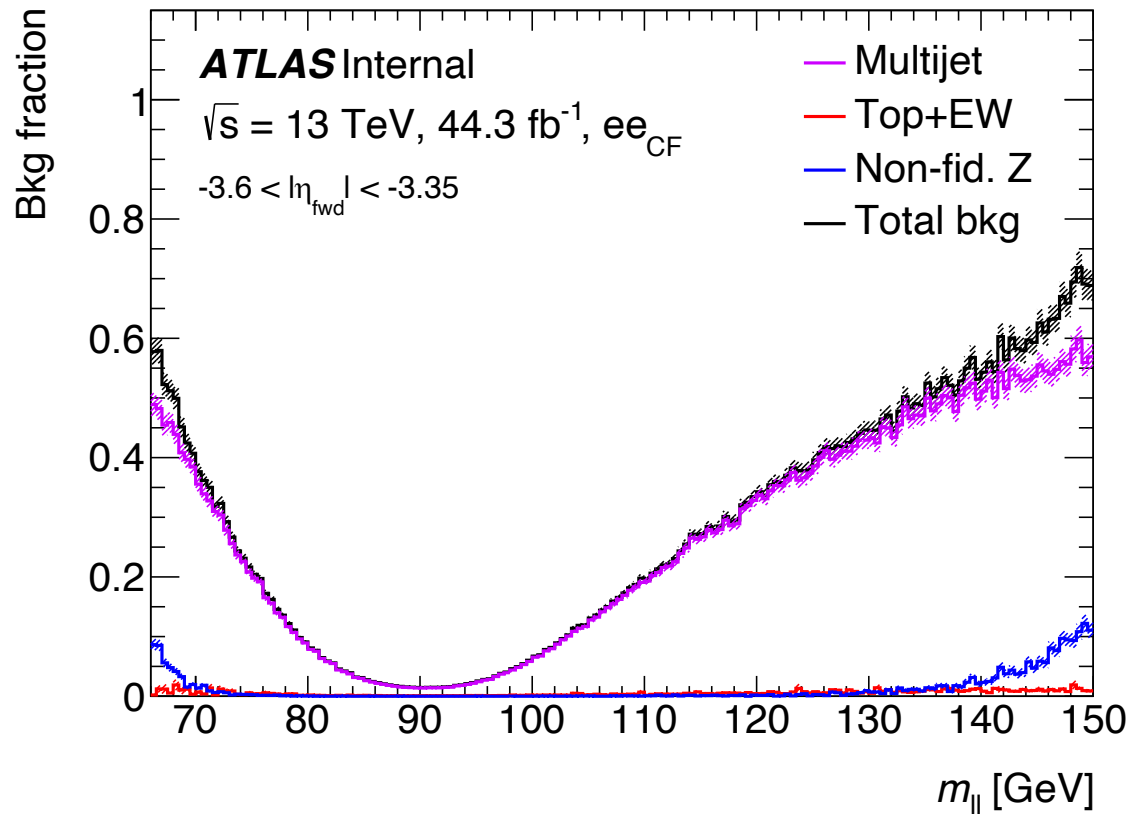
- S2w mass binning is currently 70, 80, 100, 125 – looking to extend to replace 125 with 150
- Extremely high background levels in the low/high mass sidebands!

FCal Background Composition Plots – Updated MJ



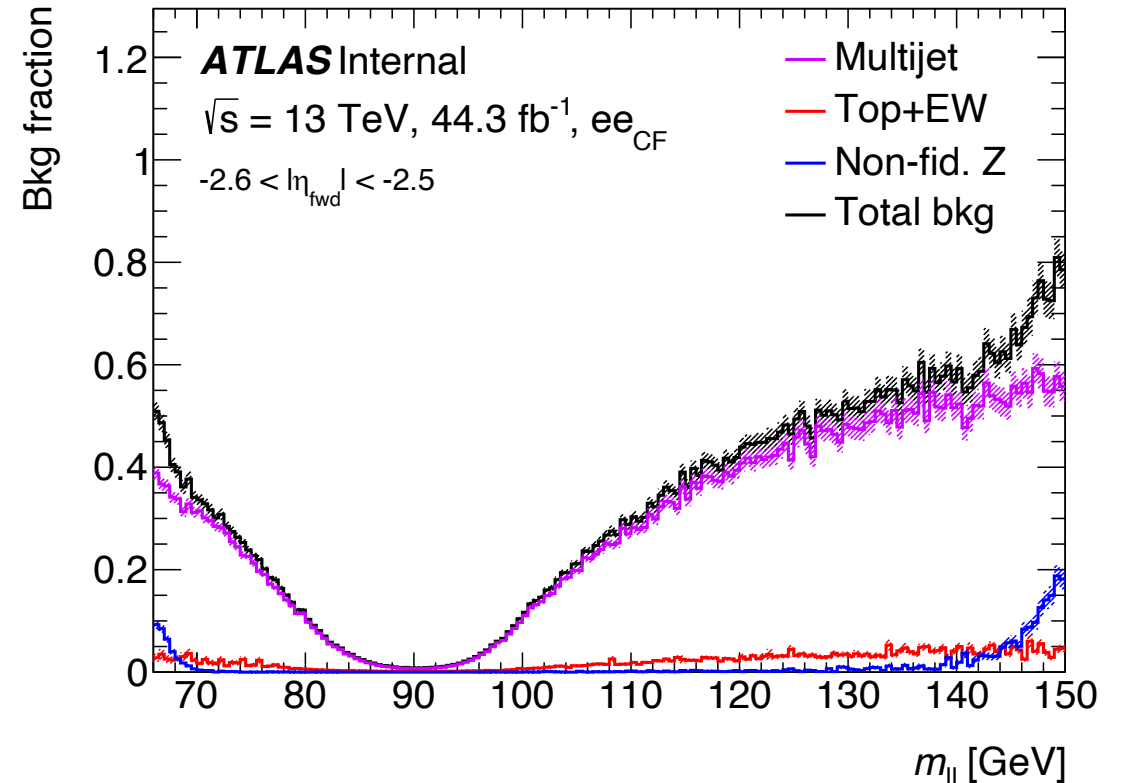
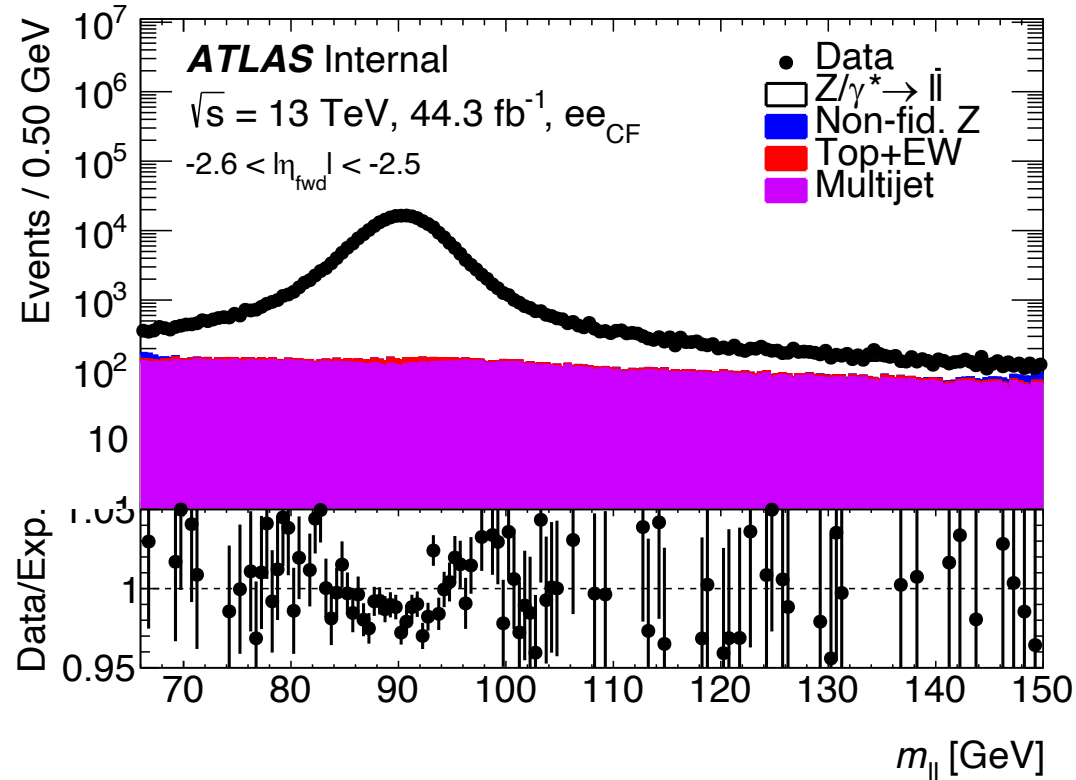
- Below $|\eta| = 4$, backgrounds begin to fall below 80% in the sidebands, probably still far too high

FCal Background Composition Plots – Updated MJ



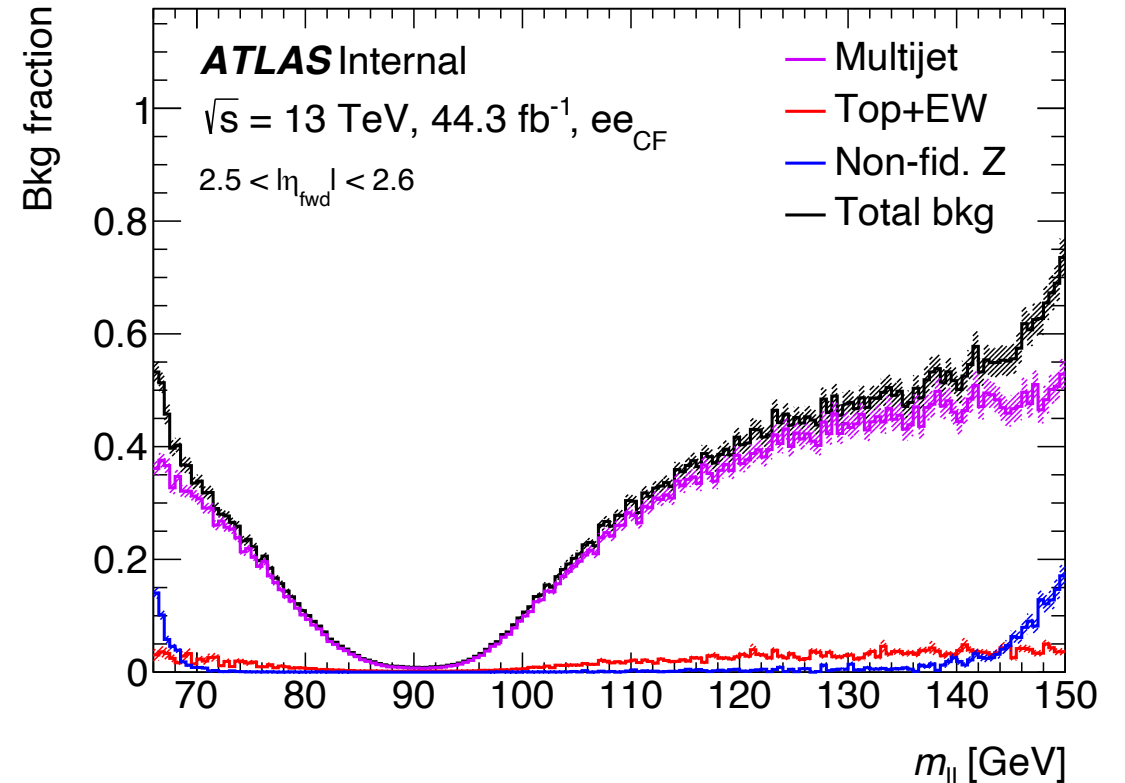
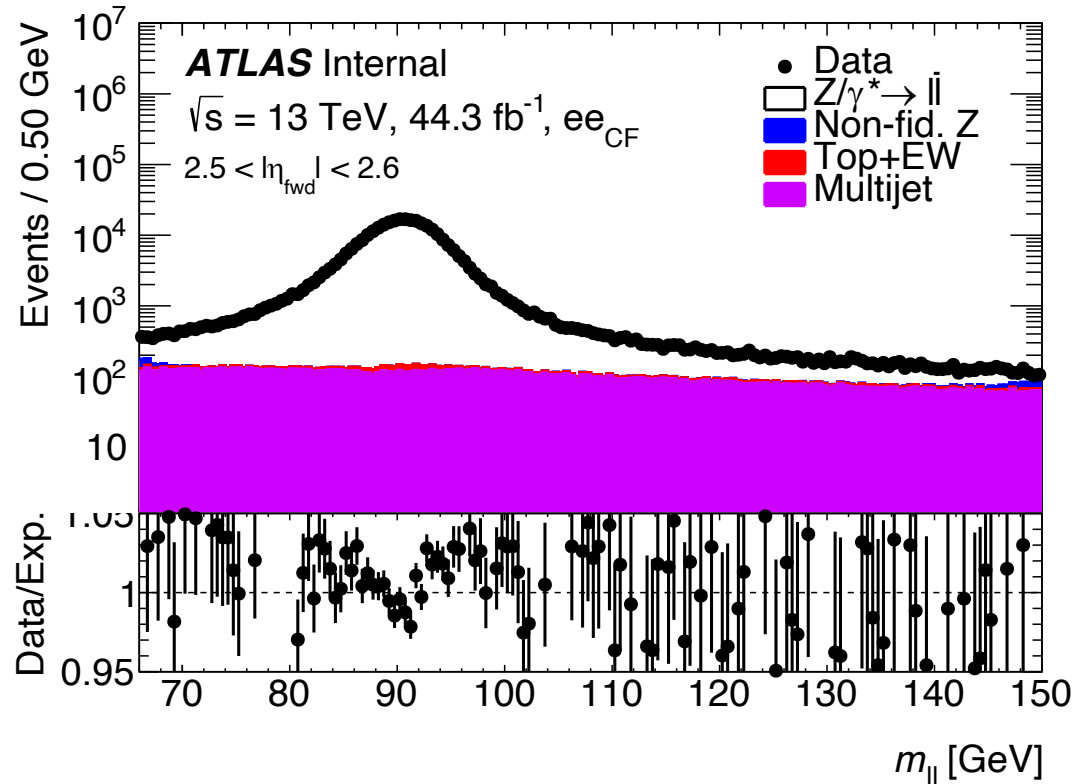
- Backgrounds are probably overall small enough to use this FCal bin for s2w extraction.

EMEC Background Composition – Updated MJ



- Extending the m_{ll} range to 150 GeV may also be problematic in the EMEC, backgrounds are still ~50% in the best bins

EMEC Background Composition – Updated MJ



- Extending the m_{ll} range to 150 GeV may also be problematic in the EMEC, backgrounds are still ~50% in the best bins

Takeaways

- Cannot calibrate $|\eta| > 4$ with the current level of granularity.
 - Return to the previous calibration bins of 4.0 – 4.9.
- Very high levels of background in the low/high mass sidebands in the FCal.
 - I'd remove everything $|\eta| > 3.6$ if staying with 100 – 125 GeV bin.
 - If extending high mass band to 150 GeV, remove the FCal entirely.
 - Extending to 150 GeV may be a challenge, even in the EMEC.
- Background levels are fine in the 80 - 102 GeV region so we can use the FCal for A_i extraction.
- Full run 2 background levels unlikely to be much lower.
- For first Asimov studies, I'll stick to the 3 (high η) FCal calibration bins and with no non-crack cuts on η .