Update 2025 April 15

DESY ZAi Group Meeting

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Hamburg, 15.04.2025

HELMHOLTZ

Forward Electron Calibration

[Lukas & Filip]

- Review MR from Filip aiteam/aidy!51
  - seems fine to me
- merge (Filip)
- learn how to run calibration
- play with rebinning
- play with the limits and the starting points of the parameter
- floating bkg ?

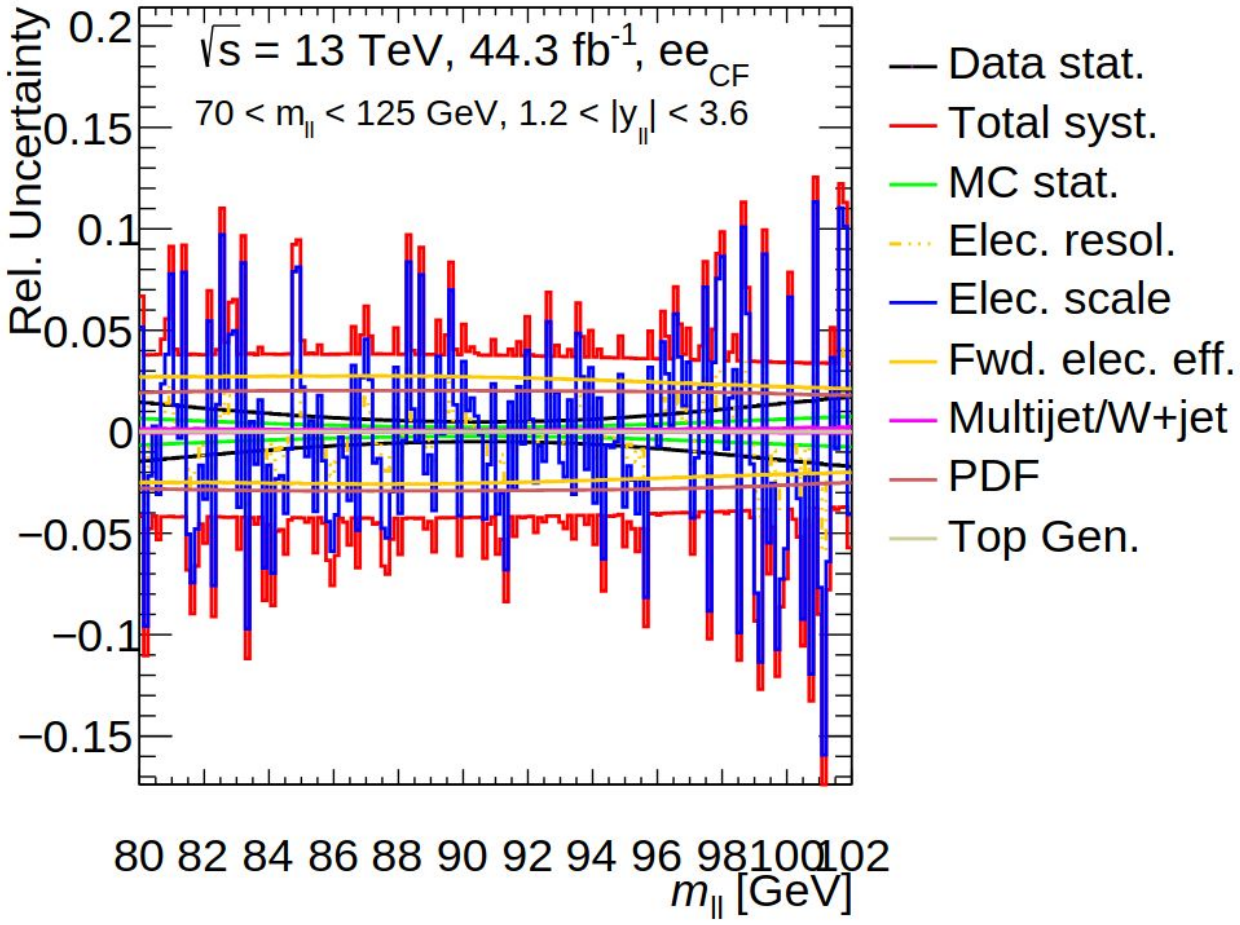
Ntuple Production

eeCFv24

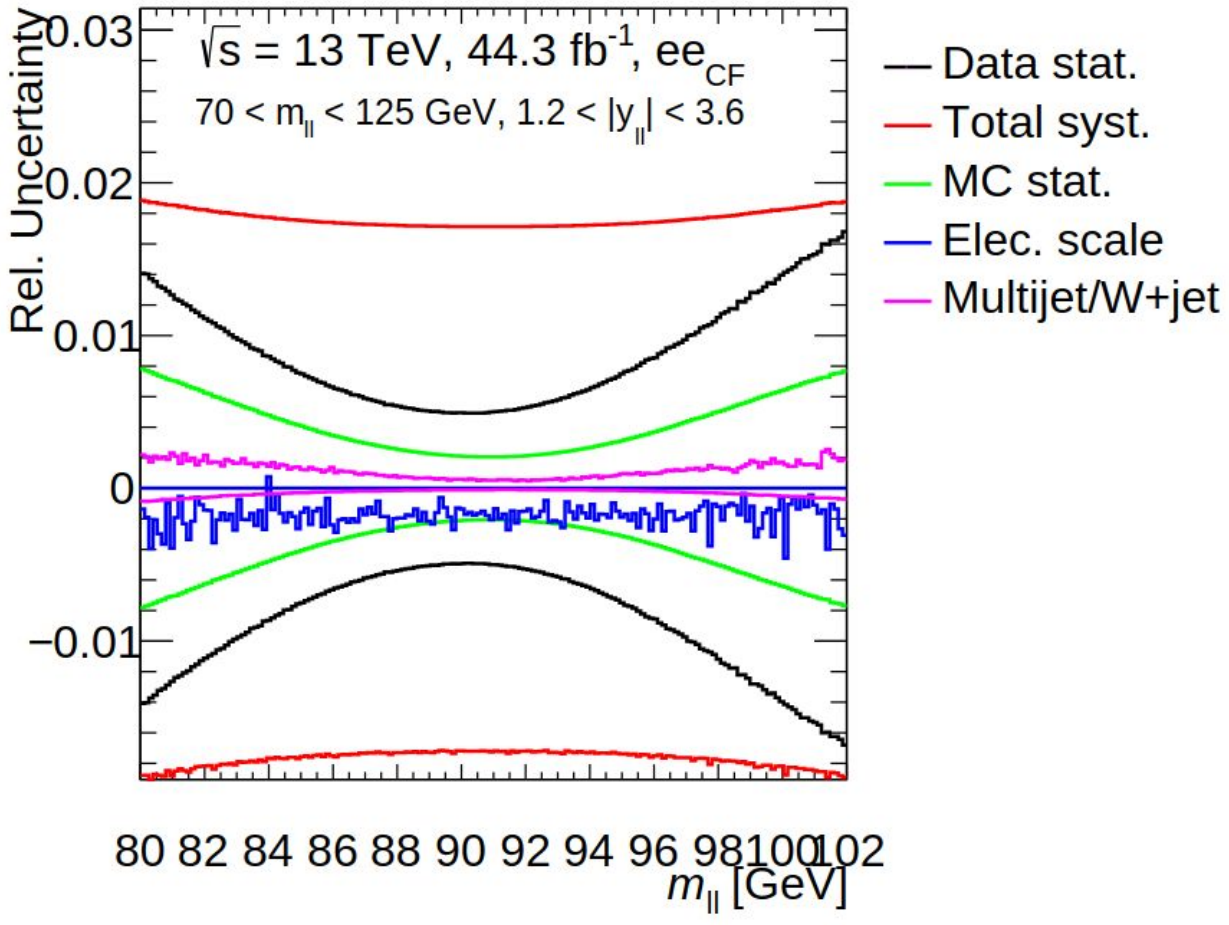
- tried re-submitting some individual tasks with no success
- Filip found (one of the) main problems:
  - --destSE=CERN-PROD_LOCALGROUPDISK in submission script
  - automatically replicates ntuples to that disk
  - not enough quota → task fails
  - why was that option set? how did we handle that before?
  - how do we proceed?

Central Electron Scale Systematic

in eeCF channel



with calibration



without calibration

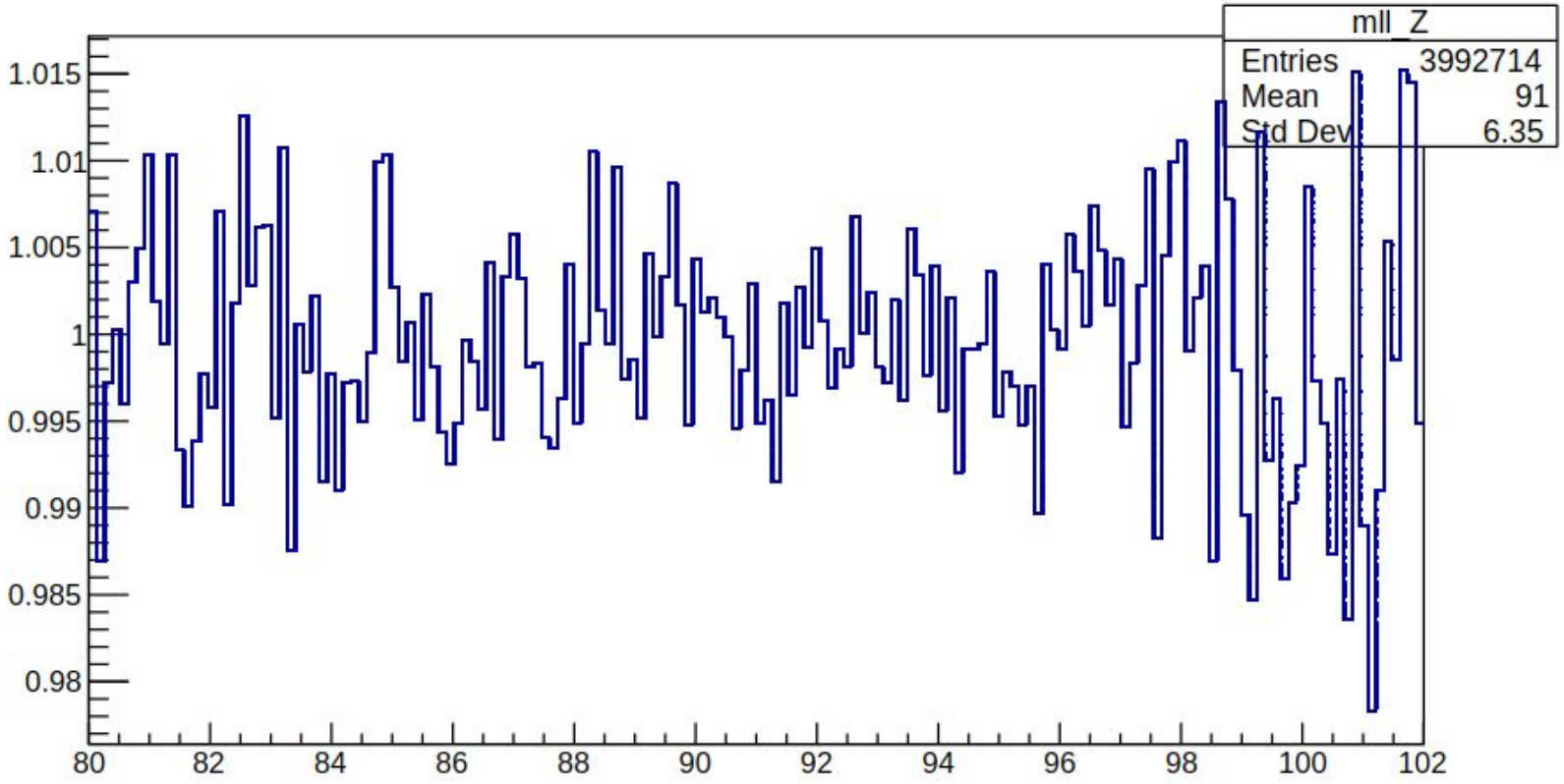
Central Electron Scale Systematic

in eeCF channel

- How exactly does the forward electron calibration cause this drastic behaviour?
  - variation in central electron calibration changes selection
    → fwd calibration shifts are applied to different events
    - but why does this not cancel out overall?
    - and it’s unclear how to fix it (technically)
- I also tried plotting each variation separately
  - not easily possible within aidy framework
  - started writing my own macro, am struggling a bit with pyroot
  - stopped when I noticed something weird while playing around with the macro…

Central Electron Scale Systematic

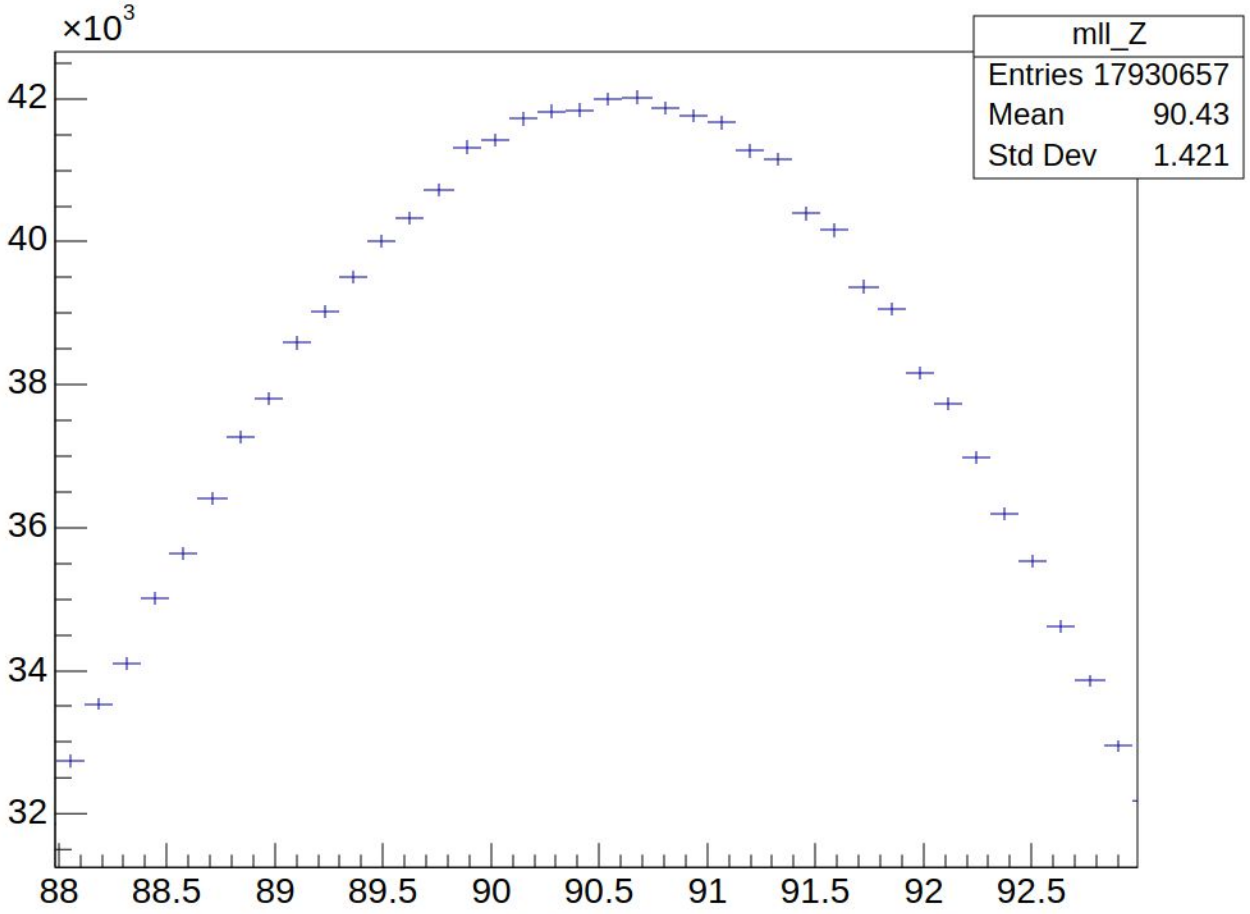
in eeCF channel



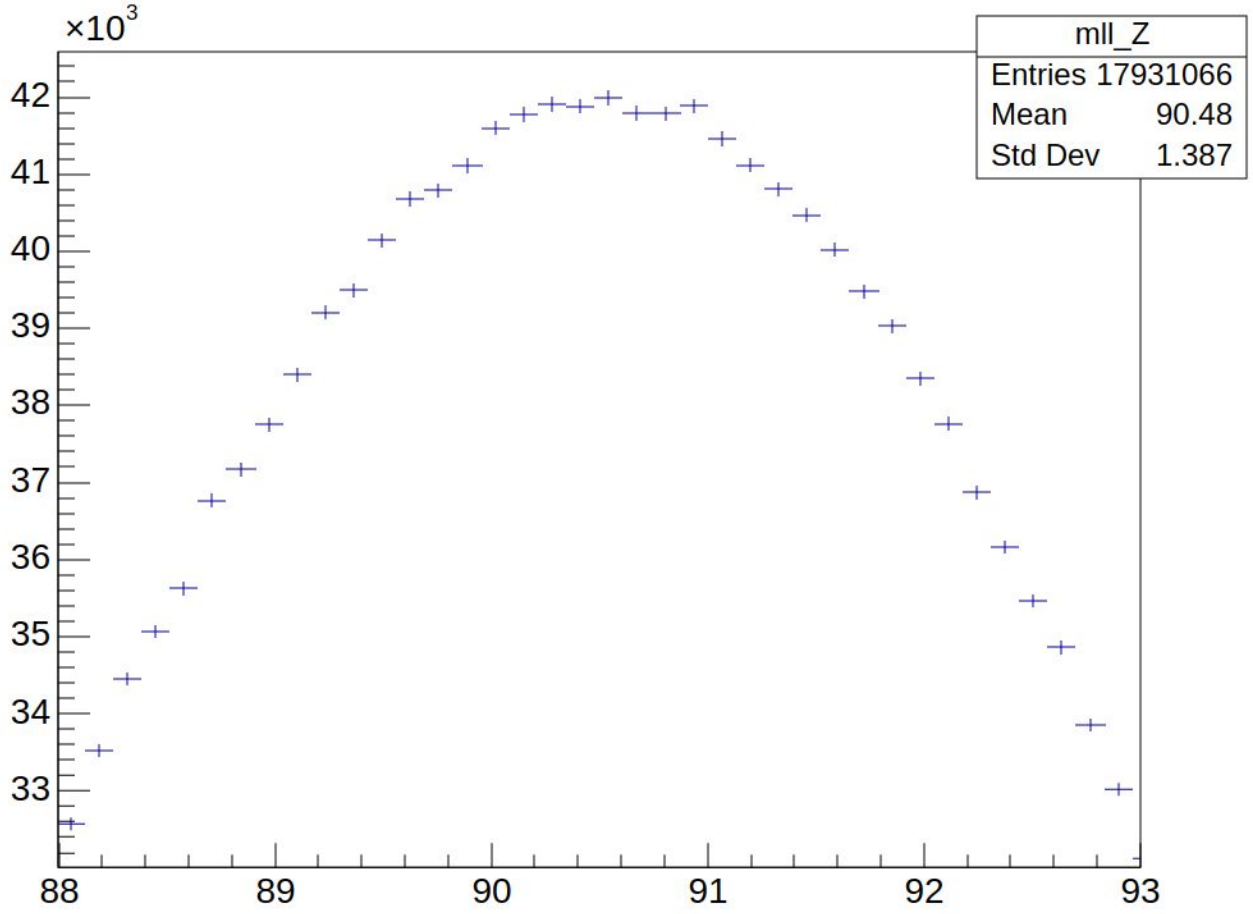
this is an overlay of several EG_SCALE variations (relative to Nominal)

Central Electron Scale Systematic

in eeCF channel



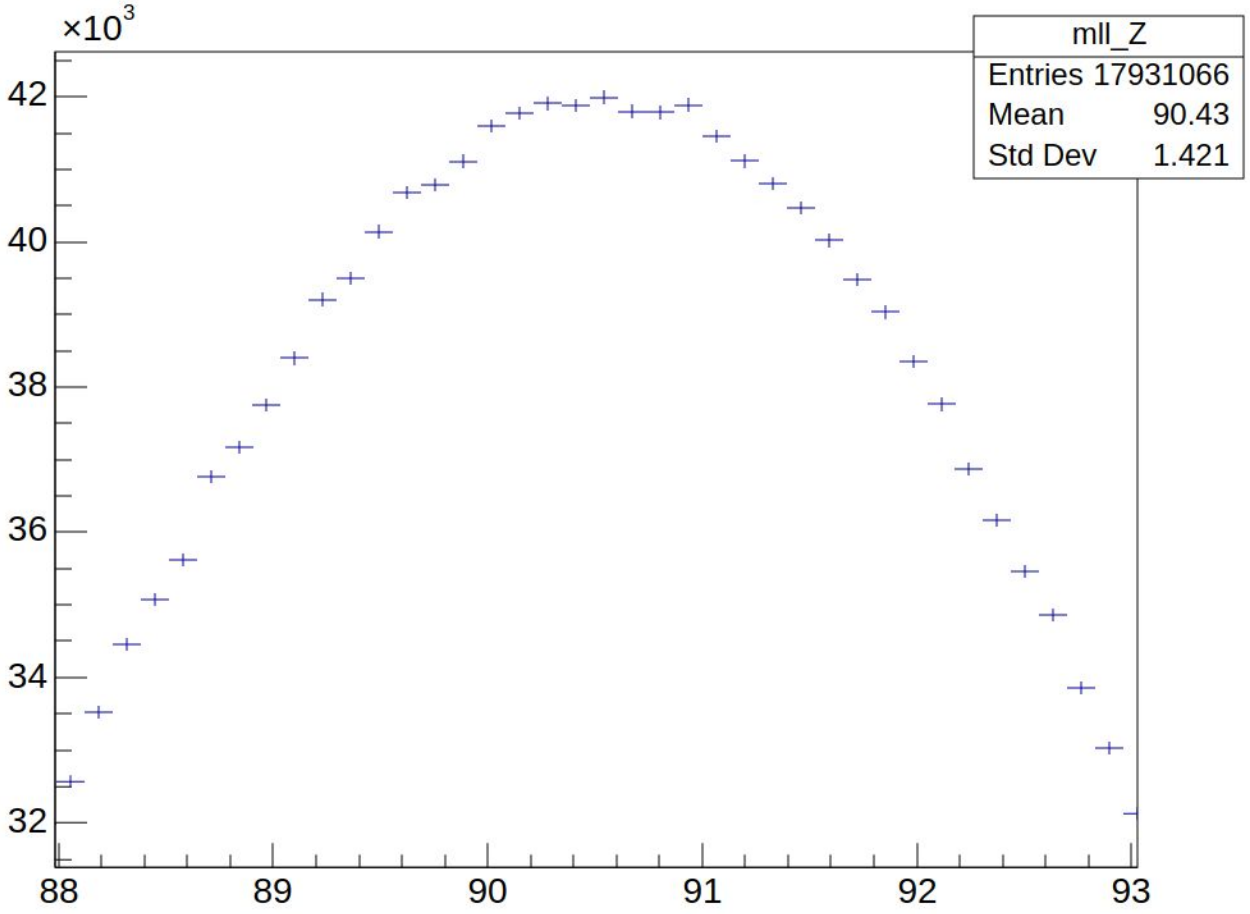
Nominal



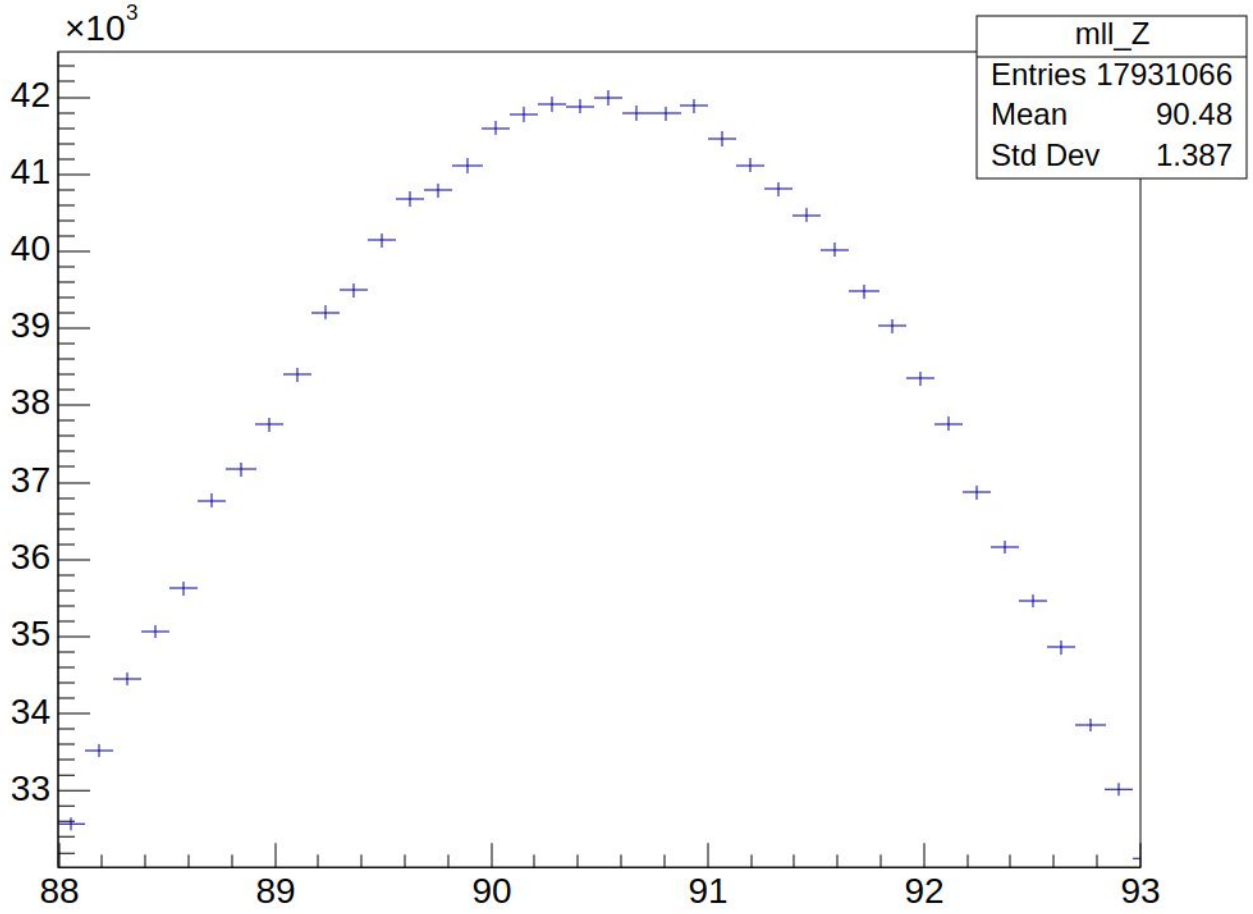
G4_1down

Central Electron Scale Systematic

in eeCF channel



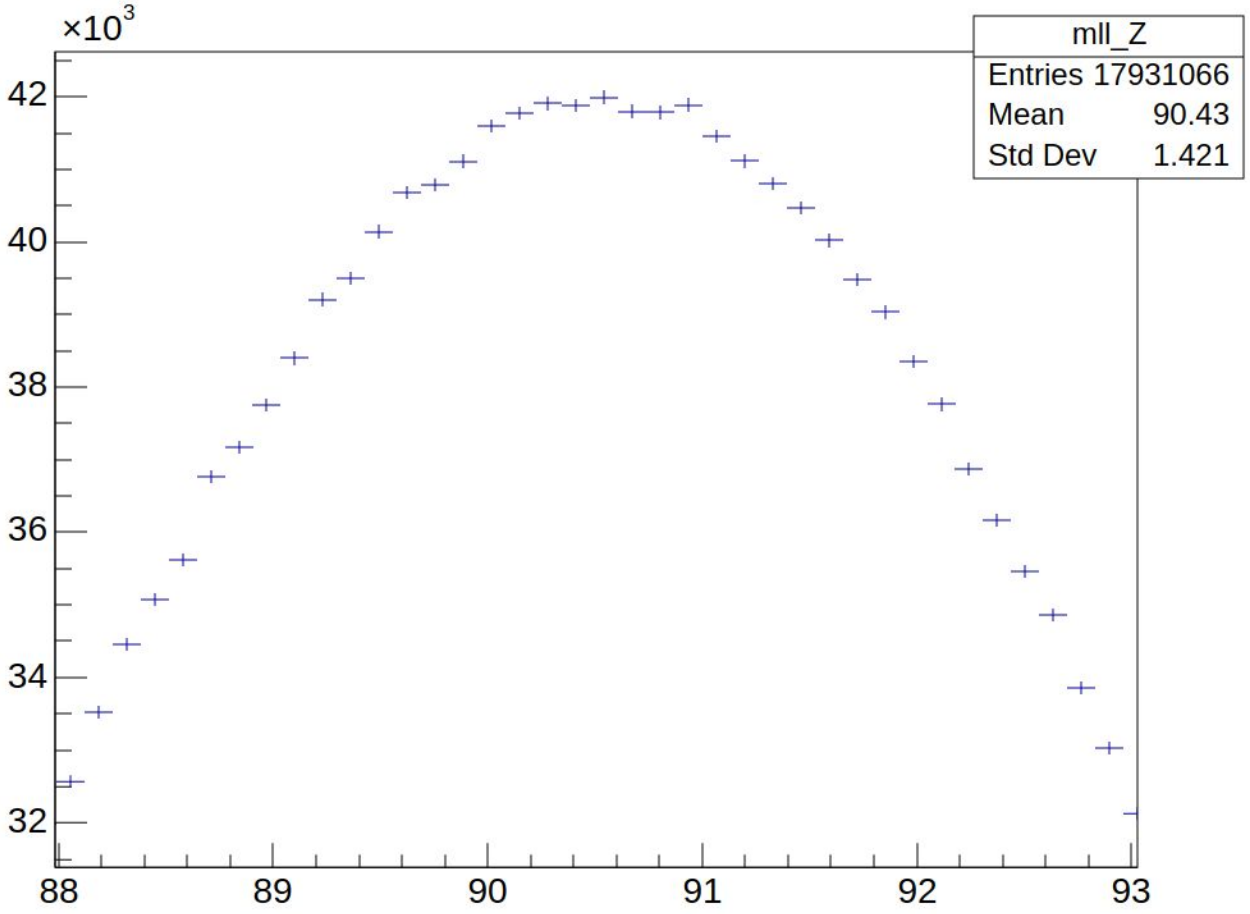
G4_1up



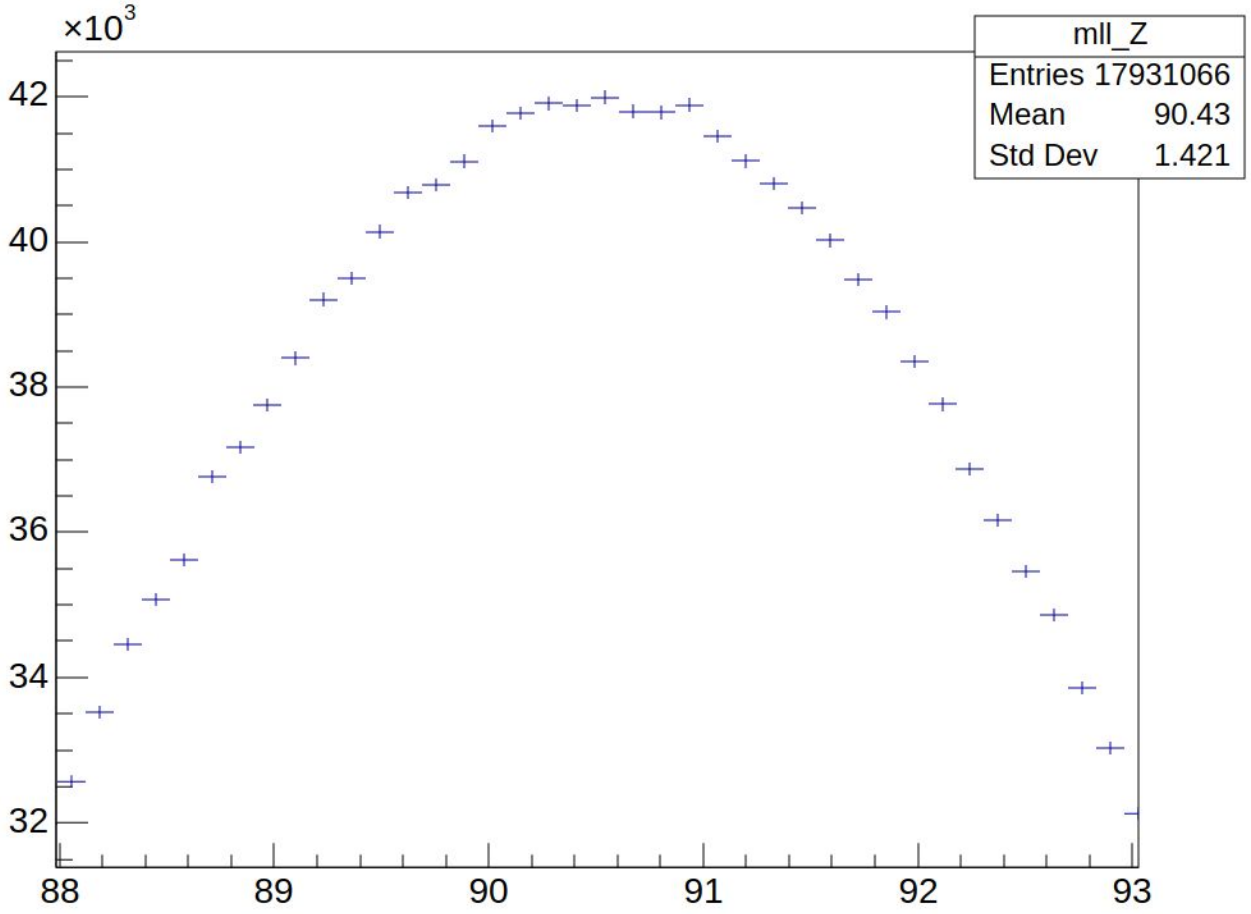
G4_1down

Central Electron Scale Systematic

in eeCF channel



G4_1up



L1GAIN_1up

Central Electron Scale Systematic

in eeCF channel

- How exactly does the forward electron calibration cause this drastic behaviour?
  - variation in central electron calibration changes selection
    → fwd calibration shifts are applied to different events
    - but why does this not cancel out overall?
    - and it’s unclear how to fix it (technically)
- The behaviour of the systematic is still wrong!!!
  - all EG_SCALE variations have the same result
    - no matter which var and whether up or down
    - without forward electron calibration: much closer to Nominal, but still all the same
- Trying to understand the code now…

Multijet Systematics

Binning Problems

- (forgot to mention them last time, sorry)
- fixed by finding out that there's a systematics_loose.xml file in addition to our systematics.xml file
  - no idea why, very bad idea in my opinion to have them separate

Correlation of Stat Variations

- found option "uncorrQCDsys"
  - set to True by default → will set it to False now
- need to test workspace and fit with this new config setting
- need to implement new (uncorrelated) QCD systematic
  - and teach the code to only uncorrelate that new one, not the others

aidy TNG

General Structure

4 Parts:

1. xAOD → Ntuples
   a. Ntuplemaker (as is)
2. Ntuples → optimized Ntuples
   a. assigning flags and weights to events
   b. RDataframe-like
3. optimized Ntuples → Histograms
   a. uproot-like
4. Histograms → Plots