Update 2025 Jan 27

SM Group Meeting

Lukas Bayer
Hamburg, 27.01.2025
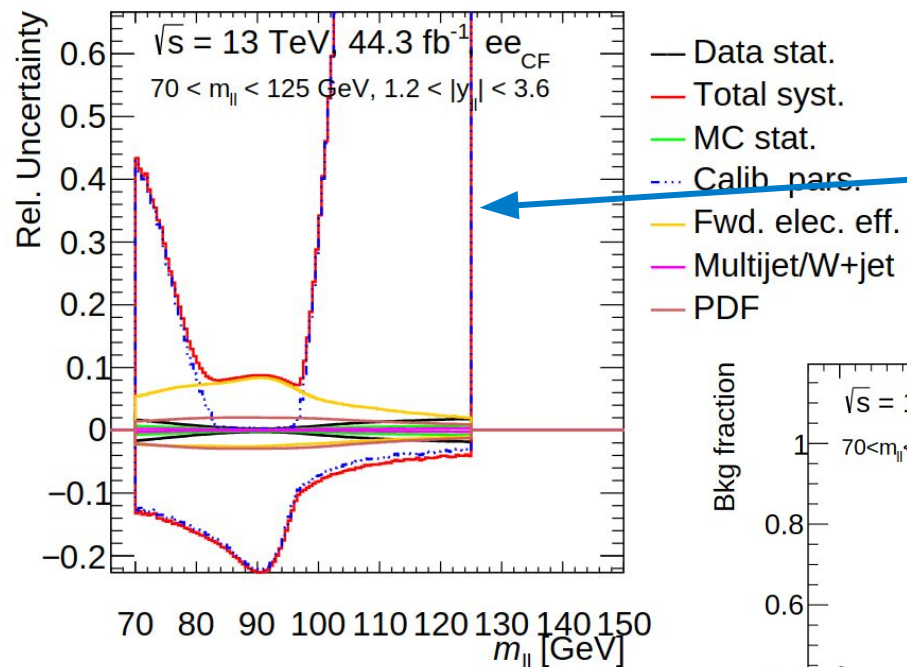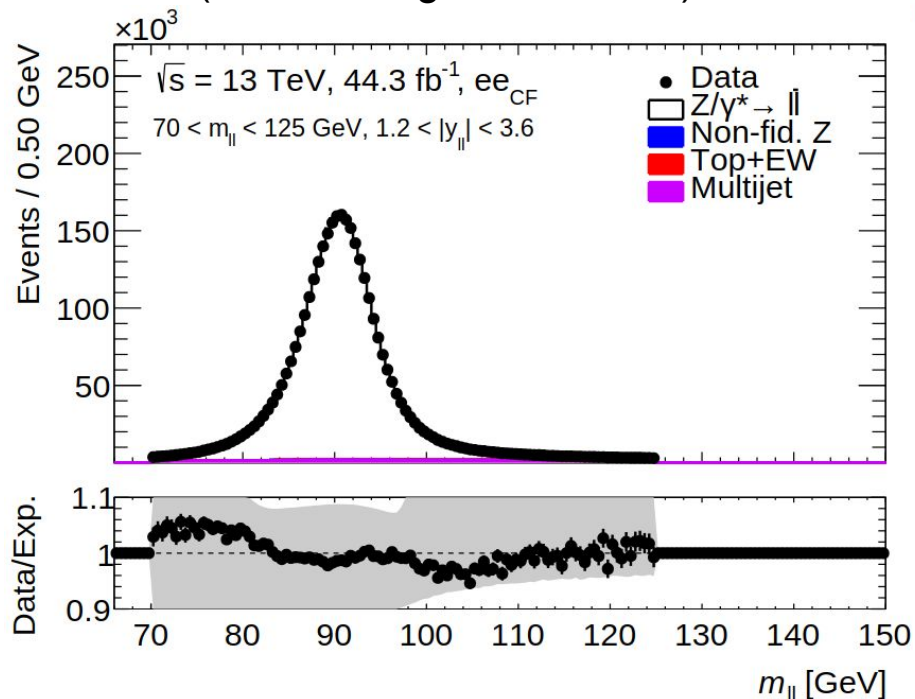
HELMHOLTZ

ZAi Analysis

in CF channel
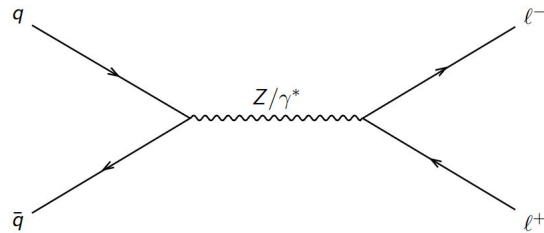
$$\frac{d\sigma}{dp_t^Z \, dy^Z \, dm^Z \, d\cos\theta_{CS} \, d\cos\phi_{CS}} = \frac{3}{16\pi} \frac{d\sigma^{U+L}}{dp_t^Z \, dy^Z \, dm^Z}$$

$$\left\{ (1 + \cos^2\theta_{CS}) + \frac{1}{2}A_0(1 - 3\cos^2\theta_{CS}) + A_1\sin 2\theta_{CS}\cos\phi_{CS} \right.$$

$$+ \frac{1}{2}A_2\sin^2\theta_{CS}\cos 2\phi_{CS} + A_3\sin\theta_{CS}\cos\phi_{CS} + A_4\cos\theta_{CS}$$

$$\left. + A_5\sin^2\theta_{CS}\sin 2\phi_{CS} + A_6\sin 2\theta_{CS}\sin\phi_{CS} + A_7\sin\theta_{CS}\sin\phi_{CS} \right\}$$

- my first analysis run with Asimov data :)
- limitations/caveats:
  - only 2017 data
  - calibration needs to be revisited
  - some systematics still missing in fit (MJ, EW bkg, calib model)

fwd elec. calibration is dominating source of uncertainty in mll tails

Multijet is dominating source of Background
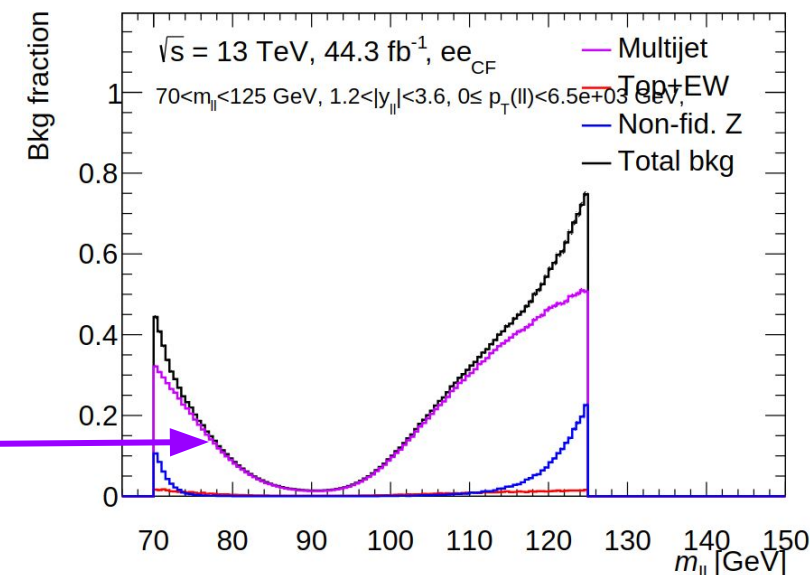
A4

(directly related to forward-backward asymmetry)