

Weekly report

Xin Shuiting

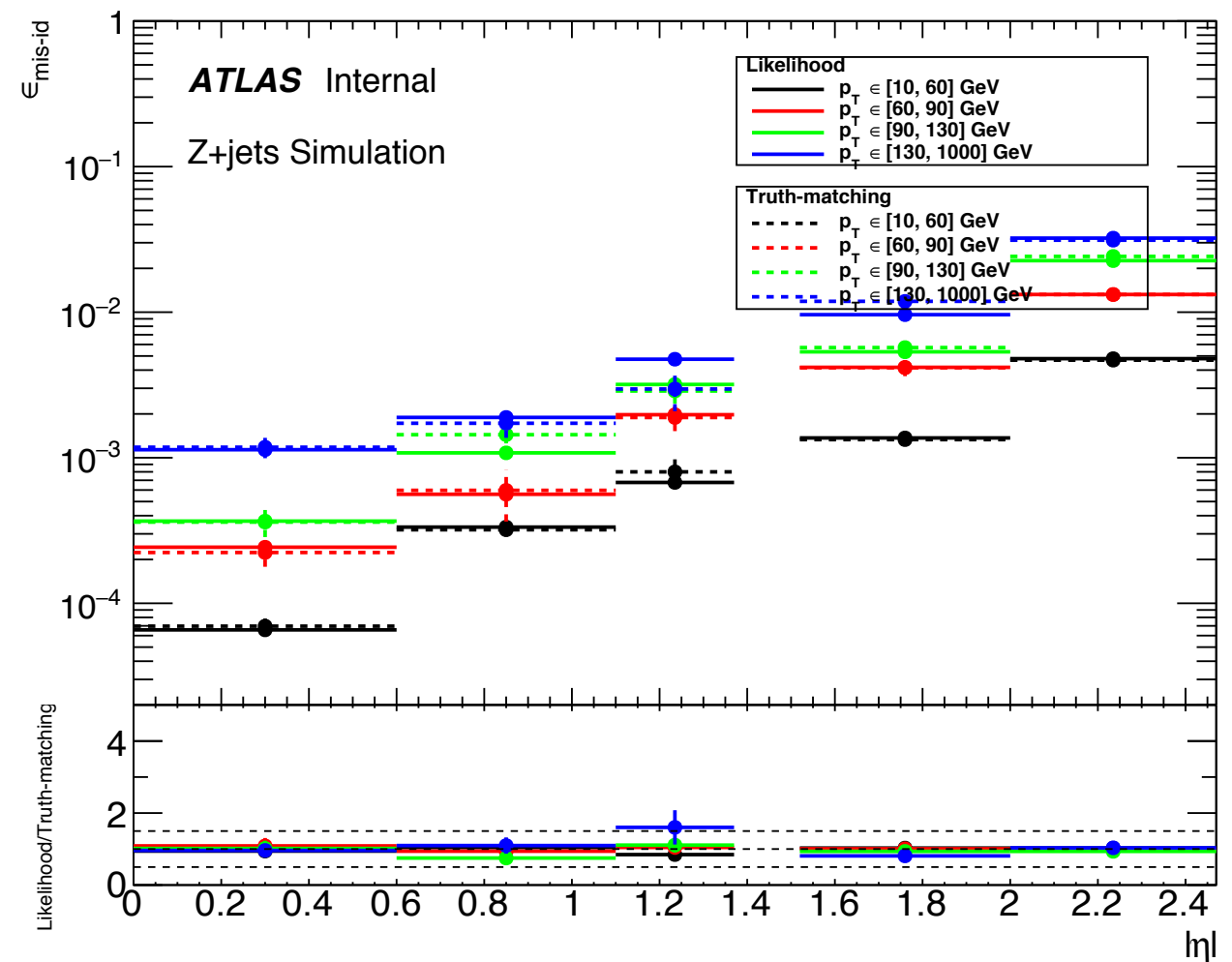
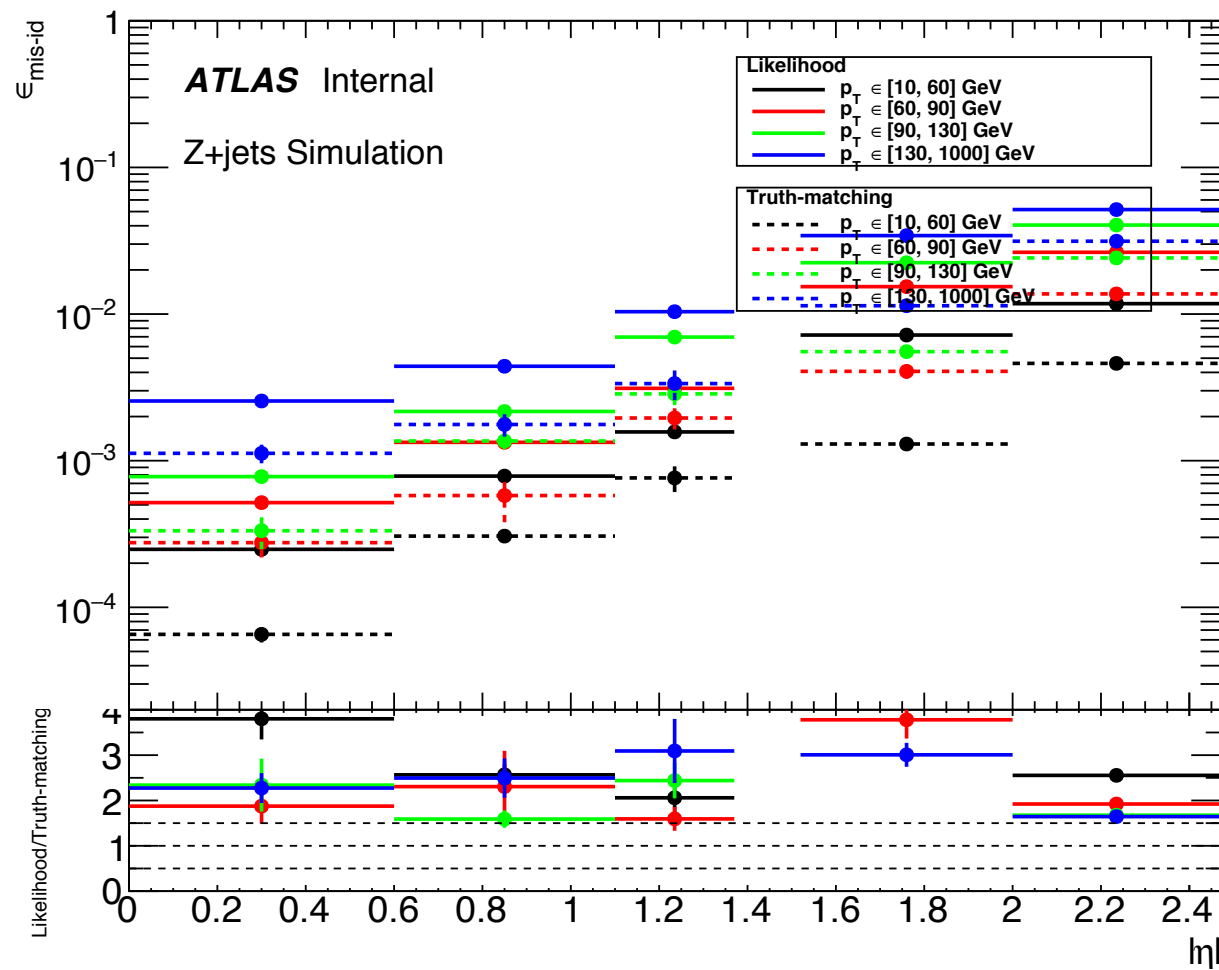
15.7.2019

Outline

- MC/Data issue of Qmild background for 2LSS analysis
- Deal with New sample

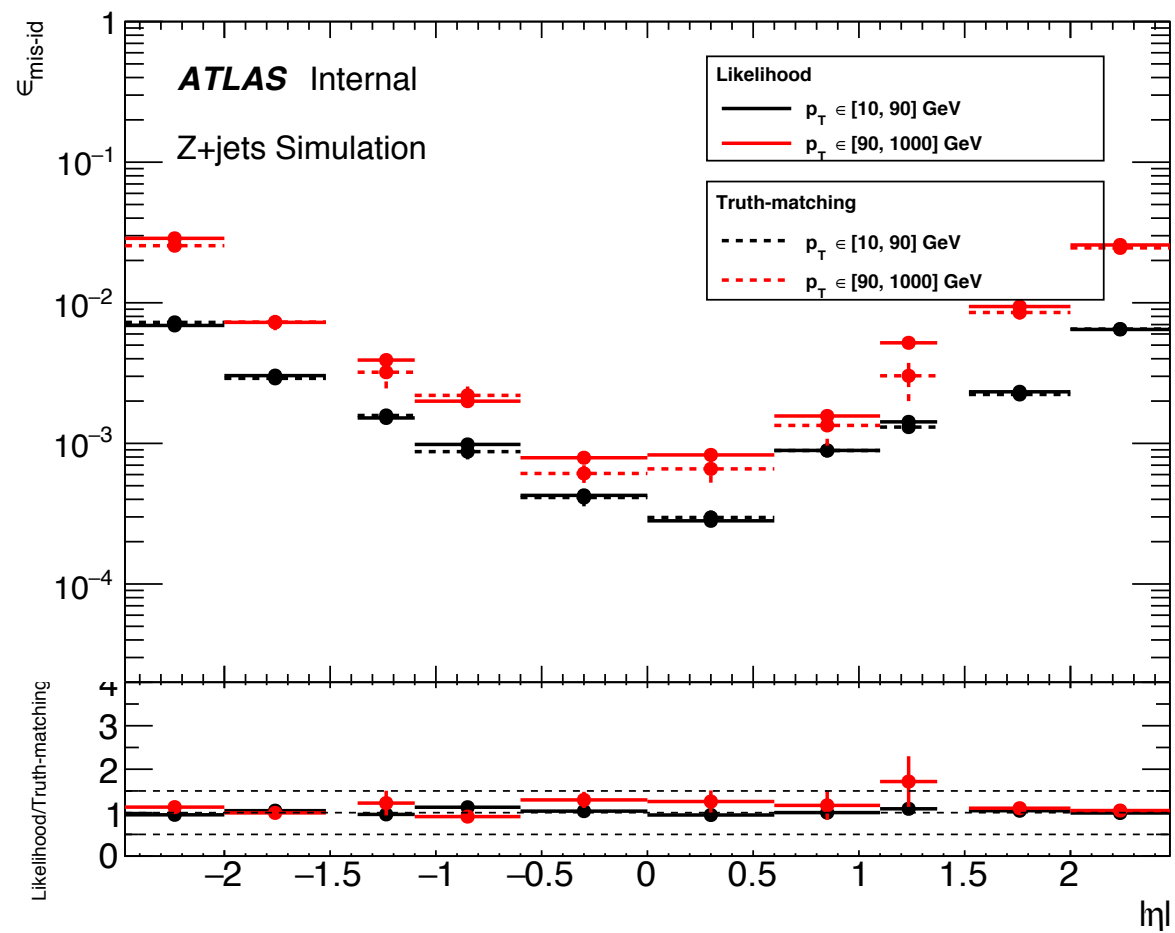
truth-closure test

- Set the same pre-selection about likelihood and truth-matching
- Problem solved

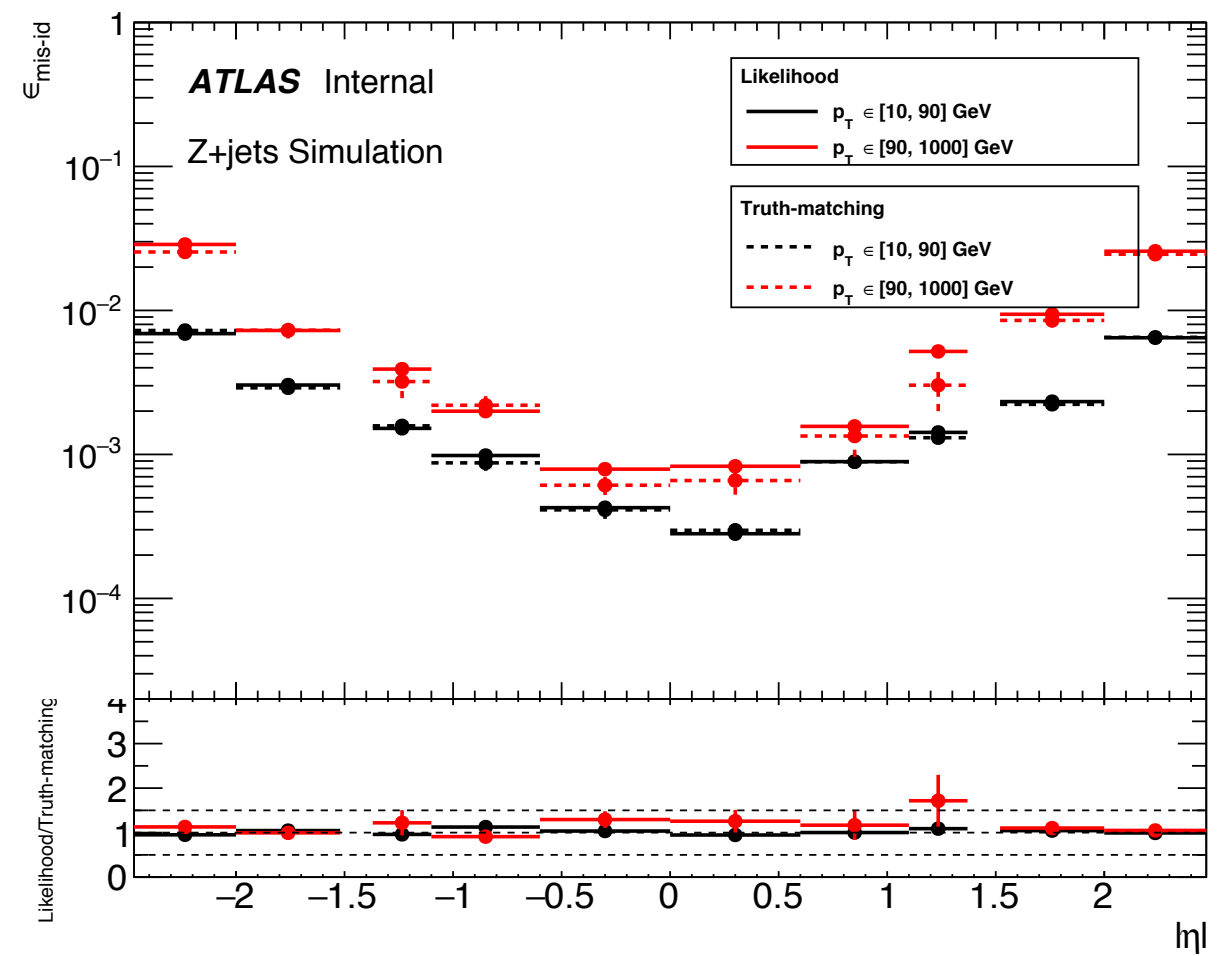


Charge dependence

Postron



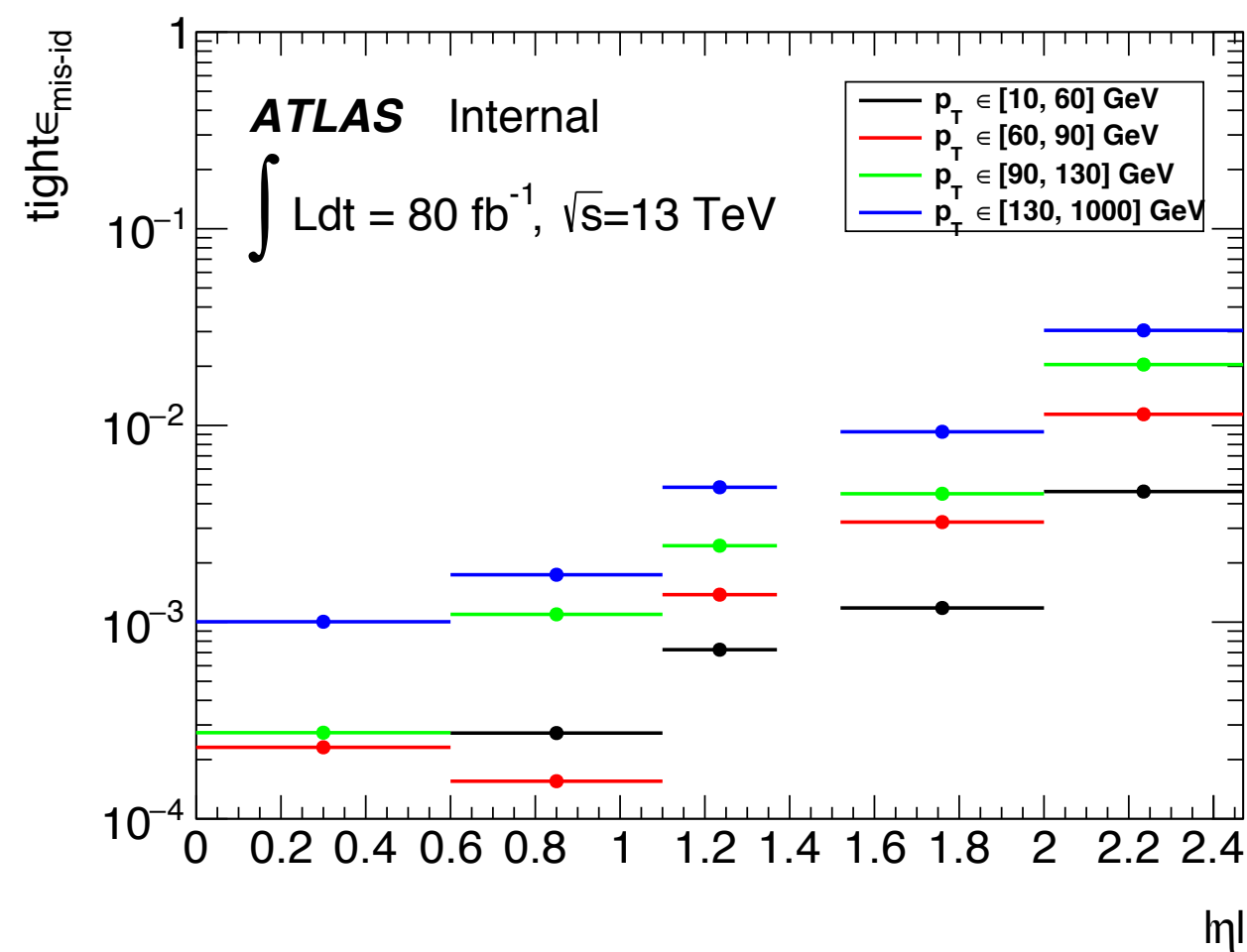
Electron



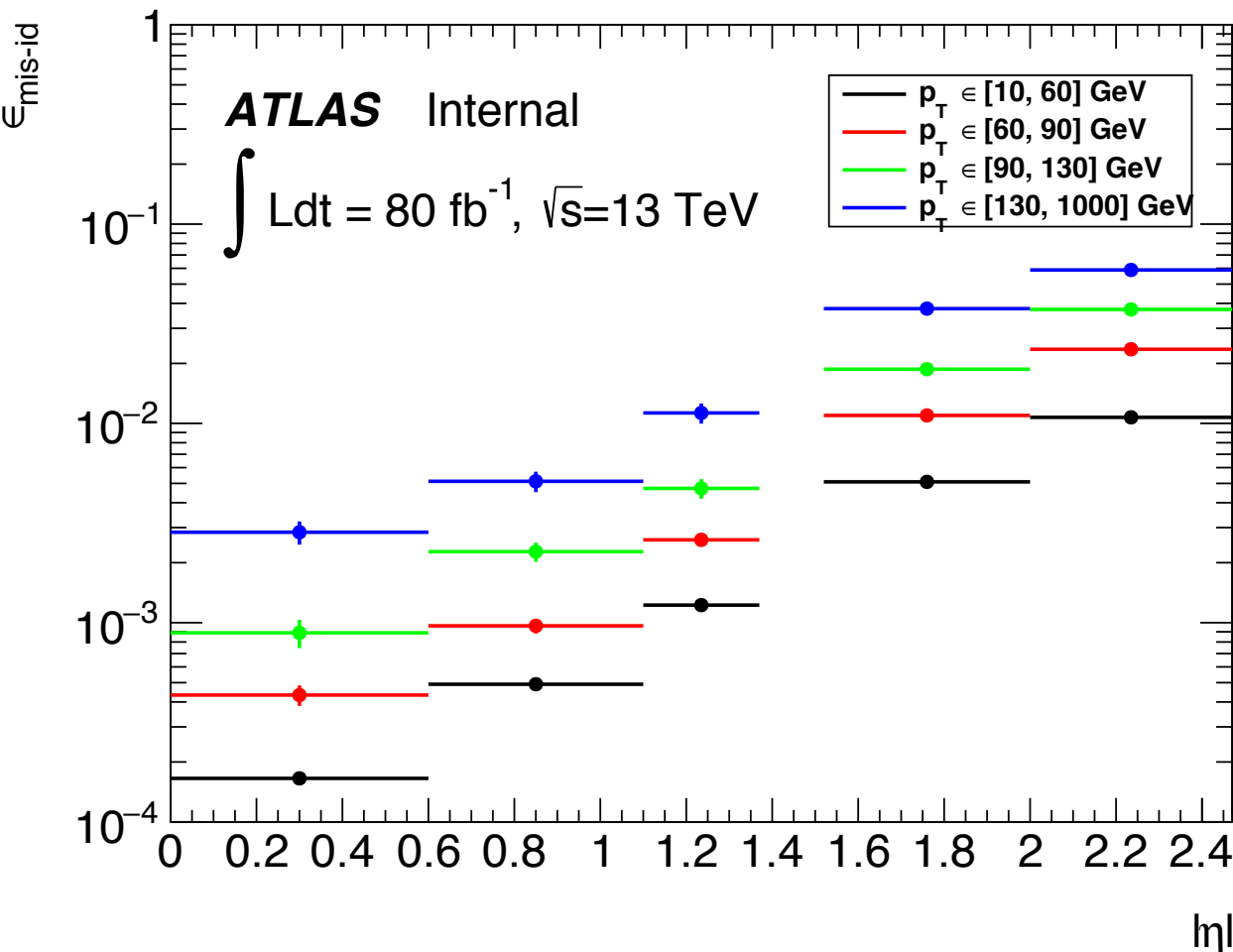
Updating QmisID rates

Tight electron

MC(likelihood)



Data



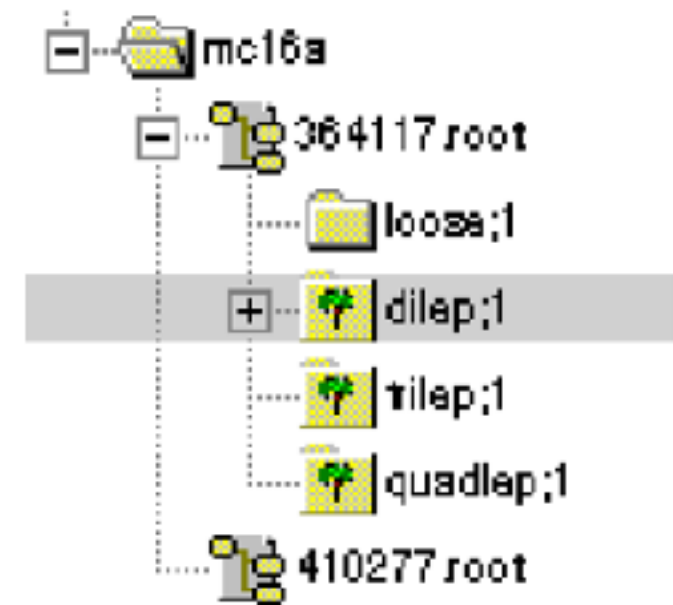
gfw2 production

- HH-ML FW2: ttHML-GFW1 $\rightarrow$ GFW2

<https://gitlab.cern.ch/atlas-physics/HDBS/DiHiggs/multilepton/hhmlfw2/tree/master>

- MC16a
/eos/atlas/atlascerngroupdisk/phys-hdbs/diHiggs/
multilepton/gn2/v1

- MII is needed to check QmisID



Back up

Introduction

- Final states: 2 same signed lepton, one of them could be QmisID
 Muon QmisID rates $< 10^{-5}$, only consider electron
- Two contributions :
 Hard bremsstrahlung process , $|\eta|$
 Mismeasurement of the electron track-curvature , $|p_t|$
- Strategy: derived from $Z \rightarrow ee$ data based on MLE

$$\epsilon_i(1 - \epsilon_j) + \epsilon_j(1 - \epsilon_i) = \epsilon_i + \epsilon_j - 2\epsilon_i\epsilon_j$$

Likelihood method

$$\ln L(\epsilon | N_{SS}, N) = \sum_{i,j} \ln [N^{ij}(\epsilon_i + \epsilon_j - 2\epsilon_i\epsilon_j)] N_{SS}^{ij} - N^{ij}(\epsilon_i + \epsilon_j - 2\epsilon_i\epsilon_j)$$

number of QmisID for ee and eu channel

$$\overline{N}_{SS} = \frac{\epsilon_i + \epsilon_j - 2\epsilon_i\epsilon_j}{1 - (\epsilon_i + \epsilon_j - 2\epsilon_i\epsilon_j)} N_{OS} \quad \text{and} \quad \overline{N}_{SS} = \frac{\epsilon_i}{1 - \epsilon_i} N_{OS}$$

Expected
Observed

- dataset:15+16+17, 80fb-1
- MC samples: Z->ee(SHERPA)
- Variable “ElectronsCase” are used:

1, both electrons are tight	2, both electrons are anti-tight
3, one tight and one anti-tight	4, at least one tight
- Selection: all go though LOOSE
 - Jet number ≥ 1 : nJets_OR_T ≥ 1
 - Bjet veto: nJets_OR_T_MV2c10_70==0
 - Lepton pt ≥ 10 GeV
 - Only ee
- Bin set
 - |eta| [0. , 0.60, 1.1, 1.37, 1.52, 1.70, 2.00, 2.47]
 - Pt [10, 60, 90, 130, 1000]GeV