Short Exercise: Electrons and photons

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Twiki page:

https://twiki.cern.ch/twiki/bin/viewauth/CMS/SWGuideCMSDataAnalysisSchoolHamburg2018ElectronsAndPhotons

Structure of exercise

Exercise based on CMSSW_9_4_4, and 2017 data and MC

A

- Brief (~10 min) presentation about ECAL and e/gamma object reconstruction in CMS
- Exercise 1: Clone ggNtuplizer, compile. Run on DoubleEG dataset. Browse the output ntuple and look at kinematic and shower-shape distributions. Write a small macro to plot diphoton invariant mass. Repeat the same for Higgs->gamma+gamma MC sample.

B

- Brief (~10 min) presentation about e/gamma object identification
- Exercise II: Familiarize with identification tools and learn usage of VID. Code snippet highlighted in twiki. Re-do diphoton invariant mass after applying tight-ID

C

- Brief (~5-10 min) presentation about energy corrections
- Exercise III: Plot raw and corrected energy in same canvas to see the differences between them. Draw a 2D plot of R9 vs Egen/Eraw to see why R9 is used as one of the variables for regression. Draw a map of ieta vs iphi and see where large corrections come from. Run the refined SC energy corrections and look at the size of corrections. Compare the Z mass distribution with and without the corrections.

- Slides for the 3 short presentations are made, and linked to the twiki
- Twiki is in advanced stage, ~ready with the 3 exercises
- 3rd exercise will be expanded (we are still figuring out if it will be too much time taking for a 2 hours exercise).
- We plan to add some quiz to improve the exercises, however the basic structure will remain same