LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Status on CxAOD Framework Setup for Zcc

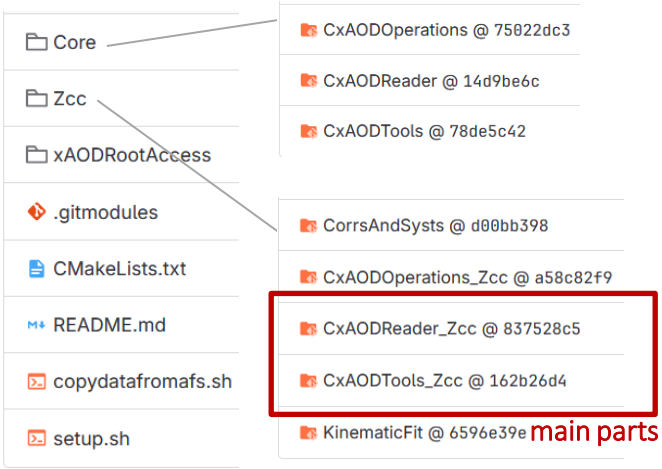
Analysis Meeting

23/04/2024

Status on CxAOD Framework Setup for Zcc

Basic goal: Setup a framework for the *Zcc* analysis using the CxAODMakerCore and CxAODReaderCore packages from the VHbb analysis as template; an own package for the Zcc analysis should be added to the CxAOD Framework at least for the Reader

Current folder structure of the CxAODReaderCore_Zcc package on GitLab:



Status:

- Simplification/ clean-up of several program parts (also together with Camilla and Semen – **Thanks!**)
- Adaption of the program structure following the previous ZHF framework
- Basic structure of histogram filling implemented in CxAODReader_Zcc
- Lepton selection from ZHF framework with slight adaption to the new lepton selections in the Zcc note implemented in CxAODTools_Zcc
- Available sample from the Maker (Z+mumu Cfilter Bveto with DSID 700324) produced by Lucrezia (**Thanks!**) to test the framework

Next steps:

- Additional checks on lepton selection implementation, histograms with further information from lepton selection required
- Implementation of the jet selection

Preliminary results on lepton selection

Sample: mc20_13TeV.700324.Sh_2211_Zmumu_maxHTpTV2_CFilterBVeto.deriv.DAOD_PHYS.e8351_e7400_s3681_r13167_r13146_p5855

➔ Pre-processed with the CxAODMakerCore package by Lucrecia (we currently plan to share this package with VHbb analysis)

Lepton selections from the Zcc note :

Muon channel	
ID	Medium
Isolation	PflowTight_VarRad
vertex track association	$\|d0signBL\| < 3$, $\|z0BL * sin\theta\| < 0.5$ mm
p_T	27 GeV
η	$\|\eta\| < 2.5$
Electron channel	
ID	Tight
Isolation	Tight_VarRad
vertex track association	$\|d0signBL\| < 5$, $\|z0BL * sin\theta\| < 0.5$ mm
p_T	27 GeV
η	$\|\eta\| < 1.37$ or $1.52 < \|\eta\| < 2.47$

Table 0.2: Overview of the lepton selection criteria.

➔ fully implemented

N leptons	exactly 2 good leptons, same flavor and oppositely charged
mass window	$76\,\text{GeV} < m_{ll} < 106\,\text{GeV}$
$E_{\text{T}}^{\text{miss}}$	$< 60\,\text{GeV}$ if $p_T^Z < 150\,\text{GeV}$

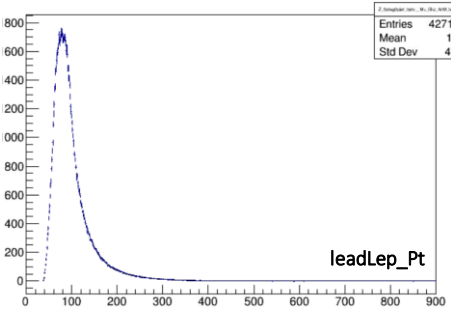
?

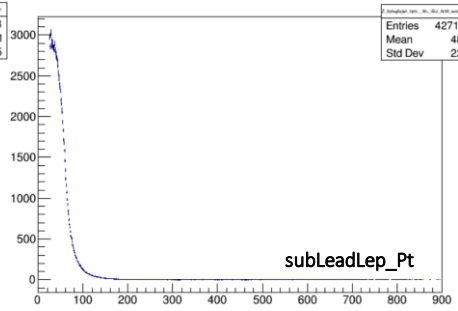
Table 0.4: Z-boson event selection.

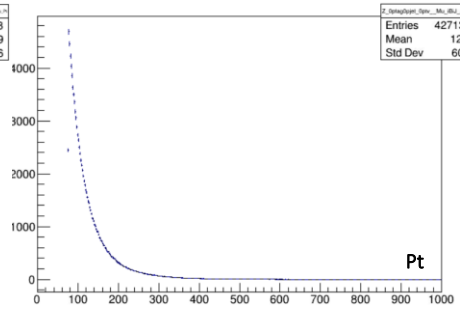
not considered yet

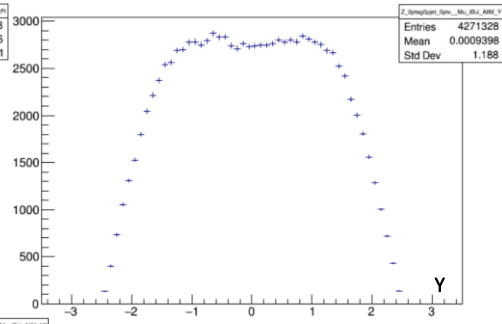
➔ since I have a Zmumu sample, will only show the mumu channel in the next slides
(due to reco analysis, there is only one event for the elel channel)

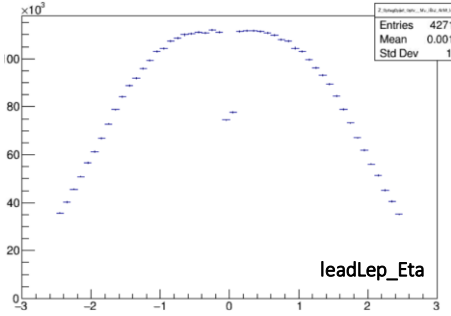
Preliminary results on lepton selection – muon channel, all M

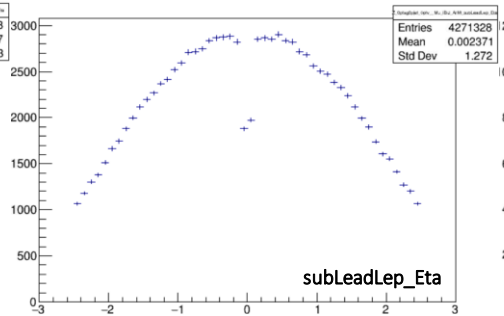


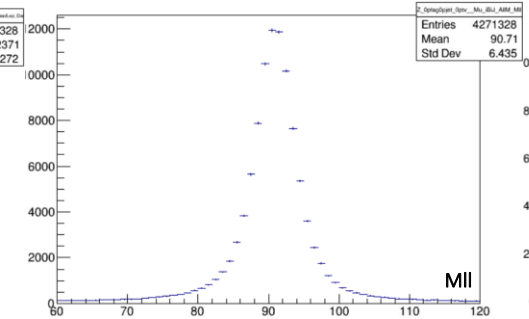


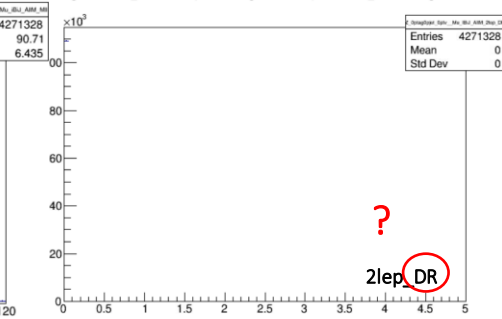












Preliminary results on lepton selection – muon channel, Z mass window