

Directly W mass measurement

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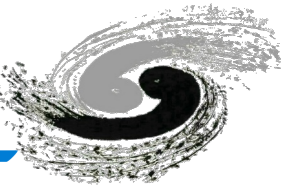


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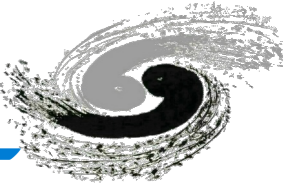
Code and samples for Wmass



- ❖ Test the directly W mass precision in ZH run.
- ❖ Test code location [/afs/ihep.ac.cn/users/b/boliu/workarea/CEPC/mW/PrintReco_MCP](https://afs.ihep.ac.cn/users/b/boliu/workarea/CEPC/mW/PrintReco_MCP)
 - ❖ Main code to read slcio file and product minitree
 - ❖ Perform Jet reconstruction
- ❖ [ww->munu+qq reconstruction samples can be found in /afs/ihep.ac.cn/users/b/boliu/workarea/CEPC/Reco/data/reco_slcios_ww](https://afs.ihep.ac.cn/users/b/boliu/workarea/CEPC/Reco/data/reco_slcios_ww) for **250 GeV**
- ❖ Contains both Jet clustering based mass reconstruction and PFO based reconstruction
- ❖ About the cepec software <http://cepcsoft.ihep.ac.cn/>

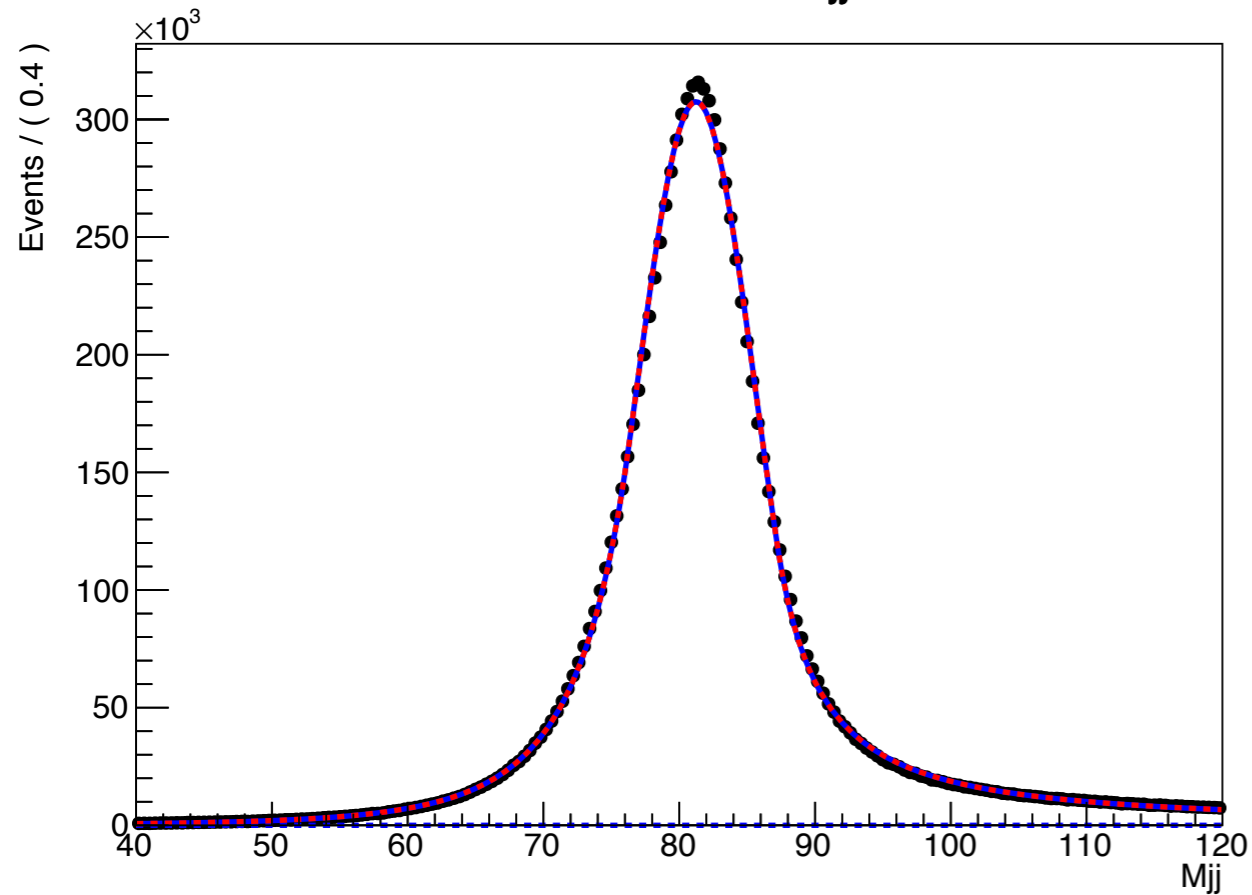


Fit on mW shape

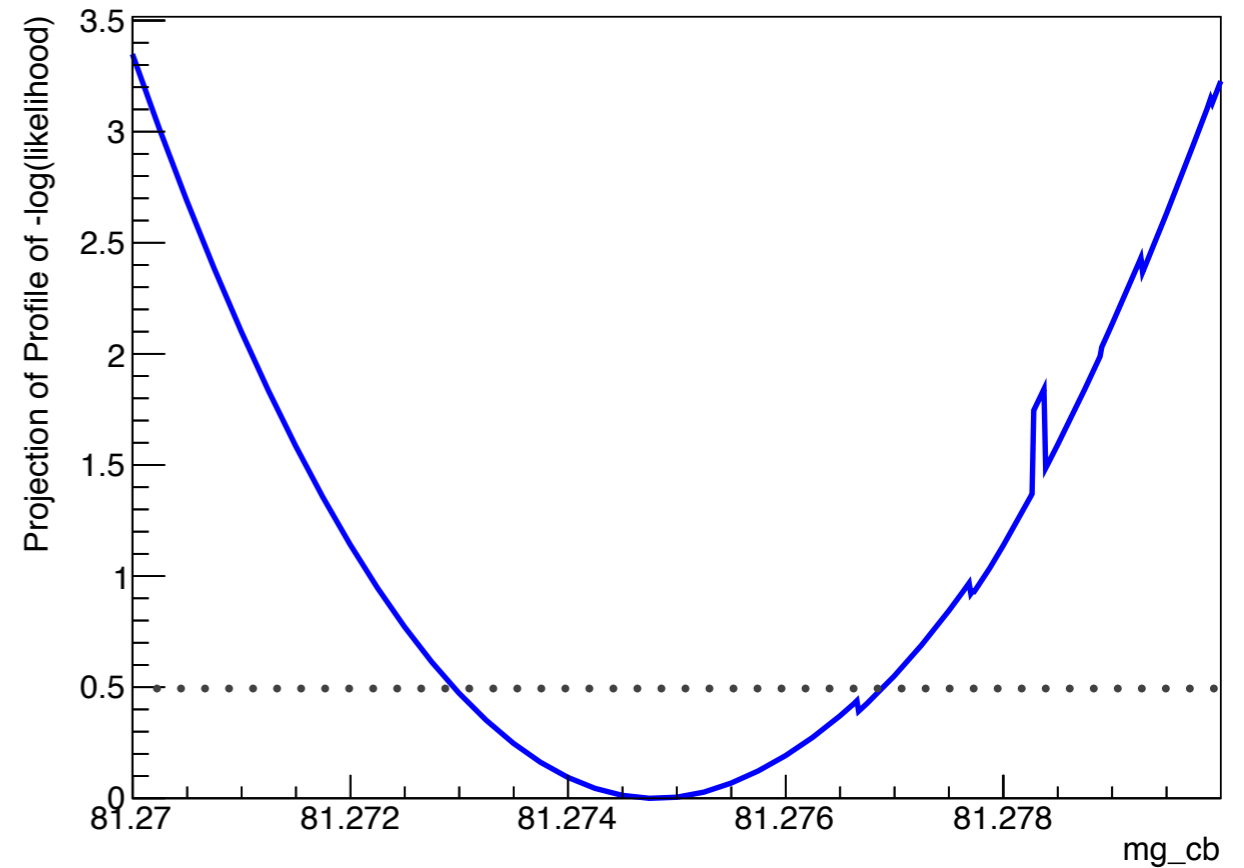


- ❖ Fit mW shape with double-side Crystal ball function
- ❖ Mean of Crystal-ball corresponding to mW
- ❖ Only perform signal fit, background contribution is small

A RooPlot of "Mjj"



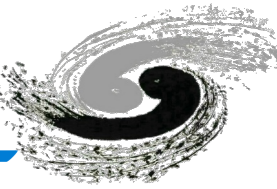
A RooPlot of "mg_cb"



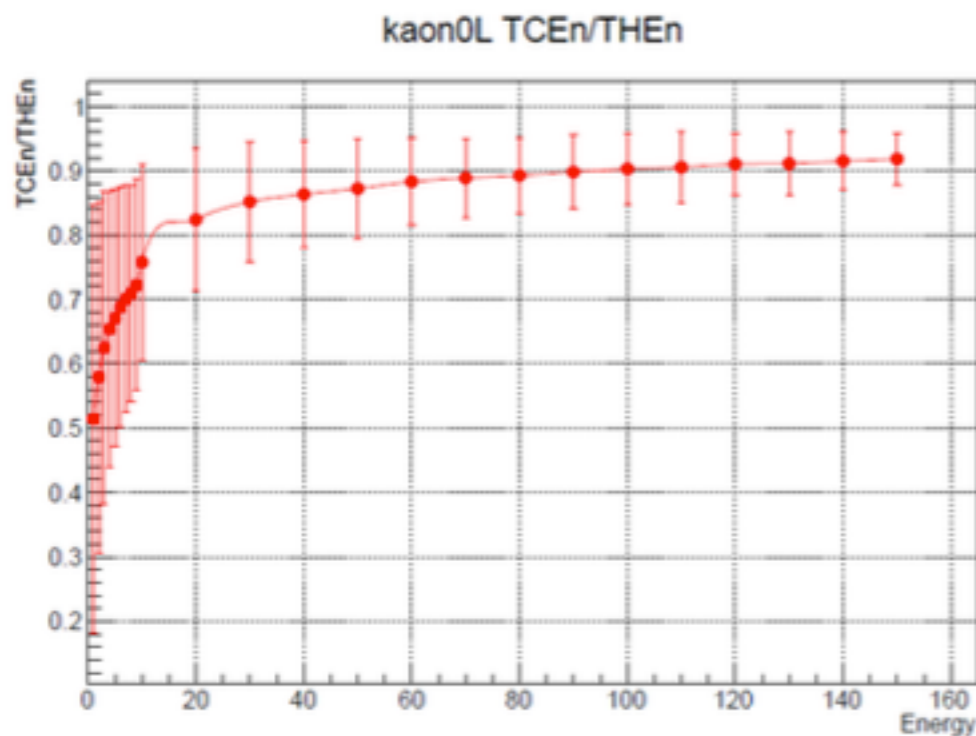
Note: because the PFO is not well calibrated, the peak position has the offset



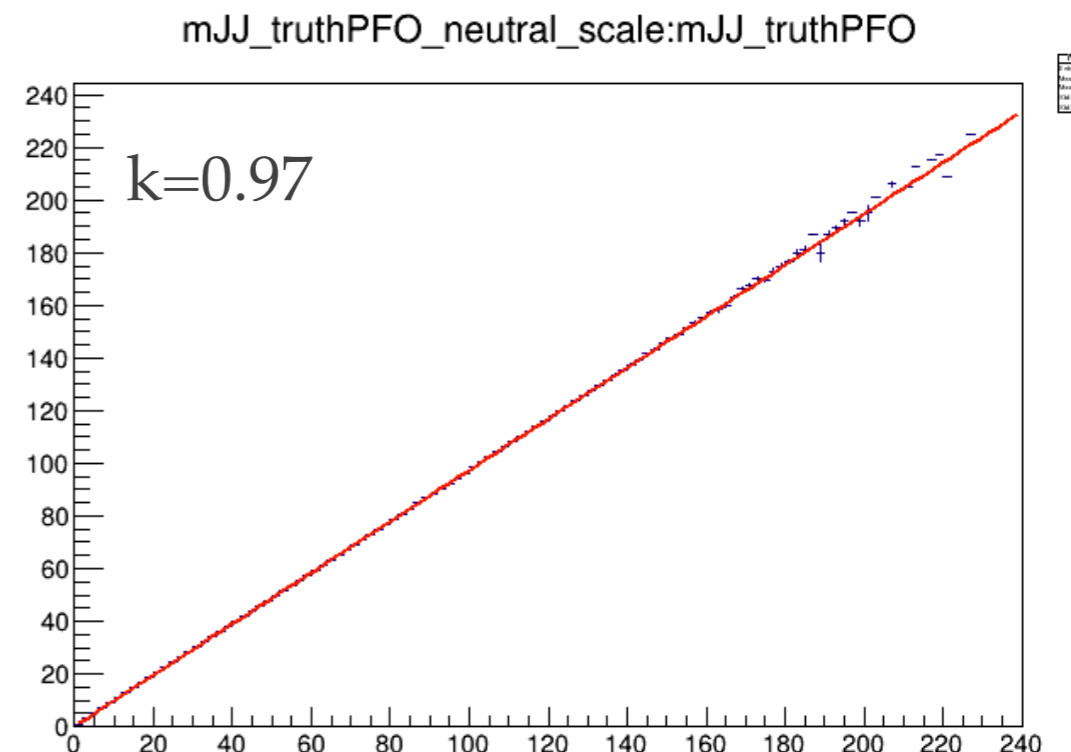
Calibration effort



- ❖ Jet based mass reconstruction:
 - Calibrate jets
 - MC-based calibration-> effort from Peizhu
 - Data-drive calibration-> Need to find good candidate events
- ❖ PFO based mass reconstruction
 - Calibrate PFO objects
 - Both Charged and neutral can be calibrated with TruthMC (MC-based)
 - Data-driven effort: Charged PFO can be calibrated with track
 - Difficult to find easy way to calibrate neutral PFO



Energy record as function of input energy for K_L^0



By scale PFO energy, affect truth mass by 3%



Neutral particle component in Jet

