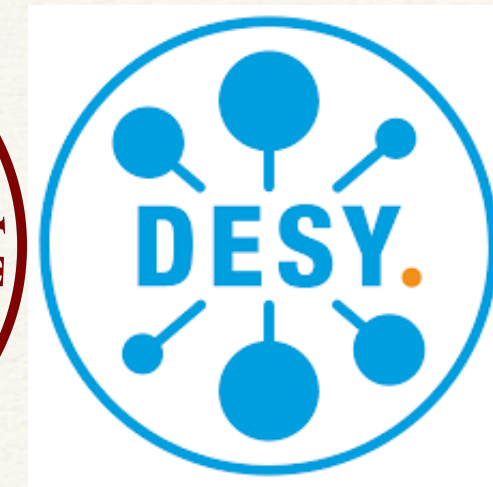




Trigger Object in NanoAODplus

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Ministry of Human Resources
and Social Security

HELMHOLTZ

RESEARCH FOR
GRAND CHALLENGES

Setup

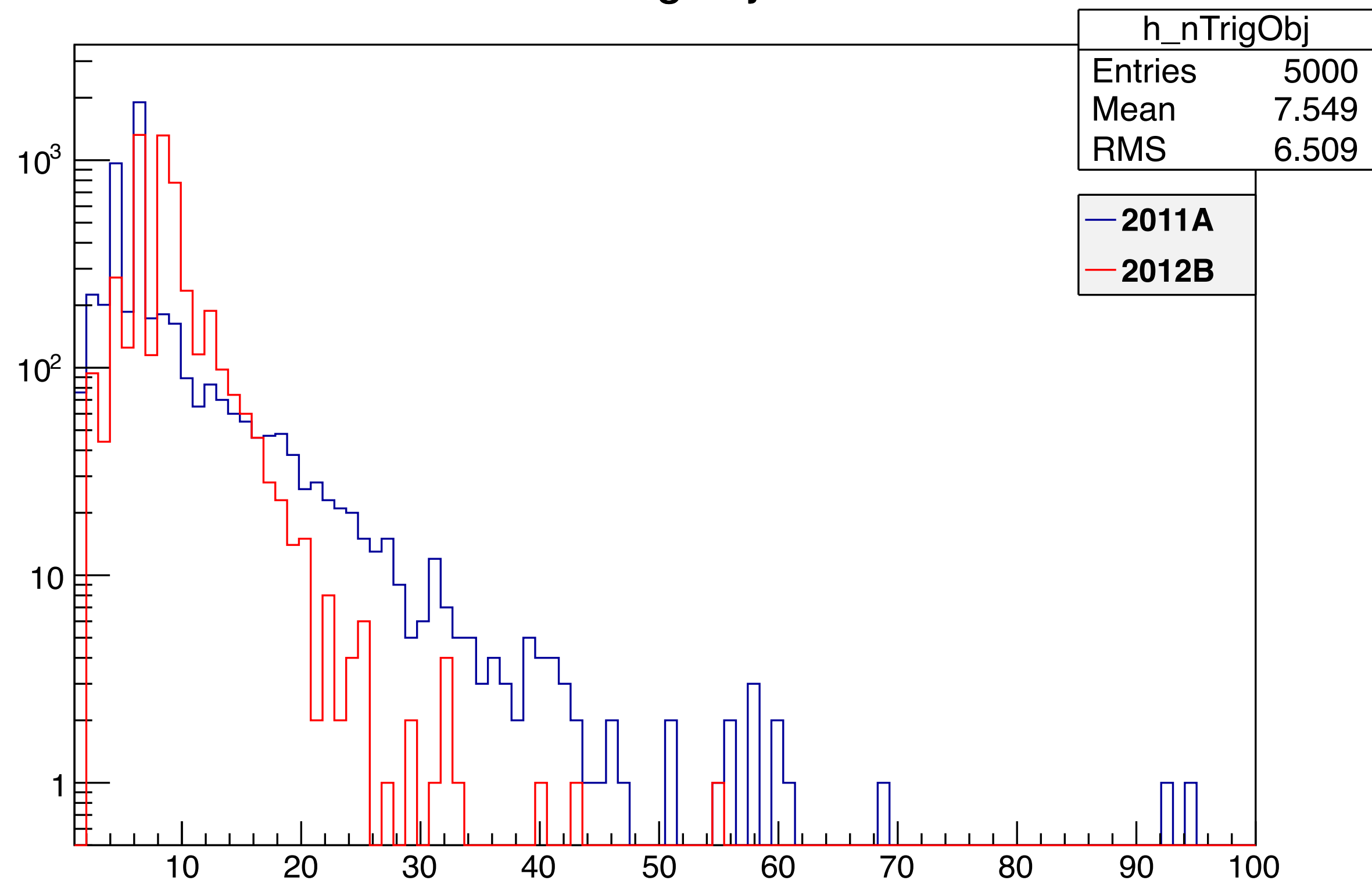
- ❖ Trigger Object: store and access the trigger matching information.
 - ❖ nTrigObj , TrigObj_pt, TrigObj_eta, TrigObj_phi
 - ❖ TrigObj_filterBits, TrigObj_id
 - ❖ TrigObj_l1pt, TrigObj_l1charge, TrigObj_l1iso, TrigObj_l1pt_2, TrigObj_l2pt
- ❖ Data: 2011A and 2012B —from Nuha
- ❖ Based on the framework nanoAODplus, NanoAnalyzer
- ❖ Referring to Run1 trigger object implementation.

https://github.com/cms-sw/cmssw/blob/CMSSW_5_3_X/HLTrigger/HLTcore/plugins/TriggerSummaryAnalyzerAOD.cc

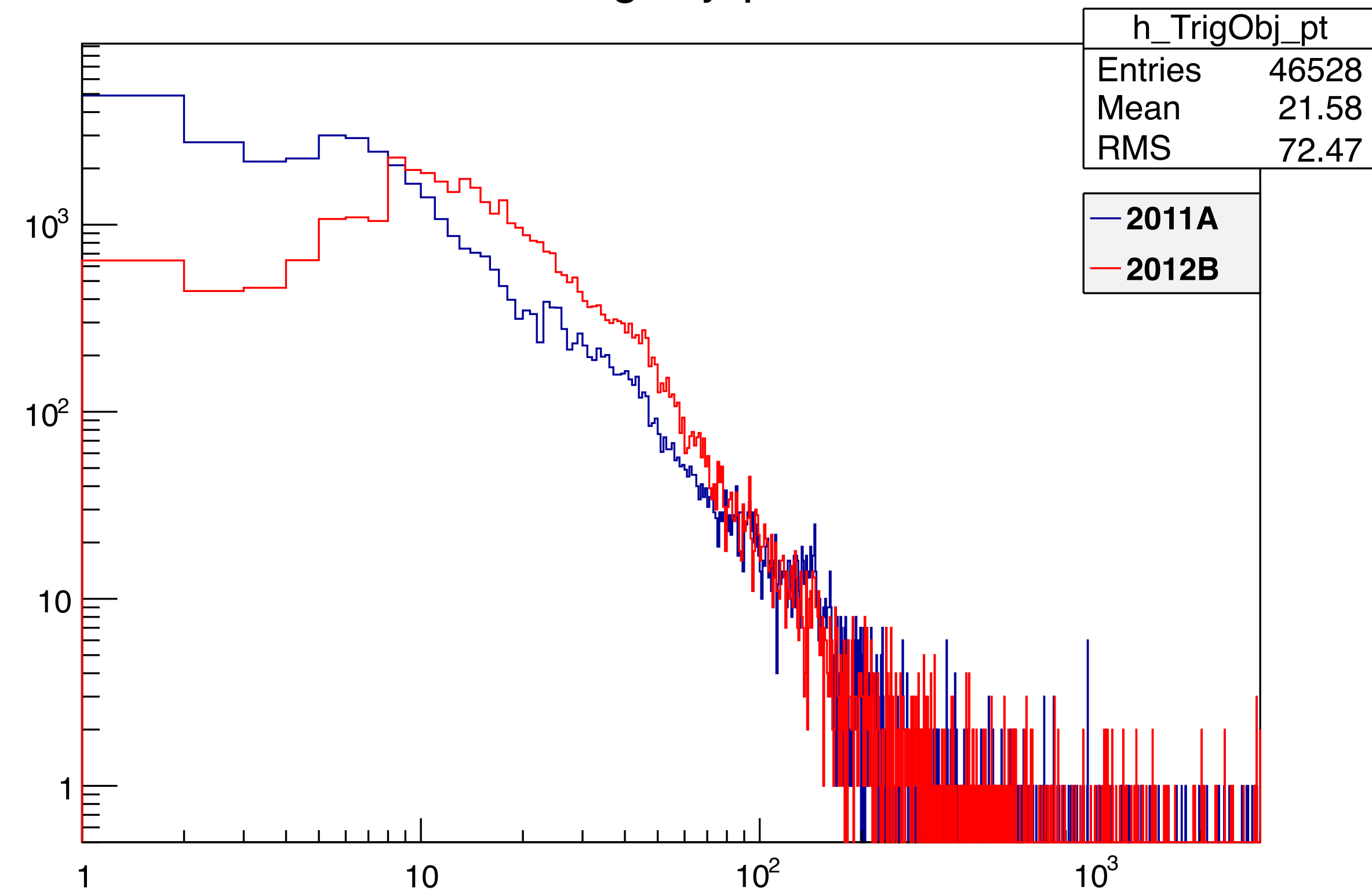
Trigger Object

- ❖ Data 2011A and 2012A with 5000 events
- ❖ **nTrigObj; TrigObj_pt; TrigObj_eta; TrigObj_phi**

nTrigObj



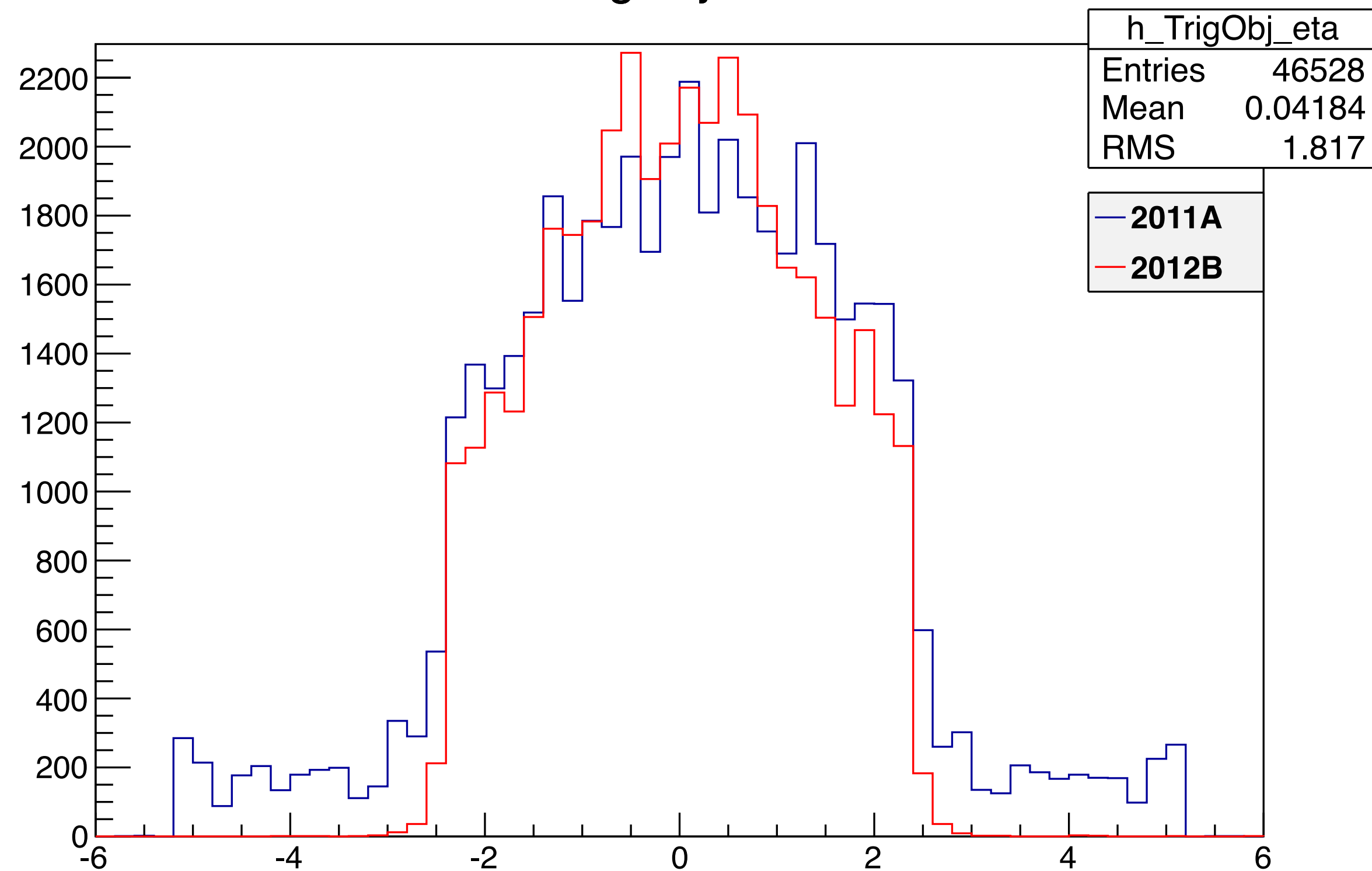
TrigObj_pt



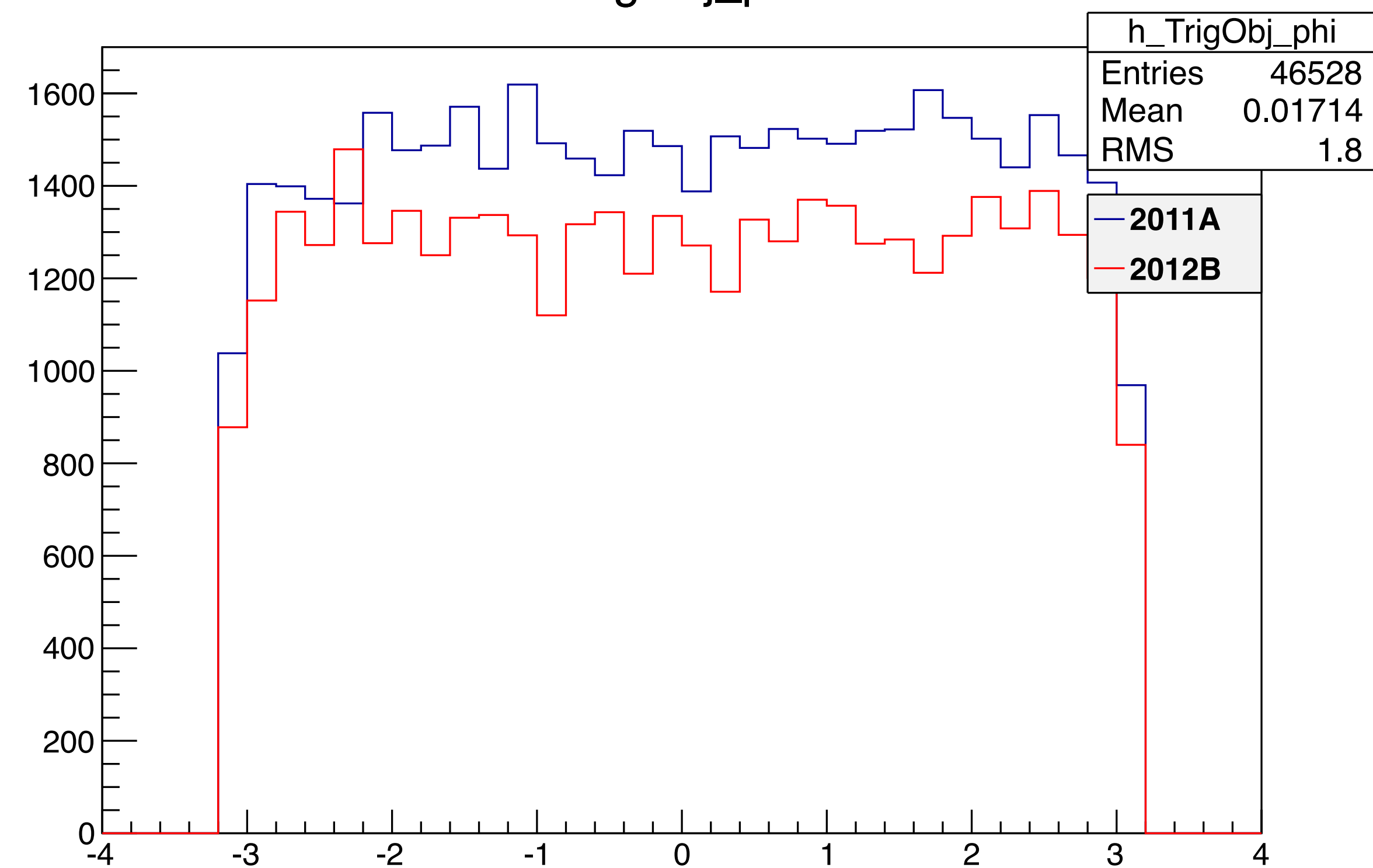
Trigger Object

- ❖ Data 2011A and 2012A with 5000 events
- ❖ nTrigObj; TrigObj_pt; **TrigObj_eta; TrigObj_phi**

TrigObj_eta



TrigObj_phi



Summary

- ❖ TrigObj, TrigObj_pt, TrigObj_eta, TrigObj_phi, have been integrated.
- ❖ 2011A and 2012B data have been used to check the variables.

To do

- ❖ Work on implementation of other trigger object variables, e.g. TrigObj_filterBits, TrigObj_l1charge, TrigObj_l1iso, TrigObj_l1pt, TrigObj_l1phi, TrigObj_l1pt_2, TrigObj_l2.
- ❖ I will cross check the implemented variable with 2010 data, and MC comparison.

Backup

Introduction

- ❖ Trigger Object: store and access the trigger matching information.
- ❖ Official NanoAOD:

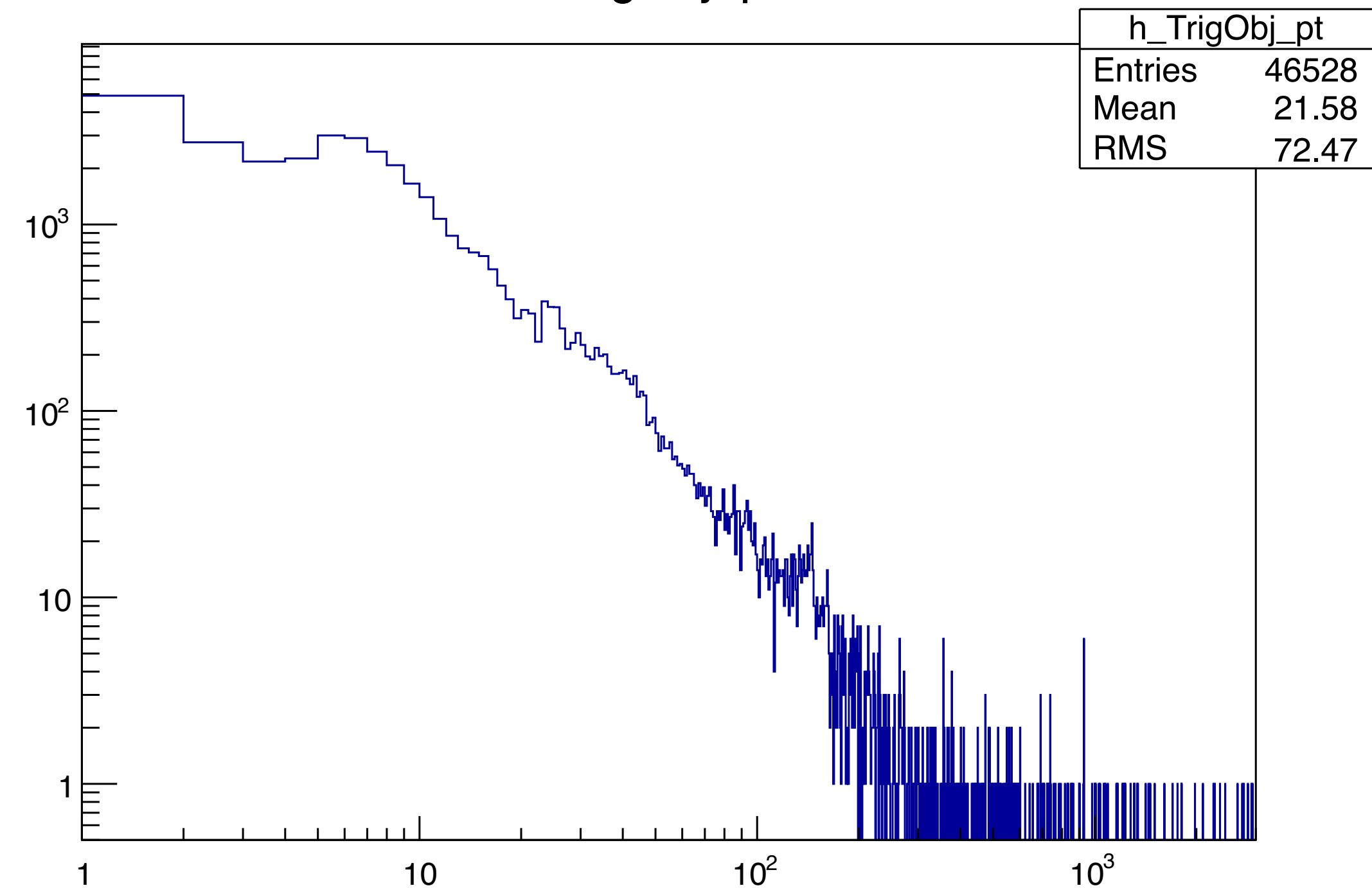
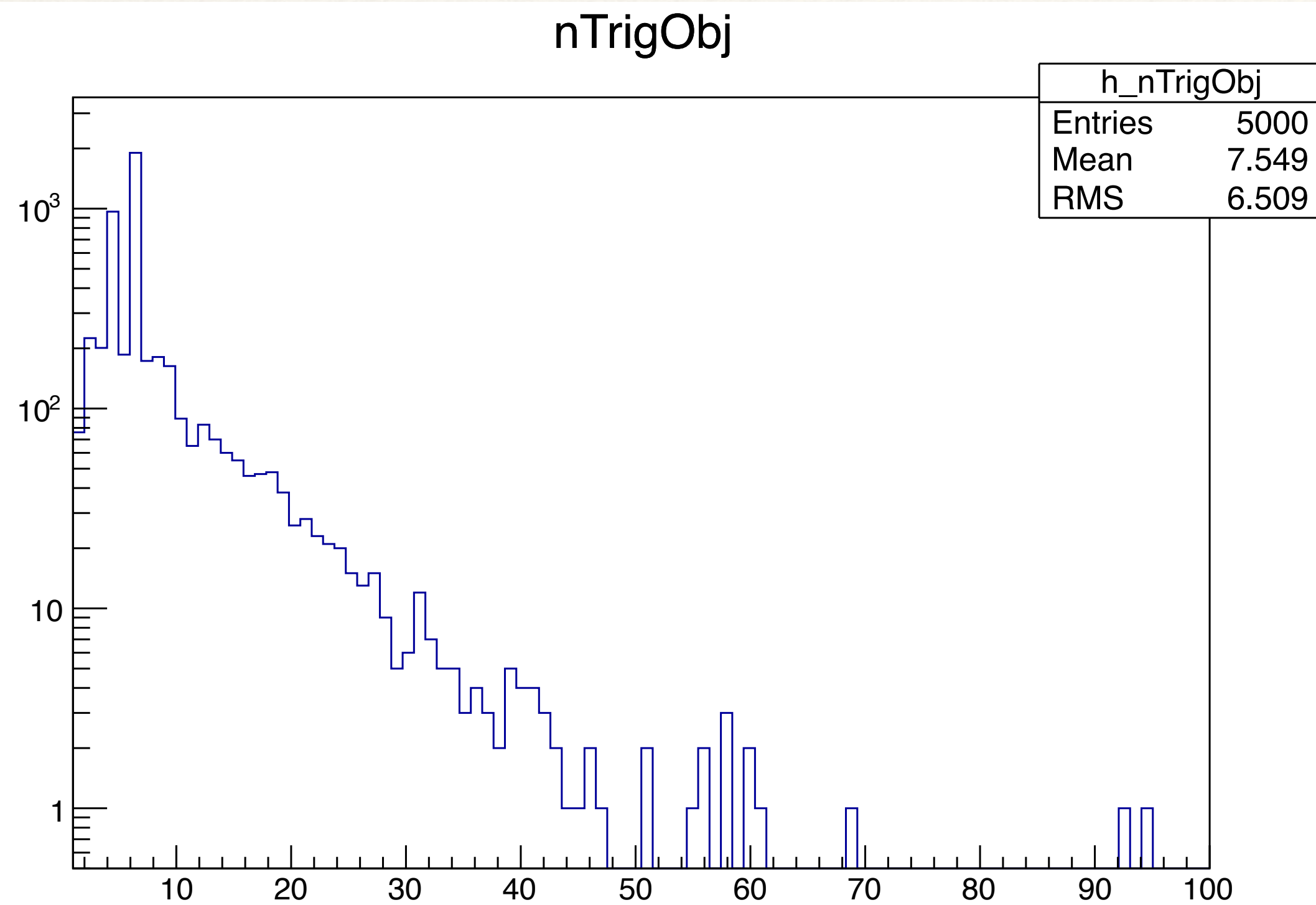
TrigObj [\[back to top\]](#)

Object property	Type	Description
TrigObj_eta	Float_t	eta
TrigObj_filterBits	Int_t	extra bits of associated information: 1 = CaloIdL_TrackIdL_IsoVL, 2 = 1e (WPTight), 4 = 1e (WPLoose), 8 = OverlapFilter PFTau, 16 = 2e, 32 = 1e-1mu, 64 = 1e-1tau, 128 = 3e, 256 = 2e-1mu, 512 = 1e-2mu, 1024 = 1e (32_L1DoubleEG_AND_L1SingleEGOr) for Electron (PixelMatched e/gamma); 1 = TrkIsoVVL, 2 = Iso, 4 = OverlapFilter PFTau, 8 = 1mu, 16 = 2mu, 32 = 1mu-1e, 64 = 1mu-1tau, 128 = 3mu, 256 = 2mu-1e, 512 =1mu-2e for Muon; 1 = LooseChargedIso, 2 = MediumChargedIso, 4 = TightChargedIso, 8 = TightID OOSC photons, 16 = HPS, 32 = single-tau + tau+MET, 64 = di-tau, 128 = e-tau, 256 = mu-tau, 512 = VBF+di-tau for Tau; 1 = VBF cross-cleaned from loose iso PFTau for Jet;
TrigObj_id	Int_t	ID of the object: 11 = Electron (PixelMatched e/gamma), 22 = Photon (PixelMatch-vetoed e/gamma), 13 = Muon, 15 = Tau, 1 = Jet, 6 = FatJet, 2 = MET, 3 = HT, 4 = MHT
TrigObj_l1charge	Int_t	charge of associated L1 seed
TrigObj_l1iso	Int_t	iso of associated L1 seed
TrigObj_l1pt	Float_t	pt of associated L1 seed
TrigObj_l1pt_2	Float_t	pt of associated secondary L1 seed
TrigObj_l2pt	Float_t	pt of associated 'L2' seed (i.e. HLT before tracking/PF)
TrigObj_phi	Float_t	phi
TrigObj_pt	Float_t	pt
nTrigObj	UInt_t	

Trigger Object

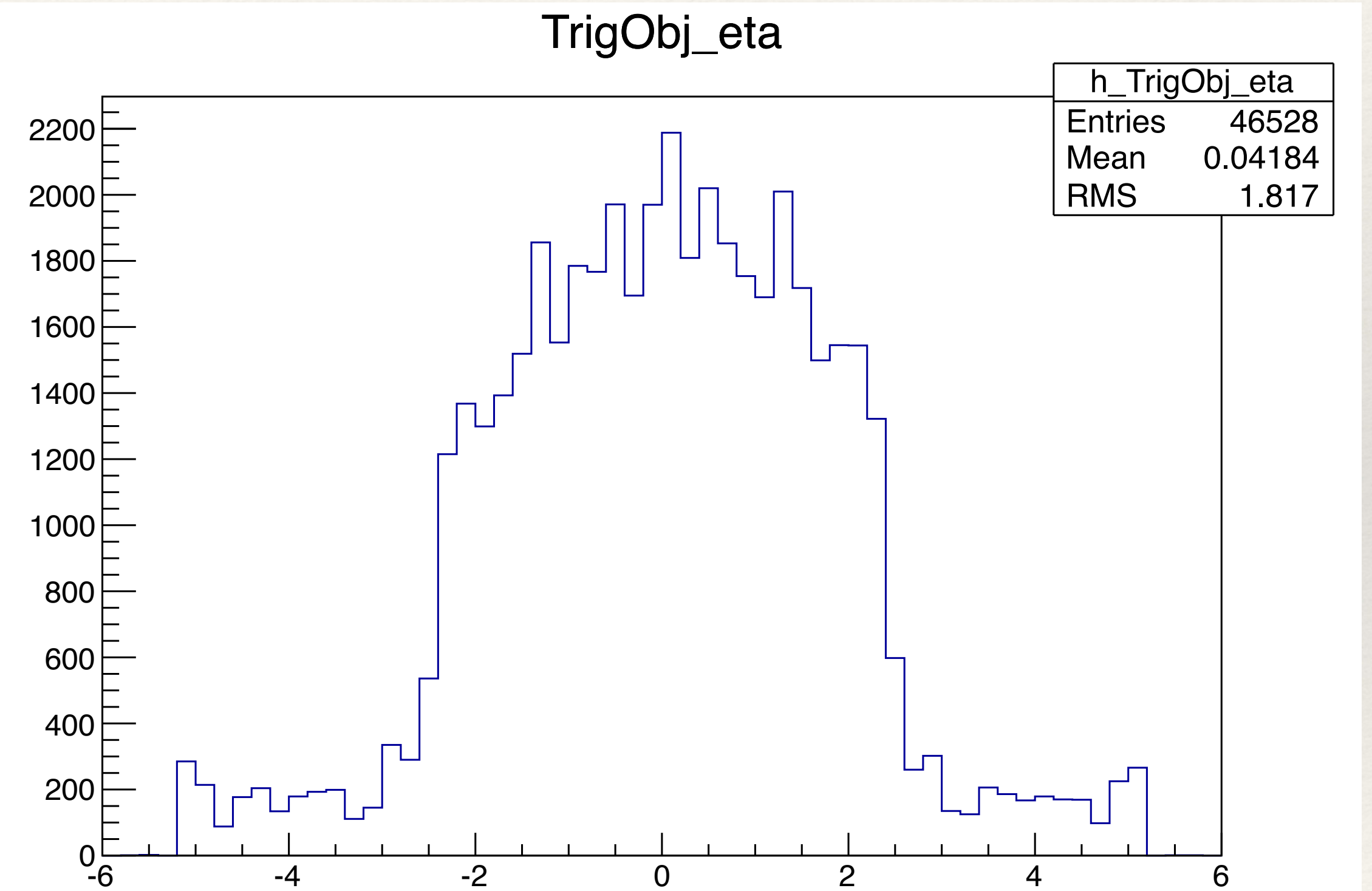
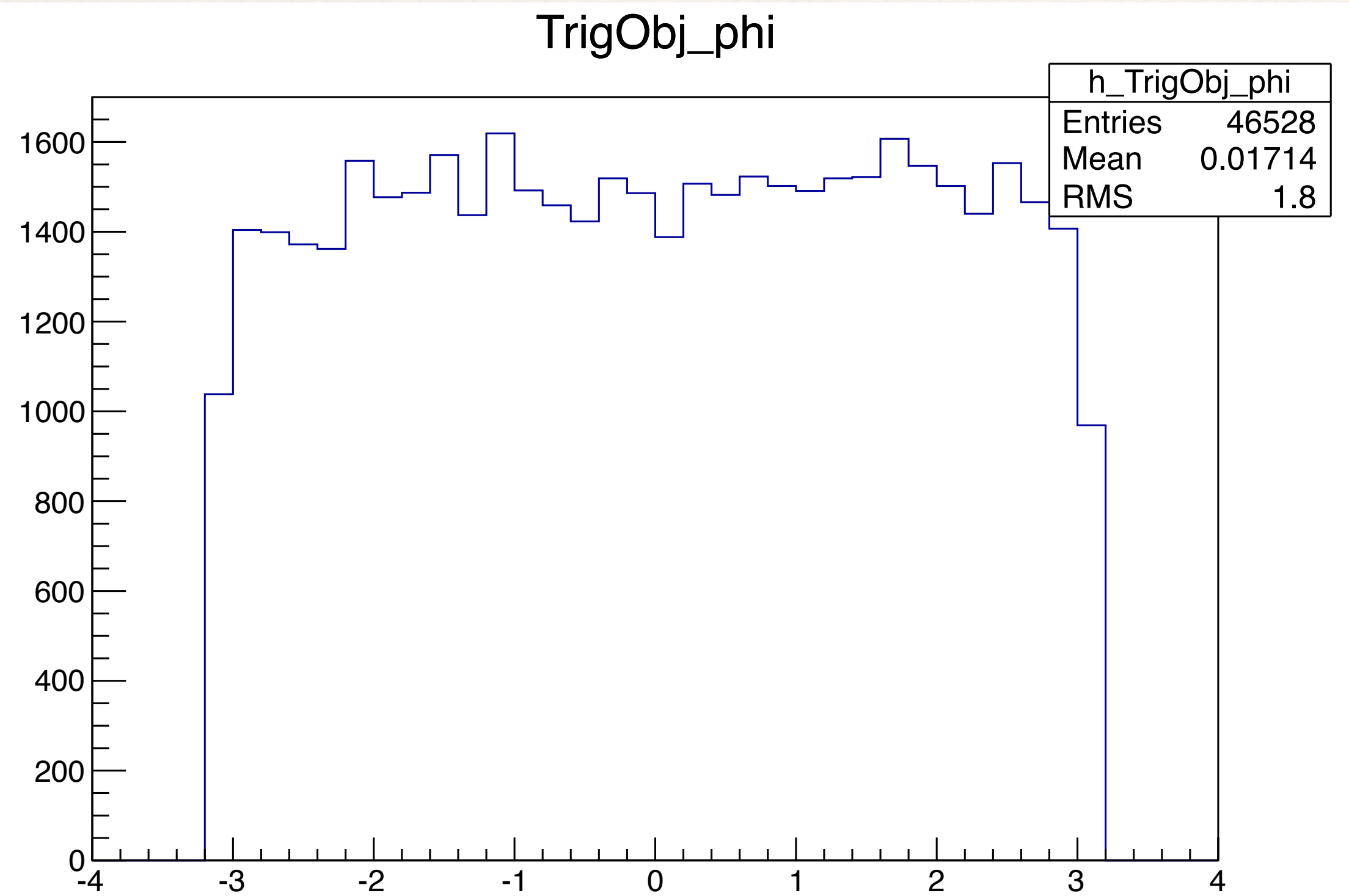
❖ nTrigObj; TrigObj_pt; TrigObj_eta; TrigObj_phi

TrigObj_pt



Trigger Object

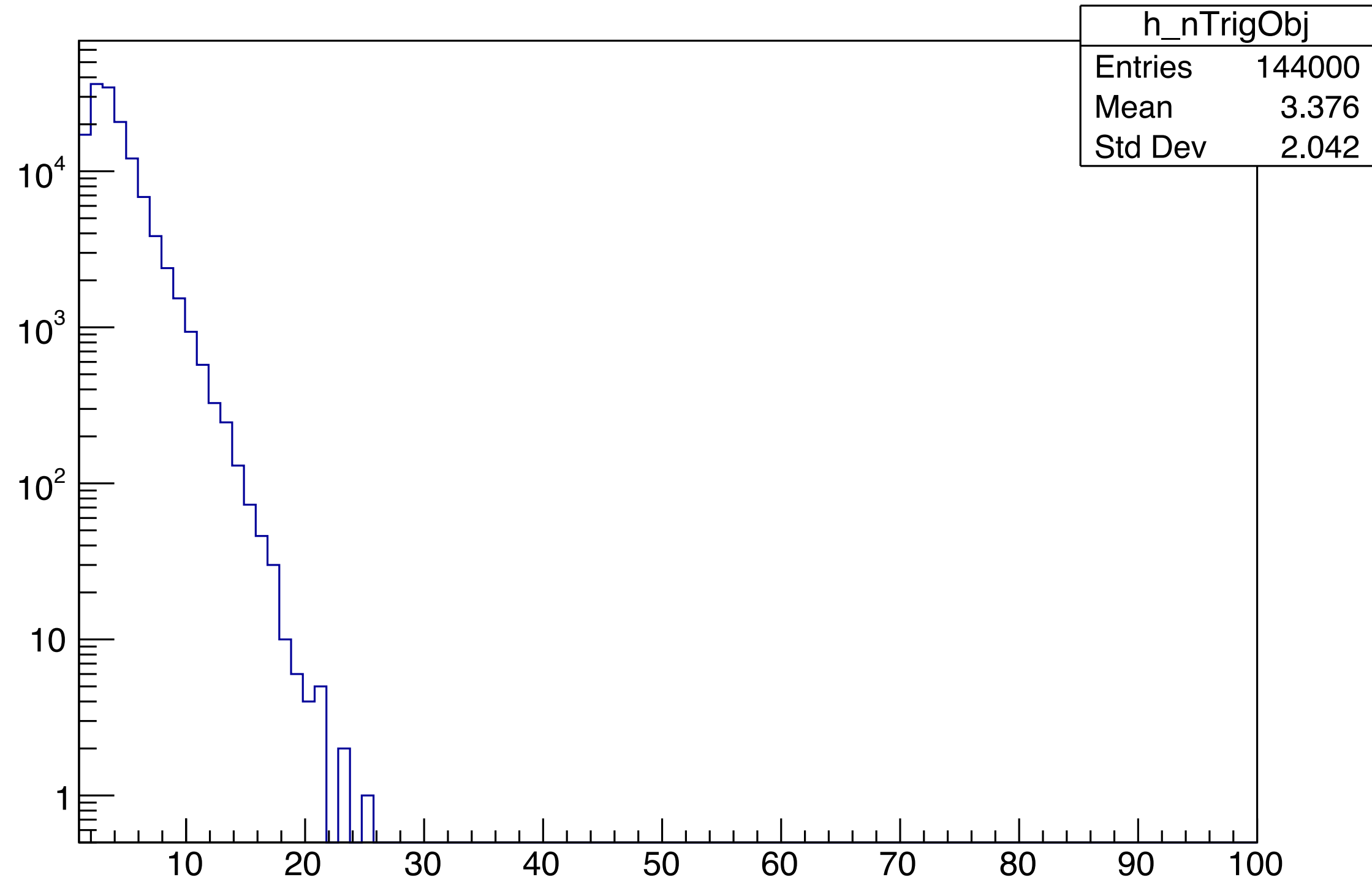
❖ nTrigObj; TrigObj_pt; TrigObj_eta; TrigObj_phi



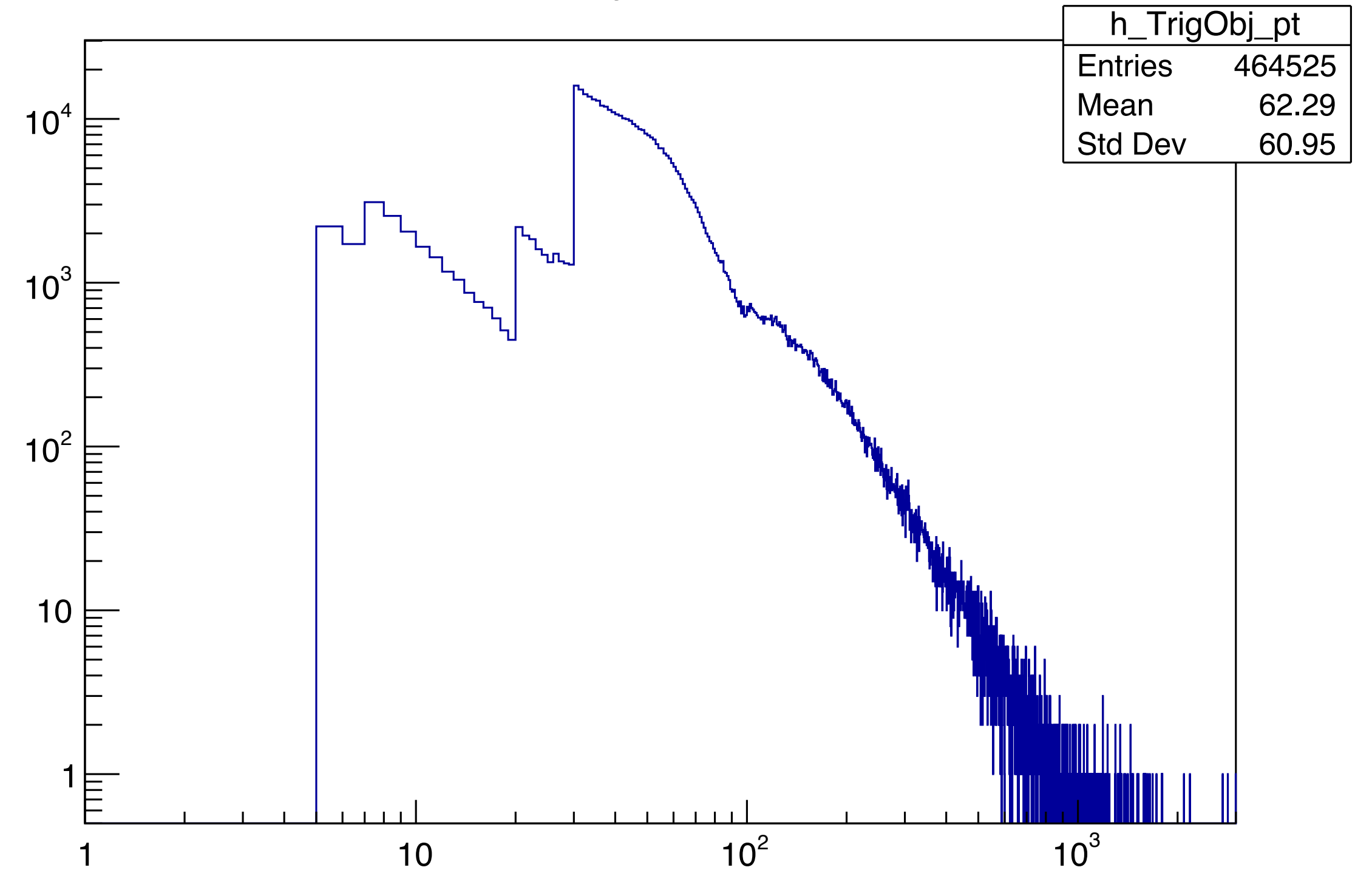
Trigger Object—NanoAOD run2

❖ nTrigObj; TrigObj_pt; TrigObj_eta; TrigObj_phi

nTrigObj



TrigObj_pt



Trigger Object-NanoAOD run2

❖ nTrigObj; TrigObj_pt; TrigObj_eta; TrigObj_phi

