

VHbb boosted - Xbb framework

Directory: /t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python

1lep 2016: /t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/Wlv2016config

2lep 2016: /t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/Zll2016Nanoconfig

1lep 2017:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/Wlv2017config

Training 1lep boosted 2017: /t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/weight

LogFiles for 1lep 2016 studies in /mnt/t3nfs01/data01/shome/acalandr

1 - Running framework - List of inputs

```
for j in `ls -1`; do for i in `ls -1 ${j}/**/*.root`; do echo ${PWD}/${i} | sed 's/\eos/cms/';
```

2 - Running framework - Prep Step

1) Prep step

```
./submit.py -T Wlv2016 -F prep-v1 -J prep -N 10
```

> check all samples are processed:

```
./submit.py -T Wlv2016 -J checklogs resubmit
```

PREPout:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/prep_v1/

--> New method for PREPStep (USE THIS METHOD!!!): ./submit.py -T Zll2016Nano -J run

--modules=Prep.VHbb -F prep --input PREPin --output PREPout

--set='Directories.samplefiles:=<!Directories/samplefiles_split!>'

3 - Running framework - Sys Step

```
./submit.py -T Wlv2016 -F sysnew-sys -J sysnew --addCollections Sys.sys_all_BoostedAndResolved -
```

List of systematics uncertainties included in general.ini:

```
sys_all_BoostedAndResolved = ['Sys.TTweights', 'Sys.LeptonWeights', 'Sys.EWKweights', 'Sys.BTagWeigh
```

The python modules for each systematics uncertainty is in myutils/.

> run without Higgs module: Sys.HiggsCandidateSystematics to make it faster. Then, I ll have to run with the Higgs module inside after the plots are done

> using BTagWeight cMVAv2 for 94X campaign (2016 reprocessing), csv file:

cMVAv2_Moriond17_B_H.csv

SYSout:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/sys_v6/

> check all samples are processed:

```
./submit.py -T Wlv2016 -J checklogs resubmit
```

The weights in 'weightF' (in general.ini) are produced after the SYS step because they come from the modules in general.ini which accounts for the systematics uncertainties.

4 - Running framework - Cacheplot Step

```
./submit.py -T Wlv2016 -F cacheplot-v2 -J cacheplot -i
```

In order to cache one specific sample, add '-S SingleElectron' to command.

> check all samples are processed:

```
./submit.py -T Wlv2016 -J checklogs resubmit
```

Output of cachestep: tmpSamples =

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/tmp/v3/
[no need to change the output of the cachepot each time as hash module will take care of picking correct samples. Everything depends on the plottingSamples: <!Directories!SYSout!>]

--> Plots can be performed either after the PREP step but some of the weights can be missing because some of the weights are calculated at the SYS step stage (they come from the evaluation of the modules for the systematics uncertainties).

5 - Running framework - Plot Step

change stuff in VHbbPlotDef (new variables) and add stuff in plot.ini

NB: Cut_BOOST = (<!GeneralBoost_doubleb!> && <!GeneralDphiMET_Lep!> < 2 && <!GeneralNaddLep!> == 0 && V_pt > 250) in cuts.ini > if I use Boost_doubleb it doesn't complain because of the btag_jetidx being wrong in the case it doesn't find one fat jet. For the prep step, I had <!GeneralBoost_doubleb!> which was more inclusive.

Additional line in plots.ini to define which variable to plot:

```
var_additionalBTAGALGOS: DeepAK8_bbVslight,DeepAK8_bbVST
```

The variable definition for the plots is in vhbbPlotDef.ini.

6 - Running framework - BDT Training Step

** In plots.ini:

```
trainingBKG =
```

```
<!Plot_general!WJet!>,<!Plot_general!DY!>,<!Plot_general!ST!>,<!Plot_general!TT!>,<!Plot_general!VV!>
```

```
trainingSig = <!Plot_general!allSIG!>
```

where allSig in trainingSig is 'WminusH','WplusH','ZH','ggZH' and trainingBkg has all the backgrounds ***except*** QCD (because it's spiky).

```
/////
```

**Variables used for training:

```
Nominal: FatJet_msoftdrop_nom FatJet_pt_nom MET_Pt V_mt SA5 FatJet_pt[Hbb_fjidx]/V_pt
abs(FatJet_eta[Hbb_fjidx]-V_eta) FatJet_deepTagMD_bbvsLight[Hbb_fjidx]
1/(1+(FatJet_deepTagMD_TvsQCD[Hbb_fjidx]/FatJet_deepTagMD_HbbvsQCD[Hbb_fjidx]))*(1-FatJet_deepTagMD
```

//////

** In training.ini:

- systematics = nominal

```
./submit.py -T LxplusZll -F cachetraining-v1 -J cachetraining [cachetraining step] (./submit.py -T Wlv2016 -J
checklogs - - resubmit to repeat for killed jobs)
```

```
./submit.py -T LxplusZll -F runtraining-v1 -J runtraining [training step]
```

6B - Running framework - BDT Training Step [adding systematics]

Using /t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/MakeSysList.py, I get the list of UP/DOWN variations for the systematics uncertainties on the BDT inputs to be added in training.ini

7 - Running framework - BDT Evaluation Step

```
./submit.py -T LxplusZll -F eval-v1 -J eval
```

If there are failed jobs, launch:

```
./submit.py -T LxplusZll -F eval-v1-reprocess-failed-jobs -J eval -k -N 1
```

8 - Running framework - Dacards

1) cache the dactacards: ./submit.py -T LxplusZll -F cachedc-v1 -J cachedc --parallel=8 (./submit.py -T LxplusZll -F cachedc-v1 -J cachedc --parallel=8 -k' to resubmit the failed jobs). The output of this step goes to the /tmp directroy (similarly as for the cacheplot step)

2) produce dacards: ./submit.py -T LxplusZll -F rundc-v1 -J rundc

3) merge root files: ./submit.py -T LxplusZll -F rundc-v1 -J mergedc

4) run Combine to get the Significance (see section 9)

9 - Running framework - Statistical method

Dacards produced in Step 8.3 are in log_Wl2016_v2/run-dc/Limits/*txt

```
To merge all the dacards: python ../../../../scripts/combineCards.py
Wlfe=vhbb_DC_TH_Wle_Wlfv11_BOOST.txt Wlfm=vhbb_DC_TH_Wlm_Wlfv11_BOOST.txt
Whfe=vhbb_DC_TH_Wle_Whf_BOOST.txt Whfm=vhbb_DC_TH_Wlm_Whf_BOOST.txt
tte=vhbb_DC_TH_Wle_tt_BOOST.txt ttm=vhbb_DC_TH_Wlm_tt_BOOST.txt
SRe=vhbb_DC_TH_Sig_BOOST.txt SRm=vhbb_DC_TH_Sigu_BOOST.txt >
```

vhbb_DC_TH_M125_Wlv_Boostovb.txt

Using CombineHarvester to get the significance:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/CMSSW_10_2_13/src/HiggsAnalysis/

-> in the /script directory, the datacards are inside the Limits/ folder (with and without DeepAK8 in the BDT training for the SR)

10 - Running framework - Fit Convergence

```
combine -M FitDiagnostics -m 125 --robustFit=1 --stepSize=0.01 --X-rtd MINIMIZER_MaxCalls=9999999
--cminApproxPreFitTolerance=10 --saveNorm -v 3 --saveShapes --saveWithUncertainties --cminPreScan
vhbb_DC_TH_M125_Wlv_Boostovb_removeJETscalesReso_all.txt
```

Datcards without resolution and shape corrections for jets removed:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/CMSSW_10_2_13/src/HiggsAnalysis/Comb
vhbb_DC_TH_M125_Wlv_Boostovb_removeJETscalesReso_all.txt

11 - Running framework - Producing profit and postfit plots

Prefit: ./submit.py -T Wlv2016 -J postfitplot --local -F postfit_test

Postfit: ./submit.py -T Wlv2016 -J postfitplot --local -F postfit_test --set="Fit.FitType:=shapes_fit_s"

Ongoing production V1

- PREP STEP [DONE]: PREPout :

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/prep_v2/

- SYS STEP w/o HiggsCandidateSystematics [DONE]: SYSout:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/sys_v9/

- PLOT STEP:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src//Xbb/python/logs_Wlv2016_v2/runplot-v11/Plots/

- PLOT STEP (with DeepAK8 cuts on SR/CR to be used for the fit):

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src//Xbb/python/logs_Wlv2016_v2/runplot-v16/Plots/

///// ///// ///// /////

- SYS STEP w HiggsCandidateSystematics [still to be done]: SYSout:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/sys_v10/

///// ///// ///// /////

- TRAINING STEP:

v1 has the full set of training variables in V11 with DeepAK8 inputs: Nominal: FatJet_msoftdrop FatJet_pt

MET_Pt V_mt SA5 FatJet_pt[Hbb_fjidx]/V_pt abs(FatJet_eta[Hbb_fjidx]-V_eta)

FatJet_deepTagMD_bbvsLight[Hbb_fjidx]

1/(1+(FatJet_deepTagMD_TvsQCD[Hbb_fjidx]/FatJet_deepTagMD_HbbvsQCD[Hbb_fjidx]))*(1-FatJet_deepTagMD

v2 has the full set of training variables in V11 WITHOUT DeepAK8 inputs: Nominal: FatJet_msoftdrop
FatJet_pt MET_Pt V_mt SA5 FatJet_pt[Hbb_fjidx]/V_pt abs(FatJet_eta[Hbb_fjidx]-V_eta)

/////

MVA in:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/sys_v9/

MVA out:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/mva_v6/
(BDT training in SR WITH DeepAK8 - default)

MVA out:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2016/Wlv/mva_v3/
(BDT training in SR WITHOUT DeepAK8)

/////

- DC step: data cards are in log_W12016_v2/run-dc/Limits/*txt

- DC step (stat+sys): /mnt/t3nfs01/data01/shome/acalandr/Logs/eval-v6/Logs/rundc-v1/Limits/

Some useful scripts

1) to remove systematics uncertainties:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/remove_sys.py

2) to plot systematics: /work/gaperrin/VHbb2018/CMSSW_10_1_0/src/Xbb/python/plot_systematics.py -
python plot_systematics.py -C Wlv2016Nanoconfig/general.ini -C Wlv2016Nanoconfig/datacards.ini -C
Wlv2016Nanoconfig/plots.ini -C Wlv2016Nanoconfig/paths.ini -C Wlv2016Nanoconfig/vhbbPlotDef.ini -C
Wlv2016Nanoconfig/samples_nosplit.ini

Statistical tools

I am working here:

/t3home/acalandr/VHbb/boosted_2016/combineHarvester/CMSSW_10_2_13/src/CombineHarvester/CombineTools

1) creating workspace from txt: text2workspace.py datacard_1lep2016_boosted.txt -o ws_boosted.root

2) FitDiagnostics: combine -M FitDiagnostics -t -1 --expectSignal 1 -d
ws_boosted_2016_1lep_29Aug_noBinByBinUnc.root --cminDefaultMinimizerStrategy 0 -v 3
--freezeParameters CMS_vhbb_scale_j_PileUpPtEC1_13TeV

This command creates: error on mu (POI), postfit plots

3) Checking NP: combineTool.py -M GenerateOnly -m 125 -t -1 --expectSignal 1 --saveToys -d
ws_boosted.root, combineTool.py -M FastScan -w ws_boosted.root -d
higgsCombine.Test.GenerateOnly.mH125.123456.root -f fitDiagnostics.root:fit_s which produces nll.pdf

4) Extract error on POI: combine -M MultiDimFit -t -1 --expectSignal 1 --algo singles -m 125 -d
ws_boosted.root --cminDefaultMinimizerStrategy 0

5) Doing impact plots: combineTool.py -M Impacts -d htt_tt.root -m 125 --doInitialFit --robustFit 1

```
cMinDefaultMinimizerStrategy 0, combineTool.py -M Impacts -d htt_tt.root -m 125 --robustFit 1 doFits  
cMinDefaultMinimizerStrategy 0
```

Validation on 1lep 2017

> Framework:

```
/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/Wlv2017config_boostedanalis
```

=

1) Prep Step > DONE!

a) Logfile:

```
/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/prep-v1
```

Output files: PREPout:

```
root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2017boosted/Wlv/p
```

b) Launch command to reprocess samples - > DONE!!

=

2) Sys step > DONE !! a) SYSout:

```
root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2017boosted/Wlv/s
```

b) Launch command to reprocess samples > DONE !!

=====

3) Plots SR/CR > DONE !!

a) cacheplot > Log: cacheplot-v1

b) plot

=====

4) BDT training + significance > DONE!!

Cachetraining: MVAout:

```
root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2017boosted/Wlv/m
```

Log: cachetraining-v2

=====

5) BDT evaluation [sabato/domenica] > ONGOING

MVAout:

```
root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2017boosted/Wlv/m
```

Log: eval-v2

a) launch command [domenica] > DONE

b) launch command to reprocess samples [domenica] > DONE

c) plots BDT [domenica] Log: cacheplot_v3 Log: runplot_v12

=====

6) adding SYS to training and to evaluation > ONGOING !!!! MVAout:

root://t3dcachedb03.psi.ch:1094//pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/VHbbPostNano2017boosted/Wlv/m
Log: eval-v8

=

7) creation of datacards

a) cachedc > DONE!! Log: cachedc-v1

b) produce DC > ONGOING!!! Log: runcd-v1[where DC are stored]

c) merge root files: > DONE!! Log: runcd-v1 Where to find DC:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/runcd-v1/Limits

d) merge DC: > DONE !!!! Working here:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/CMSSW_10_2_13/src/HiggsAnalysis/
Merged datacard:

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/runcd-v1/Limits/vhbb

=====

8) stat-only results on significance > DONE !!!

cd /t3home/acalandr/VHbb/boosted_2016/combineVersionPirmin/CMSSW_8_1_0 Significance: combine -M
Significance

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/runcd-v1/Limits/vhbb
-t -1 --expectSignal=1 --X-rtd MINIMIZER_MaxCalls=9999999 --cminDefaultMinimizerStrategy 2 -v 5
--cminApproxPreFitTolerance=10 --X-rtd MINIMIZER_analytic --freezeParameters all

===

9) stat+sys results on significance > ONGOING cd

/t3home/acalandr/VHbb/boosted_2016/combineVersionPirmin/CMSSW_8_1_0 Significance: combine -M
Significance

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/runcd-v1/Limits/vhbb
-t -1 --expectSignal=1 --X-rtd MINIMIZER_MaxCalls=9999999 --cminDefaultMinimizerStrategy 2 -v 5
--cminApproxPreFitTolerance=10 --X-rtd MINIMIZER_analytic

=== 10) stat+sys results on significance > DONE

cd

/t3home/acalandr/VHbb/boosted_2016/combineHarvester/CMSSW_10_2_13/src/CombineHarvester/CombineTools
text2workspace.py

/t3home/acalandr/VHbb/boosted_2016/CMSSW_10_1_0/src/Xbb/python/logs_Wlv2017boosted/runcd-v1/Limits/vhbb
-o ws_boosted_2017_1lep.root combine -M MultiDimFit -t -1 --expectSignal 1 --algo singles -m 125 -d
ws_boosted_2017_1lep.root --cminDefaultMinimizerStrategy 0 -v

=====

Implementation of boosted analysis in resolved Xbb framework and in the VHbb Legacy CH area

1) Changes: <https://github.com/piberger/Xbb/pull/102/files>

2) Pull request: <https://github.com/piberger/Xbb/pull/102>

3) myXbb repo: <https://github.com/acalandr/Xbb>

4) My Xbb area for tests: <https://github.com/acalandr/Xbb/tree/boostedAnalysis/python/>

5) t3 area: `/t3home/acalandr/VHbb/boosted_2016/merge_resolevd_boosted/CMSSW_10_1_0/src/Xbb/`

> OVERLAP: treated by removing in the list `*_High_` from the resolved and adding the pieced to the boosted list in the `datacard.ini` file

VHbb Legacy CH area - implementation of boosted analysis

--> directory: `/t3home/acalandr/VHbb/boosted_2016/merge_resolevd_boosted/CMSSW_10_1_0/src/Xbb/`

Pirmin s CH legacy analysis: <https://gitlab.cern.ch/piberger/VHLegacy>

> FORK of CH area: <https://gitlab.cern.ch/cms-hcg/ch-areas/VHLegacy>

<https://gitlab.cern.ch/acalandr/VHLegacy>

Area (in t3ui04):

`/t3home/acalandr/VHbb/boosted_2016/merge_resolevd_boosted/CH_VHbb_Legacy/CMSSW_10_2_13/src/CombineF`

Stuff for qstat/batch

```
alias qs="qstat -xml | tr '\n' ' ' | sed 's#<job_list[^>]*>#\n#g' | sed 's#[^>]*>##g' | grep ' ' | column -t"
```

qs

```
qslgrep Wlv2017 | awk '{print $1}' | tr '\n' ' ' (to select 2017 jobs)
```

1 -FINAL RESOLVED+BOOSTED 2017 CONFIGURATION - DNN/BDT evaluation

`/t3home/acalandr/VHbb/boosted_2016/merge_resolevd_boosted/CMSSW_10_1_0/src/Xbb/`
(<https://gitlab.cern.ch/piberger/VHLegacy>)

-> How to run DNN/BDT evaluations in Xbb with final version (this will run the DNN/BDT trainings on nominal and up/down variation samples defined in `training.ini`):

*Implementation of boosted analysis in resolved Xbb framework and in the VHbb Legacy CH area*8

DNN: ./submit.py -T Zll2016 -F eval-tf_v1 -J eval --addCollections Eval.VH where VH = ['Eval.DNN', 'Eval.CRDNN']

BDT: ./submit.py -T Zvv2017 -F eval-bdt_v2 -J eval --input MVAin --output MVAout -i

In order to run the DNN/BDT evaluation:

1) Change the name of the XML for the BDT according to naming convention

2) > Do it for DNN and CRDNN only: Use file in checkpoint (the path is relative to python). The files are here: <https://twiki.cern.ch/twiki/bin/view/CMS/VHbbLegacyDNN>

2 -FINAL RESOLVED+BOOSTED 2017 CONFIGURATION - creation of datacards and fits

/work/acalandr/CH_fit_2017_VHbb_vers2/CMSSW_10_2_13/src/CombineHarvester

1) creation of datacards : python scripts/VHLegacy.py --Znn_fwK Xbb --Wmn_fwK Xbb --Wen_fwK Xbb --Zee_fwK Xbb --Zmm_fwK Xbb

2) creation of workspace: combineTool.py -M T2W -i output/\${COMBFOLDERSTXS}2017/cmb/ -o "ws_stxs_fine.root" -P PhysicsModel:multiSignalModel --PO verbose --PO 'map=.*ZH_lep_PTV_75_150_hbb:r_zhlow[1,0,5]' --PO 'map=.*ZH_lep_PTV_150_250_0J_hbb:r_zhmednoj[1,0,5]' --PO 'map=.*ZH_lep_PTV_150_250_GE1J_hbb:r_zhmedwithj[1,0,5]' --PO 'map=.*ZH_lep_PTV_GT250_hbb:r_zhhi[1,0,5]' --PO 'map=.*WH_lep_PTV_150_250_0J_hbb:r_whmed[1,0,5]' --PO 'map=.*WH_lep_PTV_150_250_GE1J_hbb:r_whmed[1,0,5]' --PO 'map=.*WH_lep_PTV_GT250_hbb:r_whhi[1,0,5]

3) best fit: combineTool.py -M MultiDimFit -d output/\${COMBFOLDERSTXS}2017/cmb/ws_stxs_fine.root --setParameter r_zhlow=1,r_zhmednoj=1,r_zhmedwithj=1,r_zhhi=1,r_whmed=1,r_whhi=1 --redefineSignalPOIs \$(./scripts/getPOIs_STXS.py STXSfine -p) --setParameterRanges \$(./scripts/getPOIs_STXS.py STXSfine -r) \$(./scripts/getPOIs_STXS.py STXSfine -O) --saveInactivePOI=1 --saveToys --saveWorkspace -t -1 -n .STXSfine_BestFit_prefit

4) scan with systematics: combineTool.py -M MultiDimFit -d higgsCombine.STXSfine_BestFit_prefit.MultiDimFit.mH120.123456.root -D 'toys/toy_asimov' --generate \$(./scripts/getPOIs_STXS.py STXSfine -g) --redefineSignalPOIs \$(./scripts/getPOIs_STXS.py STXSfine -p) --setParameterRanges \$(./scripts/getPOIs_STXS.py STXSfine -r) \$(./scripts/getPOIs_STXS.py STXSfine -O) --saveInactivePOI=1 --points 50 --floatOtherPOIs 1 --snapshotName "MultiDimFit" --skipInitialFit --algo grid --split-points 3 --job-mode script --task-name STXS_FINE_VH_scans -n .STXS.FINE.VH >jobs1.txt

for i in `cat jobs1.txt | awk '{print \$4}'`; do sbatch --job-name=STXSfit\${i}.sh/ --mem=3000M

--time=0-01:30

--output=/mnt/t3nfs01/data01/shome/\$USER/VHbb/CMSSW_10_1_0/src//Xbb/python/logs_Wlv2017/fit_\${i}.sh/}.lo

--account=cn-test ./\${i} ; done

6) scan without systematics: combineTool.py -M MultiDimFit -d higgsCombine.STXSfine_BestFit_prefit.MultiDimFit.mH120.123456.root -D 'toys/toy_asimov' --generate

```
$(./scripts/getPOIs_STXS.py STXSfine -g) --redefineSignalPOIs $(./scripts/getPOIs_STXS.py STXSfine -p)
--setParameterRanges $(./scripts/getPOIs_STXS.py STXSfine -r) $(./scripts/getPOIs_STXS.py STXSfine -O)
--saveInactivePOI=1 --points 50 --floatOtherPOIs 1 --snapshotName "MultiDimFit" --skipInitialFit --algo
grid --split-points 3 --freezeParameters allConstrainedNuisances --job-mode script --task-name
STXS_FINE_VH_scans_frall -n .STXS.fr.all.FINE.VH >jobs2.txt
```

```
for i in `cat jobs2.txt | awk '{print $4}'`; do sbatch --job-name=STXSfit${i}.sh/ --mem=3000M
--time=0-00:30
--output=/mnt/t3nfs01/data01/shome/$USER/VHbb/CMSSW_10_1_0/src//Xbb/python/logs_Wlv2017//fit_${i}.sh/.lo
--account=cn-test ./${i} ; done
```

6) plot likelihood scan:

```
mkdir VHbb_STXS_scans
```

```
cd VHbb_STXS_scans
```

```
mkdir results
```

```
mkdir plots
```

```
mv ../higgsCombine.STXS.FINE.VH.*.root results/
```

```
mv ../higgsCombine.STXS.fr.all.FINE.VH.*.root results/
```

```
cd results
```

```
for P in $(../scripts/getPOIs_STXS.py STXSfine -P); do hadd -k -f scan.${P}.root
higgsCombine.STXS.FINE.VH.${P}.POINTS.*.root; rm
higgsCombine.STXS.FINE.VH.${P}.POINTS.*.root; done;
```

```
for P in $(../scripts/getPOIs_STXS.py STXSfine -P); do hadd -k -f scan.${P}.fr.all.root
higgsCombine.STXS.fr.all.FINE.VH.${P}.POINTS.*.root; rm
higgsCombine.STXS.fr.all.FINE.VH.${P}.POINTS.*.root; done;
```

```
cd ../
```

```
INPUT="results"; OUTPUT="plots"; for P in $(../scripts/getPOIs_STXS.py STXSfine -P); do eval python
../scripts/plot1DScan.py -o scan_nominal_${P} --POI ${P} --translate ../scripts/pois.json --model STXS
--json ${OUTPUT}/STXSfine.json --others \"${INPUT}/scan.${P}.fr.all.root:Freeze all:8\" --breakdown
"Syst,Stat" --meta "POIs:${P}" -m ${INPUT}/scan.${P}.root --y-max 10 --no-input-label --outdir
${OUTPUT}/; done
```

```
7) final summary STXS plot: python ../scripts/summaryPlot.py -i
'plots/STXSfine.json:STXS/r_whmed,r_whhi,r_zhlow,r_zhmednoj,r_zhmedwithj,r_zhhi' --vlines
'1.0:LineStyle=2' --subline="41.5 fb^{-1} (13 TeV - 2017)" -o plots/summary_stxs --translate
../scripts/pois.json
```

3 -FINAL RESOLVED+BOOSTED 2017 CONFIGURATION - input/output location

SYS 1. Zvv: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zvv/VHbbPostNano2017_V11/sys/v1/ OK

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2. Wlv: //pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Wlv/VHbbPostNano2017_V11/sys/v1/ OK

3. Zll: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zll/VHbbPostNano2017_V11/sys/v3/ OK

HADD 1. Zvv: pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zvv/VHbbPostNano2017_V11/sys/v6/ OK

2. Wlv: //pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Wlv/VHbbPostNano2017_V11/sys/v7/ OK

3. Zll: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zll/VHbbPostNano2017_V11/sys/v6/ OK

EVAL DNN [use WP training for input variables in training.ini] 1. Zvv:

pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zvv/VHbbPostNano2017_V11/eval/v11/ OK

2. Wlv: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Wlv/VHbbPostNano2017_V11/eval/v7/ > OK

3. Zll: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zll/VHbbPostNano2017_V11/final/v9 > OK

EVAL BDT

1. Zvv: pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zvv/VHbbPostNano2017_V11/eval/v12 > OK

2. Wlv: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Wlv/VHbbPostNano2017_V11/eval/v9 > OK [11 left]

3. Zll: /pnfs/psi.ch/cms/trivcat/store/user/acalandr/VHbb/Zll/VHbbPostNano2017_V11/final/v11 > OK [25 left]

SHAPES

0lep: /work/acalandr/logs_Zvv2017/rundc-v2/Limits/

1lep: /work/acalandr/logs_Wlv2017/rundc-v2/Limits/

2lep: /work/acalandr/logs_Zll2017/rundc-v2/Limits/

2lep_bis: /work/acalandr/logs_Zll2017/rundc-v3/Limits/

-- AlessandroCalandri - 2019-07-02

This topic: Sandbox > TestTopic11111202

Topic revision: r33 - 2020-01-20 - AlessandroCalandri



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