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Urgent Validation Tasks

Here we collect information on changing/validating the L1 algorithms for HI.

A set of macros to run the L1 jet algorithm on the L1 Ntuples listed below can be found with instructions here:

<https://github.com/CmsHI/L1EmulatorMacros>

We are collecting the rates and turn-ons for different changes to the nominal algorithm at the following google doc page:

https://docs.google.com/spreadsheets/d/1--6Cr1oYvo-RKs80pK5o8lxkcU14szQ_mPtWoMFN2Q/edit?usp=sharing

The same information is stored for photon-related triggers here:

https://docs.google.com/spreadsheets/d/11_T7Zs-lBCyR4UMiN5KEQ648sviSQMPWDywmTjefBKQ/edit#gid=0

Running the HI Stage-1 emulator

Set up the emulator env. The following instructions are based on SWGuideL1TOOfflineDev, those directions should supersede these.

```
cmsRel CMSSW_7_4_0
cd CMSSW_7_4_0/src
cmsenv
git cms-merge-topic -u CmsHI:forest_CMSSW_7_4_0
git clone git@github.com:richard-cms/L1UpgradeAnalyzer.git Analyzers/L1UpgradeAnalyzer
scram build -j4
# then use the templates found in Analyzers/L1UpgradeAnalyzer/test
# to run on HI MC, use runEmulatorAndAnalyzer_fromRAWMC.py
# make absolutely sure that the globaltag you are using is appropriate!
```

Task Matrices

Jets

Task Category	Subtask	Description	Responsible name	Link to results twiki or presentations
Sample Production	5.02 TeV Hydjet Forest		Alex	
	2011 Data jet L1 Ntuple		Alex	
	2011 Data photon L1 Ntuple		Alex	
MC/Data Validation	2011 Data/2.76 Hydjet	Comparing energy deposits in the endcap (calotowers or rechits maybe) to check detector response	GM/Camelia	offlinecheck.pdf
	5.02 TeV Offline/HiForest	Is the 5.02 TeV simulation any	GM/Camelia	offlinecheck.pdf

	validation	good? Suggestions for "money plots" welcome		
Algorithmic Changes	zeroed-walls	zero-out eta=4, eta=17 walls	Alex	
	double-subtraction	apply background subtraction twice iteratively	Kaya	
	truncated mean	average only lowest 16 regions in each ring	Kaya	
	eta-reflection	avg eta-reflected phi rings together	Kaya	
	single-region	Instead of 3x3 jets use single region (similar to single track seed results)	Kaya/Michael	
	Mean + Sigma Subtraction			https://indico.cern.ch/event/385155/
	One-by-one jets			
	two-by-two jets			
	combination sigma and 1x1			
	combination sigma and 2x2			
Basic Kinematics	region energy sigma vs eta & centrality		Alex/Kaya	2015-03-11-alex-L1.pdf
	data vs MC distributions		Alex/Kaya	
	Checks on L1 calibrations	do reco-gen matching to see if we can calibrate away the noisy areas	GM/Camelia	

Photons

Task Category	Subtask	Description	Responsible name	Link to results twiki or presentations
Nominal Performance	Rates			
	Turn-On		Done	
Alternative Seeding	4x4 towers, no HCAL	Turn the HCAL off and see the rates/efficiencies for the offline isolated photons as suggested by Maria	Alex	
	4x4 towers with HCAL	Use calorimeter regions to seed the photons, (basically the same as single track seed)	Kaya	slides
	Jets	Use L1 jets to seed offline photons. Try 2x2 and 3x3 jets	Bi Ran	

Offline Development Validation Samples

Global Tags

GT Name	Description
MCHI2_74_V3	Guess at run2 conditions for 74X
MCHI1_74_V3	Run 1 conditions in 74X
auto:run2_mc_hi	Points to MCHI2_74_V3 in 740pre8
auto:run2_mc_HIon	Points to MCHI2_74_V3 in 740pre8
STARTHI53_LV1	2011 PbPb MC
FT_R_53_LV6	2011 PbPb Data
GR_P_V27A	Prompt reco tag for 2011
POSTLS161_V12	Used for pp test samples produced in 6XX

pp

Data

MC

HI

Data

Full Raw

Sample	Dataset	Notes
HIMinBiasUPC	/HIMinBiasUPC/HIRun2011-v1/RAW	Includes more than just minbias

Skims

Sample	RAW
Full Track 14	/HIHighPt/icali-HIHighPt_RAW_Skim_HLT_HIHighPtFullTrack14-4d786c9deacb28bba8fe5ed87e99b9e4-
Jet 95	/HIHighPt/icali-Skim_HLT_HIJet95_v3-8c595218c7288f8db8461601626c9a8e-SD_HIJet95/USER
Jet 55	/HIHighPt/icali-HIMinBiasUPC_Skim_HLT_HIJet55_v2-72e9032319e369ee7d3493bb45d1ee7d-SD_H
Jet 80	/HIHighPt/dgulhan-HIHighPt_HIRun2011_HLT_HIJet80-c2565dc65c088b00e9ff32e2778a39bf/USER
MinBias	/HIMinBiasUPC/icali-HIMinBiasUPC_Skim_HLT_HIMinBiasHfOrBSC_v2-35880fcf9fb9fd84b27cd14
!MinBias 750 RECO	/HIMinBiasUPC/icali-HIMinBiasUPC_Skim_HLT_HIMinBiasHfOrBSC_v2-35880fcf9fb9fd84b27cd14
Central	/HIMinBiasUPC/icali-HIMinBiasUPC_Skim_HLT_HIMinBiasHfOrBSC_Centrality0-10-64ca16868e48
Photon20/30	/HIHighPt/richard-HIHighPt-HIRun2011-RAW-photon20and30_v2-56d3f34efbd38c742eee00f066b12b
Photon20/30	/HIHighPt/dgulhan-HIHighPt_HIRun2011_HLT_HISinglePhoton20_HISinglePhoton30-94b0666b91c95

MC

Some dijet samples which are not listed here are listed at this page instead:

<https://twiki.cern.ch/twiki/bin/viewauth/CMS/ChargedParticleRAA2015#HiForest>

Sample	GEN-SIM

2.76TeV MB Hydjet (5_3)	
2.76TeV MB Hydjet Run 2 Conditions (7_4_0_pre8)	
2.76TeV MB Hydjet Run 1 Conditions	
5.02TeV MB Hydjet	/Hydjet_Quenched_MinBias_5020GeV/HiFall14-START71_V1-v2/GEN-SIM
AllQCDPhoton30	/Pyquen_Unquenched_AllQCDPhoton30_PhotonFilter35GeV_eta3_TuneZ2_Hydjet1p8_2760GeV
Dijet 15	/Pyquen_DiJet_Pt15_TuneZ2_Unquenched_Hydjet1p8_2760GeV/HiFall13-STARTHI53_LV1-v1
Pion Guns (0-800 MeV and 10-15 GeV sample)	
5.02 TeV Dijet30 Embedded	/PyquenUnquenched_DiJet_pt30_PbPb_5020GeV_embedded/richard-PyquenUnquenched_DiJet_p
5.02 TeV Dijet80 Embedded	
5.02 TeV Photon30 Embedded	/AllQCDPhoton30_PhotonFilter20GeV_eta3_TuneZ2_PbPb_5020GeV_embedded/richard-AllQCD
5.02 TeV Photon30 Embedded (high stats)	/Pyquen_Unquenched_AllQCDPhoton30_PhotonFilter20GeV_eta24_TuneZ2_PbPb_5020GeV_GH
5.02 TeV Photon50	
5.02 TeV EmDijet30 Embedded	/Pyquen_Unquenched_EmEnrichedDijet30_ParticleFilter20GeV_eta24_TuneZ2_5020GeV_GEN_
5.02 TeV EmDijet80 Embedded	/Pyquen_Unquenched_EmEnrichedDijet50_ParticleFilter20GeV_eta24_TuneZ2_5020GeV_GEN_
5.02 TeV Z-ee	/ZEE_5TeV_GEN_SIM_PU/twang-ZEE_5TeV_GEN_SIM_PU-2d0aad9ea1db09d1a7f2128c6ccb

-- RichardBarbieri - 18 Apr 2014

- 11Jet_20150411_rebelEv.pdf: 11Jet_20150411_rebelEv.pdf</verbatim>
- 11Photon.pdf: 11Photon.pdf</verbatim>

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