Dimuon Trigger Status: preparing for pp

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Reminders

- Goals
  - To get full p_T spectrum of quarkonia from pp, we should input dimuon trigger path without any p_T cuts at L1/HLT.
  - We'd like to use DoubleMu0(good quality & no p_T cut) and ask TSG to make it.
  - TSG wanted to know followings for arranging bandwidth (~ 2-3 Hz).
    - Rates of L1_DoubleMuOpen and L1_DoubleMu0 (~ 82Hz)
    - Rates of HLT_DoubleMuOpen and HLT_DoubleMu0 (~0.2Hz)
    - Timing of newly proposed dimuon trigger path

How to study

Rates

GEN-SIM-DIGI-RAW-HLT

HLTrigger/HLTanalyzers/test/HLTAnalysis.cfg

"Rootuples"

L1_DoubleIsoEG10
L1_DoubleMuOpen
L1_EG5_TripleJet15
L1_HTT200

By TSG

HLTrigger/HLTanalyzers/test/rates/OpenRates.cpp

OpenHLT

Rates of trigger path

Timing

We're finding proper sample now...

From DBS

HLT_DoubleMuOpen_JPsi

edmConfigFromDB

hltTimingSummary

Time info. of trigger path

Status

- Rates
  - Tool : OpenHLT
    - Allows anyone to compose new triggers by studying rates and efficiencies of the would-be triggers
  - Used samples : Roottuples provided by TSG
    - /castor/cern.ch/user/a/apana/OpenHLT184/MinBias/
  - Conditions of testing L1 bit
    - L1_DoubleMuOpen : low quality and no p_T threshold
    - L1_DoubleMu0 : good quality and no p_T threshold

Results(Rates)

- MinBias 500k events, 14 TeV

Lumi. & Bunches	Trigger path	Rates (Hz)
Luminosity = 2.0E31 Bunches = 156 **(Testing conditions for iCSA08)**	L1_DoubleMuOpen	53.874 ± 13.067
	L1_DoubleMu0	53.874 ± 13.067
	L1_DoubleMu3	41.198 ± 11.417
	HLT_DoubleMuOpen	0.000 ± 0.000
	HLT_DoubleMu0	0.000 ± 0.000
	HLT_DoubleMu3_Jpsi	0.000 ± 0.000

Luminosity = 8.0E29 Bunches = 43 **(Real data-taking conditions)**	L1_DoubleMuOpen	2.155 ± 0.523
	L1_DoubleMu0	2.155 ± 0.523
	L1_DoubleMu3	1.648 ± 0.457
	HLT_DoubleMuOpen	0.000 ± 0.000
	HLT_DoubleMu0	0.000 ± 0.000
	HLT_DoubleMu3_Jpsi	0.000 ± 0.000

Luminosity = 2.9E30 Bunches = 43 **(Real data-taking conditions)**	L1_DoubleMuOpen	7.812 ± 1.895
	L1_DoubleMu0	7.812± 1.895
	L1_DoubleMu3	5.974 ± 1.657
	HLT_DoubleMuOpen	0.000 ± 0.000
	HLT_DoubleMu0	0.000 ± 0.000
	HLT_DoubleMu3_Jpsi	0.000 ± 0.000

Summary & Plans

- P. Bargassa(TSG) said need not prescale for 8E29 but prescale for 2.9E30 aiming ~ 2-3Hz.
  - Necessary to check what he meant allocating ~2-3 Hz for L1 or L1/HLT
- We need at least 10k J/ψ events after L1/HLT. We are waiting for efficiency tool released by TSG. Coming soon…
- Now we can use DoubleMuOpen for dimuon trigger path(HLT_DoubleMuOpen_Jpsi).
- For timing study, we need large and proper MinBias sample. We'll discuss with Pedram again.(Ongoing)