News & Plans

Physics Operations Meeting#2

December 4, 2009

- From 8:30 today (courtesy of Massi via Tiziano) :
  - Saturday morning : final setting up for collisions 4x4 5e9 protons per bunch. Sometime during this will have 1-2 hours of STABLE beams declared
  - Saturday afternoon : collisions starting around 16:00.
  - Then will work towards injecting more current per bunch (some of that work possible also on Saturday morning) and
  - Foresee collisions again sometime on Sunday at higher intensity per bunch and 2x2 bunches of which 1 colliding in CMS (plus 1 pilot bunch colliding in ATLAS and CMS)
- From Tiziano at 12:20
  - Hello, 1 minute after the end of the Run meeting there was a quench in the LHC… This lead to a change of plan on the LHC side: the access originally foreseen for 16:00 is now advanced to 13:00.
  - As you know we are in the process of replacing the PLC for the tracker cooling.
  - The DRY run/dress rehearsal of operation is now rescheduled to start as soon as the tracker/pixel/preshower will be available again (hopefully shortly after 14:30)
  - From Jim Virdee – this is a "quenchino" and should not impact the overall planning
- General plans for next week or so
  - Expecting of order 1M Min Bias at injection energy by sometime next week.
  - Followed by ramping studies and most likely running at 2360 GeV (details next week).

Datasets

- 2009 Data-taking: 900 GeV, 2.36 TeV
  - Lots of work has gone into preparing to skim physics datasets. It is not as easy as it seems. Roberto Rossin will report on this in the next talk.
- 2010 Data-taking:
  - Need a broader suite of PDs and SDs, plus some CS
    - A lot of work. Oliver Buchmuller will be organizing this effort (taking over for Roberto R and I)
      - Will form a larger group because the key will be to be ready to react to a rapidly changing trigger table!
  - All groups need to prepare to present their dataset needs
    - Can start from 31 SDs used in OCT X

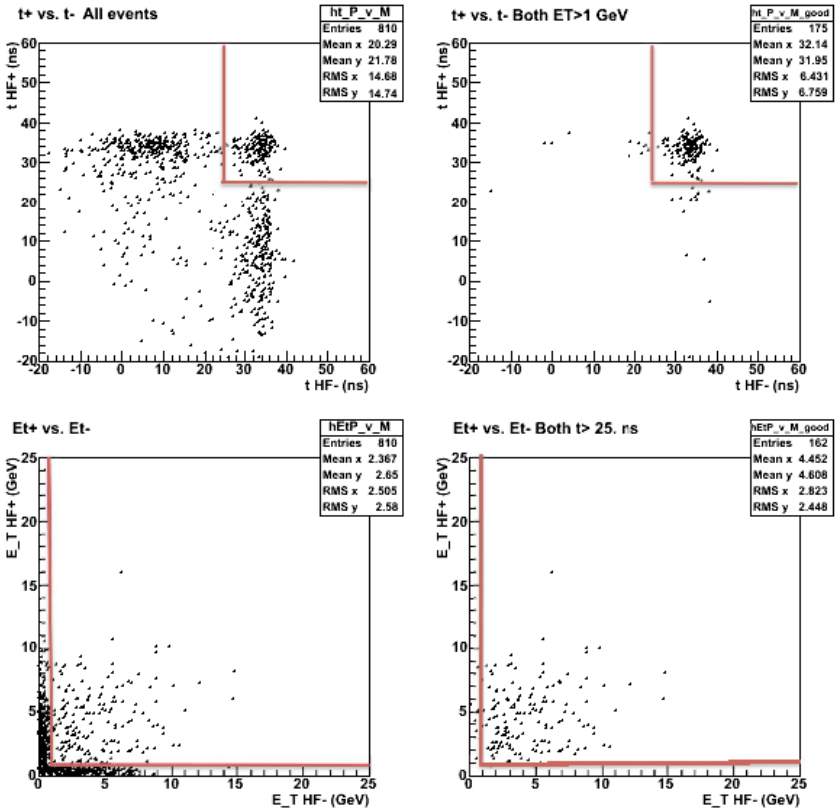
https://twiki.cern.ch/twiki/pub/CMS/OctoberX/SD_DetailedTable_20090928.xls

2010 datasets preparation

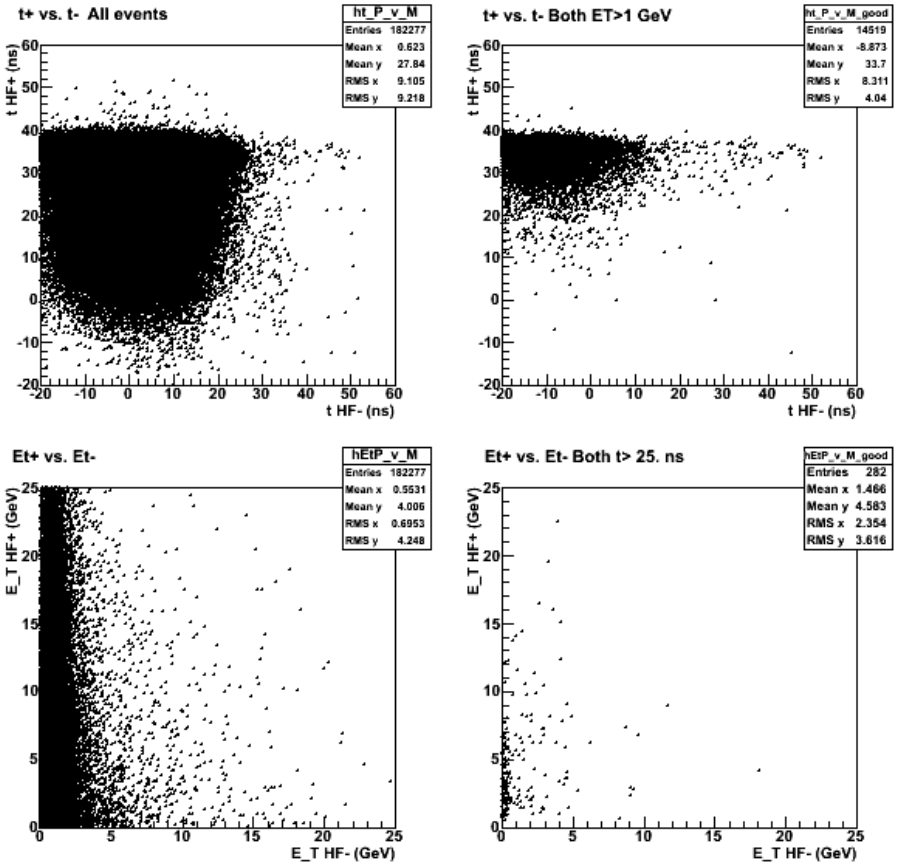
- The planning has to start asap
  - Realistically we will not be able to address this fully in meetings during the remaining 2 weeks of 2009 but it is important for all groups to start preparing already now.
- Basic guidelines
  - What we distribute will evolve with time
    - In the beginning we will distribute PD in RECO, AOD
    - Later we expect to mainly distribute SDs and at some point (June 2010?) we will mainly distribute AODs
  - We'll commission more PD and SD as we gain experience.
    - May start with O(10) of each. Currently plans are to reach ~15 PD and maybe ~60 SD by end of 2010 run.
  - Much to be gained by merging SD ideas across groups
  - SDs will have some advantages
  - Some Central Skims are necessary and are anticipated
    - Exotica has some new physics channels that could be showing things early so we have to make sure they get the data they need to rule them out…or discover!
- Mainly though, as we have always repeated, and as is very clear from running the past couple of weeks; What we will do will depend very much on what we learn from the data!
  - So it is important to start with a small number of samples that are easily distributed and viewed by many eyes.
  - Then we can define the right SDs and skims in general, and test them thoroughly before putting them into the Tier-1 workflows for which we cannot afford to risk problems.

Using timing to validate collisions

Run 122314



Run 122294



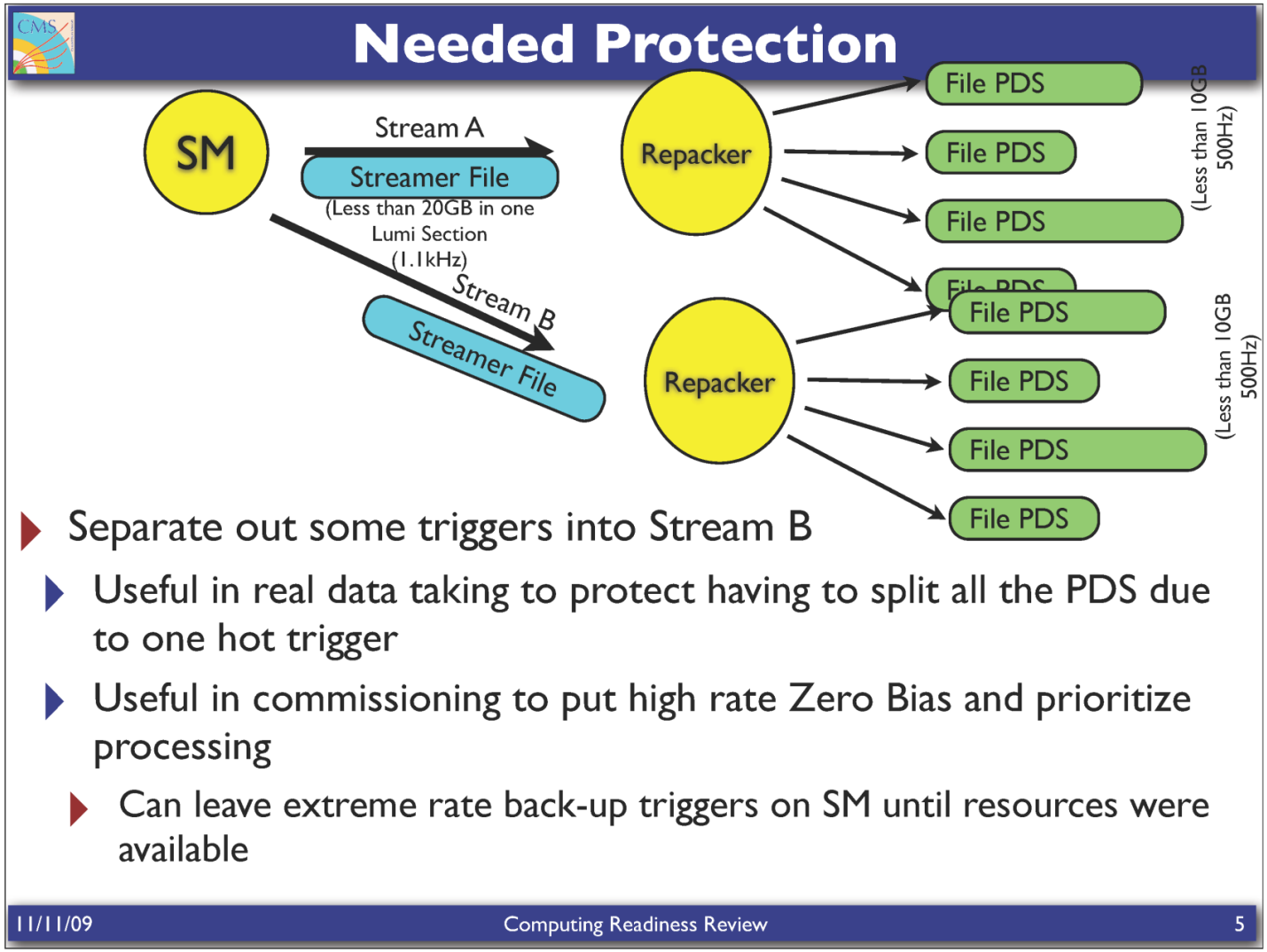
HF: Two sets of cuts are sufficient:

1) E_T : require that both HF+ and HF- have E_T> 1 GeV
2) timing : require that both HF+ and HF- have hit times > 25 ns
(the timing should be centered at zero, but isn't)

- Correlating timing in HF, HE, EE
  - Used to correlate forward/backward activity in time
  - Expected to be very reliable for validating real collisions (HF results above: courtesy Dan Marlow)

Additional Info

Scenario for Startup*
Stream A (standard), Stream B (backup)



*Ian Fisk – Computing Readiness Review Nov.11, 2009
http://indico.cern.ch/conferenceDisplay.py?confId=73524

PD summary @ L=8E29

Dataset	Rate (Hz)
JetMonitor	14.04
Jets	22.97
Met_HT_BTag_HSCP	8
MuMonitor	12.74
Mu	25.34
EleGammaMonitor	24.87
EleGamma	23.19
DoublePhoton5_Res	13.35
Tau	20.17
MinB	13.59
BH_Forward	7.48
TOTAL TABLE RATE	139.2
TOTAL DATA ON DISK	185.74
TOTAL OVERLAP	34%

8e29 SD's: First iteration as used in OCT X

Sample ID	Sample	# events	Xsec	Equivalent Lumi (pb-1)	JetMonitor			Jets			Met_HT_BTag_	MuMonitor		Mu					EGMonitor			EleGamma				DoubleEleGamm			Tau		MinB			BH_Forward	TOT
1000000	/MinBias	3.00E+07	7.53E+10	0.00040	1	1	1				1		1	1																1	1	1	1	11
1002010	/QCD_Pt15	5.00E+06	1.46E+09	0.00343	1	1	1				1		1	1		1			1	1	1	1	1	1	1	1	1	1						18
1002020	/QCD_Pt30	2.00E+06	1.09E+08	0.01835				1	1	1	1			1	1							1	1		1	1	1	1	1					13
1002030	/QCD_Pt80	2.00E+06	1.94E+06	1.03306				1	1	1	1											1	1											6
1011010	/QCD_EMEnriched_Pt20to30	3.00E+07	3.20E+06	9.37500																		1	1						1	1					4
1011020	/QCD_EMEnriched_Pt30to80	4.00E+07	4.70E+06	8.51064																		1	1						1	1					4
1011030	/QCD_EMEnriched_Pt80to170	5.00E+06	2.85E+05	17.54386																		1	1						1	1					4
1089000	/ppMuMuX	1.00E+06	1.10E+06	0.90560										1		1			1																3
1088000	/ppMuX	1.00E+07	1.19E+08	0.08426										1		1			1																3
1023010	/InclusiveMu5_Pt50	5.00E+06	3.64E+05	13.73626							1				1		1	1																4
1023020	/InclusiveMu5_Pt150	5.00E+05	6.78E+03	73.74631							1				1																			2
1012010	/QCD_BCtoE_Pt20to30	2.00E+06	1.92E+05	10.41667																		1	1						1	1					4
1012020	/QCD_BCtoE_Pt30to80	2.00E+06	2.40E+05	8.33333																		1	1						1	1					4
1012030	/QCD_BCtoE_Pt80to170	1.00E+06	2.28E+04	43.85965																		1	1						1	1					4
1040000	/Ttbar	5.00E+05	4.14E+02	1207.72947												1	1	1				1	1	1	1										7
1054000	/Wenu	2.00E+06	1.18E+04	168.91892																		1	1	1	1										4
1053000	/Wmunu	2.00E+06	1.18E+04	168.91892												1	1																		2
1071010	/Zee	2.00E+06	1.94E+03	1028.80658																		1	1	1	1			1							5
1071020	/Zmumu	2.00E+06	1.94E+03	1028.80658												1	1	1																	3
					2	2	2	2	2	2	4	2	2	2	2	2	4	3	2	1	1	1	7	7	3	3	2	2	2	7	7	1	1	1	1	105
					SD_L1Jet6	SD_Jet15U	CS_DiJetAve15	SD_Jet30U_Quad_Fwd	SD_Jet50U	CS_DiJetAve30	SD_MET	SD_BTag_HSCP	SD_L1MuOpen	SD_L1Mu	PD_Mu → HLT_Mu3	PD_Mu → HLT_Mu5	SD_Mu3	SD_Mu9	SD_L1_L2_Mu	SD_DoubleMu	SD_L1SingleEG5	SD_L1DoubleEG5	SD_Photon10_L1R	SD_Ele10_LW_EleId_L1R	SD_Ele15_LW_L1R	SD_Photon15	SD_Photon20	SD_DoubleEG5	SD_DoublePhoton5_JPsi_Upsilon	SD_DoublePhoton10	SD_SingleLooseTau25	SD_DoubleLooseTau15	SD_ZeroBias	SD_MinBiasCal	SD_MinBiasPixel	SD_BH_Forward	TOT

Legend: a "1" in the cell of X label SD_L1Mu and Y label /MinBias indicates that the sample /MinBias will be used to populate the SD_L1Mu. The rightmost yellow columns shows how many time we will have to run on a sample, the orange line indicates how many samples populate an SD (signals excluded).

Note that wrt previous presentations we added 5 highPt lepton/dilepton samples to the Ele and Mu SDs. These will available with an equivalent integrated lumi of O(10)pb-1

Roberto Rossin – Wed. Plenary meeting Oct. 23
http://indico.cern.ch/conferenceDisplay.py?confId=68686

Plugging in the numbers with a step in energy

Month	OP scenario	Max number bunch	Protons per bunch	Min beta*	Peak Lumi	Integrated	% nominal
1	Beam commissioning						
2	Pilot physics combined with commissioning	43	3×10^{10}	4	8.6×10^{29}	~200 nb^{-1}	
3		43	5×10^{10}	4	2.4×10^{30}	~1 pb^{-1}	
4		156	5×10^{10}	2	1.7×10^{31}	~9 pb^{-1}	2.5
5a	No crossing angle	156	7×10^{10}	2	3.4×10^{31}	~18 pb^{-1}	3.4
5b	No crossing angle – pushing bunch intensity	156	1×10^{11}	2	6.9×10^{31}	~36 pb^{-1}	4.8
6	Shift to higher energy: approx 4 weeks	Would aim for physics without crossing angle in the first instance with a gentle ramp back up in intensity					
7	4 – 5 TeV (5 TeV luminosity numbers quoted)	156	7×10^{10}	2	4.9×10^{31}	~26 pb^{-1}	3.4
8	50 ns – nominal Xing angle	144	7×10^{10}	2	4.4×10^{31}	~23 pb^{-1}	3.1
9	50 ns	288	7×10^{10}	2	8.8×10^{31}	~46 pb^{-1}	6.2
10	50 ns	432	7×10^{10}	2	1.3×10^{32}	~69 pb^{-1}	9.4
11	50 ns	432	9×10^{10}	2	2.1×10^{32}	~110 pb^{-1}	12

OCT X SD's pertain to earliest data

Twiki Info

- Main Twiki now in place
  - https://twiki.cern.ch/twiki/bin/view/CMS/PO900GeV
  - 35 activities pre-installed by Roberto.
    - Revise list directly or let Roberto know what you want changed. For each activity I need
      - One contact name
      - Input datasets, as defined on the Main TWiKi
      - Tier-2's that will be used (CAF also if to be used)
      - Address of your own TWiKi
        - Full details and the names of all people involved