

ATLAS Shift Training

Trigger Rate Presenter and Data Quality Monitoring Tools

TRP, DQMD, OHP

Ivana Hristova (HUB)

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- **This training session introduces the following monitoring tools to shifters**
- **Overview, walk-through and use cases of**
 - **Trigger Rate Presenter (TRP)**
- **Brief introduction to**
 - **Data Quality Monitoring Display (DQMD)**
 - **Online Histogram Presenter (OHP)**

- End of transition from commissioning and consolidation of all detector sub-systems to stable operation of the experiment as a whole
- No fault can be tolerated → we make any attempt to find and fix it
- Ensure as Trigger shifter you have made yourself familiar with material from other sessions at this training
 - See Trigger Introduction by Martin zur Nedden/Catrin Bernius
- Ensure you know what to do at your every 8-hour shift in the ATLAS Control Room
 - What are your shift duties
 - How to setup your working space
 - Which tasks to perform routinely
 - What actions to take at various situations
- This training focuses on “how-to” use certain tools, rather than “what-to” do

- **Contents**

- An overview of the tools' features and capabilities is presented. You will learn how to launch the tools, how to navigate and perform the required actions. The usage is illustrated with several examples from previous shifts. You are invited to further explore and experiment with the tools

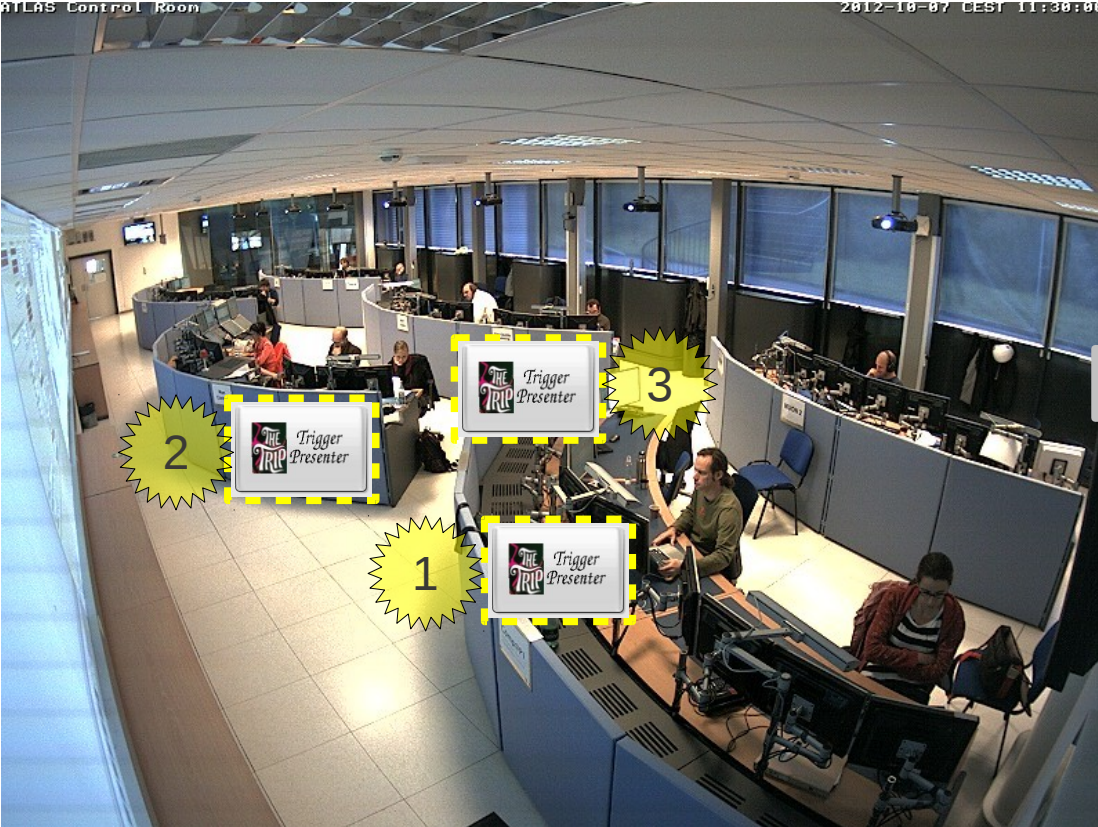
- **Disclaimer**

- Tools and commands tested with current TDAQ release tdaq-05-05-00
- Procedures may be altered in the course of the data taking
- Check updated information on Twiki pages for shifters

- **Caveats**

- The tools themselves are still being improved and tested, e.g.
 - TRP Run Control applications
 - TRP rate predictions
 - Trigger monitoring histograms/configurations in DQMD and OHP
- Your shifter reports, experience and feedback provide valuable input for developers, in addition to securing smooth trigger operation

- **TRP GUI displays trigger online rates and other time-dependent quantities**
- **Allows for spotting problems in Trigger and other systems as well**
- **The tool is most frequently used by the Trigger shifter and expert**
 - Additionally, it is installed and can be launched at other shift desks as well
- **It is referred to as, either**
 - Trigger Presenter (or TriP) → *obsoleted*
 - Trigger Rate Presenter (or TRP) → *preferred/recommended name*
- **Note**
 - Other tools to monitor Trigger Rates are not covered today



Trigger Rate Presenter
TRP
[Trigger Presenter]

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Shift Desks in the ATLAS Control Room

1

Trigger

2

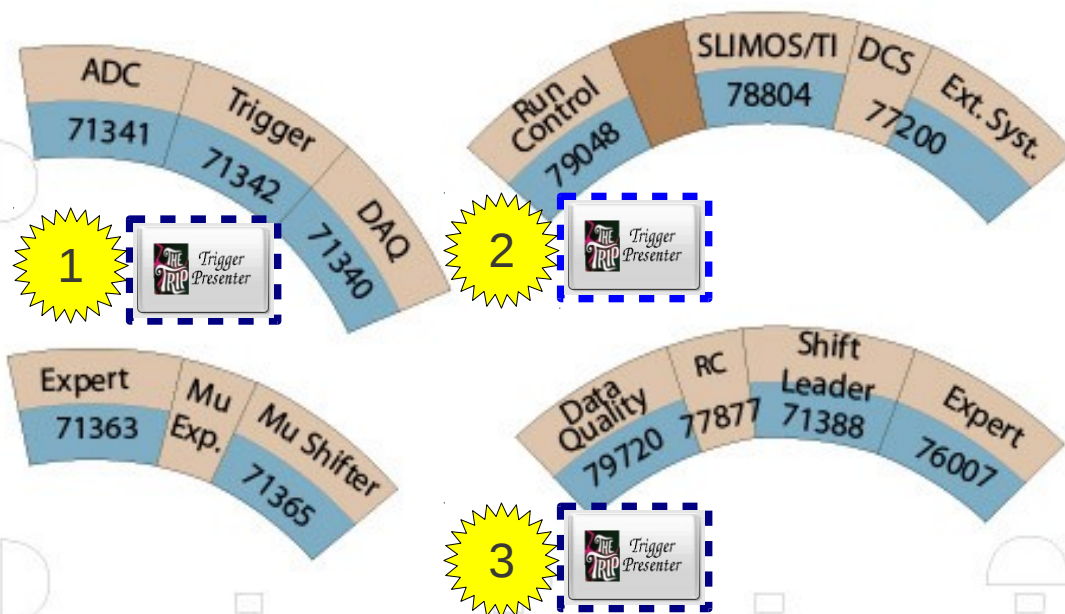
Run Control

3

Data Quality

Emergency
Exit

74300
(wall mounted) Entrance



Insert Here Some Info

Setup Script 1

Part Name 2

Database File 3

Setup Opt

Oks Opt

MRS Filter

OHP Opt 4

BUSY Opt

OMD Opt

TriP Opt

Get Default Read Info Get Partition

Main Mon Advanced Ctrl Advanced

Start Partition Monitor Partition RC Status Local Procs

OKS DVS Log Manager MRS

Busy DQM Display Trigger Presenter DF Summary

OHP OMD TISPY SFO Display

Log Messages

Removed temporary file /tmp/.daqpanel_dump_env_hristova

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7 Configure and Launch TRP from DAQPanel

1 /det/tdaq/scripts/setup_TDAQ_daq-05-05-00.sh

2 ATLAS

3 /atlas/oks/tdaq-05-05-00/combined/partitions/ATLAS.data.xml

4 -c /atlas/moncfg/tdaq-05-05-00/trigger/trp/trp_gui_conf.xml

5 Click to launch TRP

*** This is what you have provided ***

Setup Script ---> /det/tdaq/scripts/setup_TDAQ.sh

Partition ---> ATLAS

Database File ---> /atlas/oks/tdaq-04-00-01/combined/partitions/ATLAS.data.xml

setup_daq options --->

oks_data_editor options --->

ohp options ---> -c /atlas/moncfg/tdaq-04-00-01/trigger/ohp/atlas_trigger.ohp_Physics.xml

TriP options ---> -c /atlas/moncfg/tdaq-04-00-01/trigger/trp/trp_gui_conf.xml

BUSY options --->

OMD options --->

MRS filter ---> TDAQ|LVL1|HLT

Executing start_trp with the command line: source /det/tdaq/scripts/setup_TDAQ.sh; exec start_trp -p ATLAS -c /atlas/moncfg/tdaq-04-00-01/trigger/trp/trp_gui_conf.xml

start_trp STDOUT: Setting up TDAQ Common SW release "tdaq-common-01-18-04"

start_trp STDOUT: Setting up DQM Common SW release "dqm-common-00-18-03"

start_trp STDOUT: Setting up DAQ SW release "tdaq-04-00-01"

start_trp STDERR: /bin/bash: line 0: exec: start_trp: not found

- **TRP allows shifters to monitor L1 and HLT online trigger rates in real time**
- **Other time-dependent quantities can be added and displayed on demand**
- **The GUI was designed to provide simple and quick access to monitoring information**
- **Information is organised in Plots and Tables**
- **Navigation and actions performed via Menu, Tabs, Buttons**
- **Plots/Tabs configurable (by Trigger/Menu/TRP expert on-call)**

Menu

Tabs

(Note: here shown rates from old 2012 run)

Overall Rates Tab

ATLAS Trigger Operation 2012

File Plots Help

Rates Predictions

L1 Collision

L1 Empty

More Plots

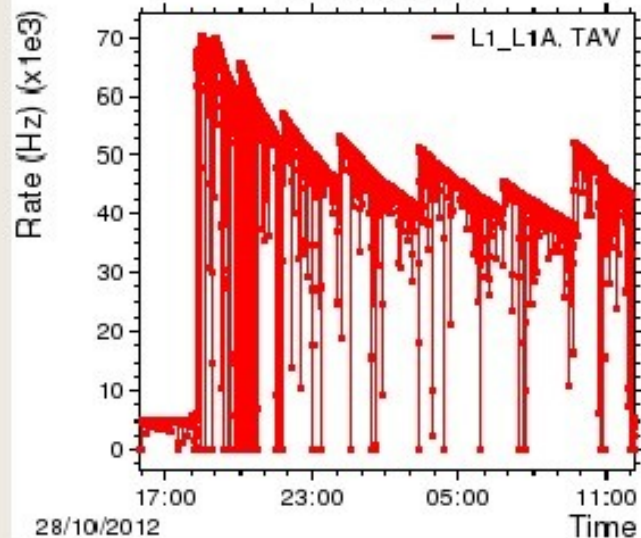
Tables

History Tables

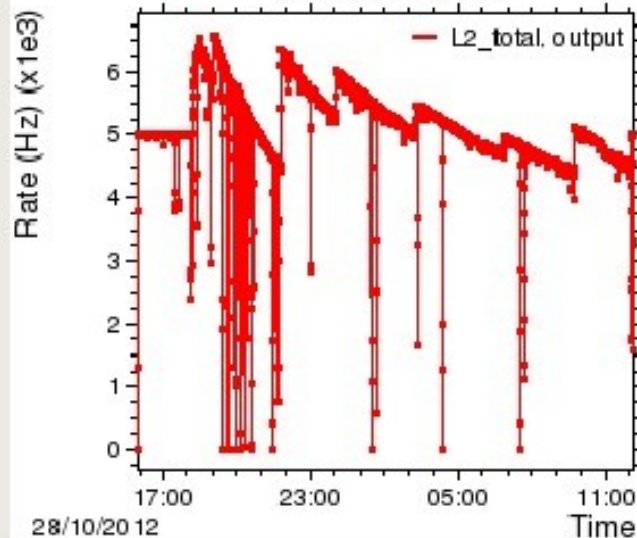
Run 213539 Tables

Run 213539 Plots

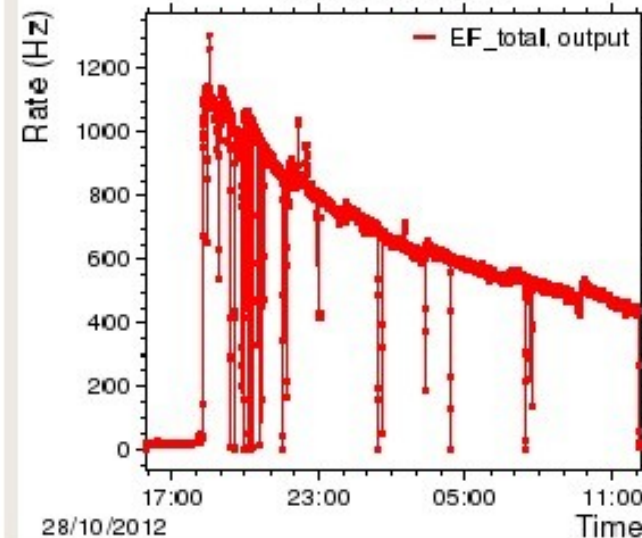
L1 Rate: Output



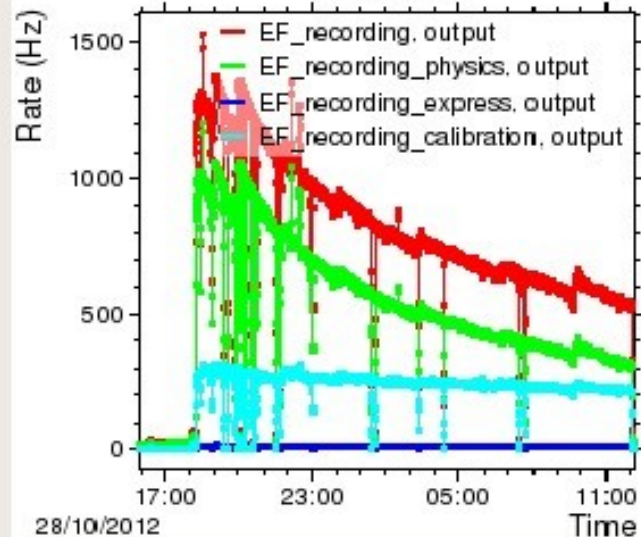
L2 Rate: Output



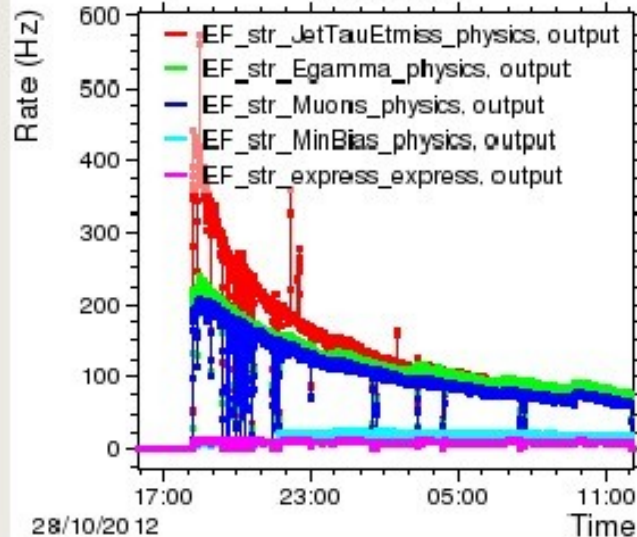
EF Rate: Output



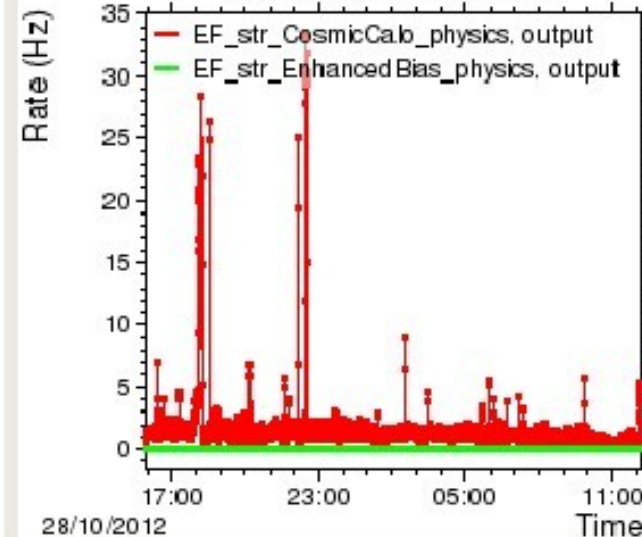
Recording



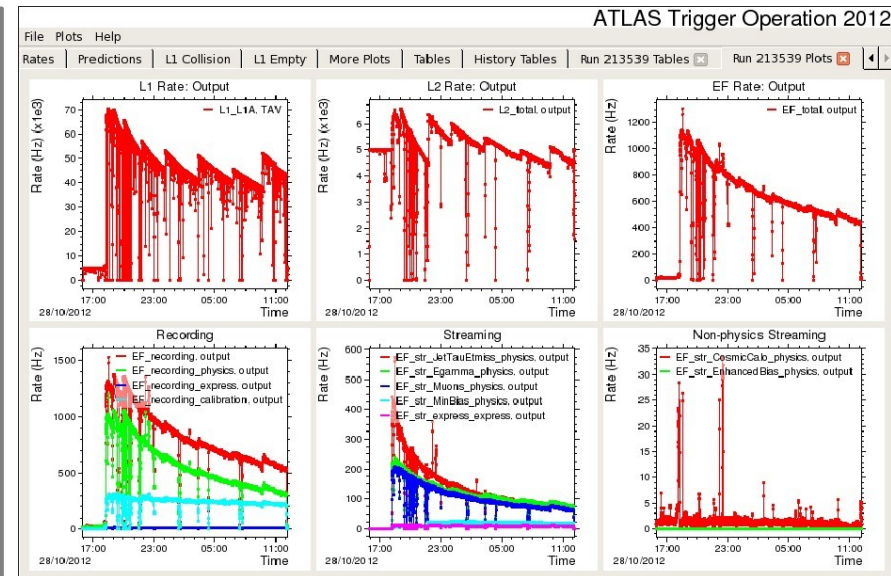
Streaming



Non-physics Streaming



- Purpose
 - Display global trigger rates at a glance
 - L1A/HLT output
 - HLT recording
 - HLT physics streaming
 - HLT non-physics streaming
 - Plots pre-configured to show relevant triggers
- Shift task
 - Check if plots continue updating
 - L1 rates: every 10 s
 - HLT rates: every 10 s (or 20 s)
 - Check the rate values are as expected
 - Monitor rate trends: spikes, dips, jumps
 - Report unexpected behaviour
 - Take screenshot
 - Add log message describing the observation



TRP typical plot

Title

Legend

L1 Rate: Output

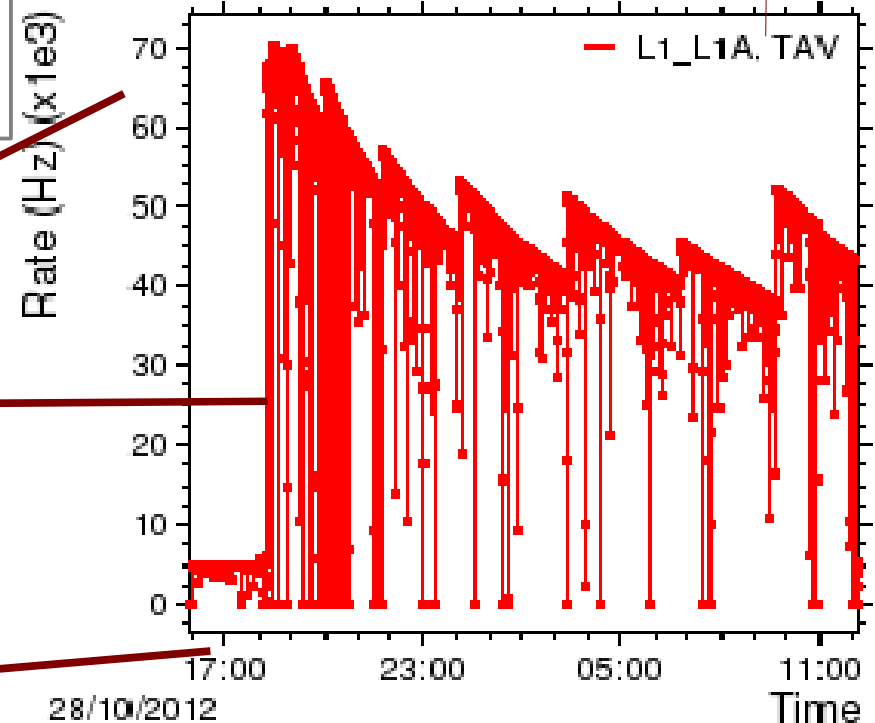
Y-axis: rate in Hz

Mind scaling factor, e.g., x 1e3

Trends in rate distribution

E.g., prescale changes, dips due to downtime

X-axis: time and date



1 Access from TRP Main Page

Select and click Tables in the Tabs area

5 Action Buttons

1 Tables

2 Table Tabs

3 L1 Table

4 Filter

FilePlotsHelp

Overall Rates

HLT @ M4

L1 Collision

L1 Empty

More Plots

Tables

History

Tables

Plot

Plot Correlation

Clear

Filter:

☒ Enable filter

L1

HLT

Busy

DeadTimeCTP

ROSAccess

DFSummary

Lumi

Chains

Name	TBP	TAP	TAV	PS	DT
L1_RD0_FILLED	155680	51893.9	51159.3	3	0.0141563
L1_TRT	5.89701	5.89701	5.79706	1	0.0169492
L1_MU4	0	0	0	1	0
L1_MU4_EMPTY	0	0	0	1	0
L1_MU11_EMPTY	0	0	0	1	0
L1A	52876.6	0	51165.1	1	0.0323689
L1_EM3	0	0	0	-1	0
L1_EM16V	0	0	0	-1	0
L1_EM18VH	0	0	0	-1	0
L1_EM10VH_XE35	0	0	0	-1	0
L1_TAU15I_XE35	0	0	0	-1	0
L1_TAU15_XS35	0	0	0	-1	0
L1_2EM6	0	0	0	-1	0
L1_XS55	0	0	0	-1	0

- Purpose
 - Show current rate values (in Hz)
 - Rates organised in Table Tabs
 - Main tabs to check
 - L1
 - HLT
 - Additional tabs to aid investigation
 - Auxiliary non-rate information
 - Busy, DFSummary, Lumi, etc.
 - Tabs configured by TRP/Trigger experts
 - Shift task
 - Check rates per trigger item/chain/group/stream

① Click column header to sort

Ctrl + Click selects
Several non-adjacent cells

Shift + Click selects
several/or range of cells

④ Clear selection

② Click cell

③ Click to create plot

⑤ Type trigger name

File Plots Help

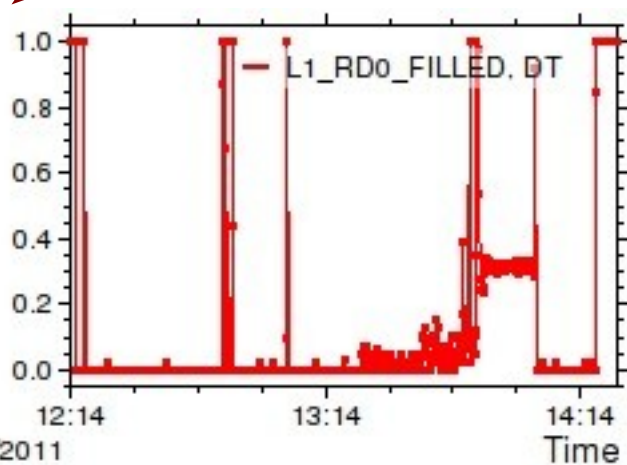
Overall Rates | HLT @ M4 | L1 Collision | L1 Empty | More Plots | Tables | History Tables

Plot | Plot Correlation | Clear

Filter:

☒ Enable filter

LT	HLT	Busy	DeadTimeCTP	ROSAccess	DFSummary	Lumi	Chains
Name	TBP	TAP	TAV	PS	DT		
L1_RD0_FILLED	155680	51893.9	51159.3	3	0.0141563		
L1_TRT	5.89701	5.89701	5.79706	1	0.0169492		
L1_MU4	0	0	0	1	0		
L1_MU4_EMPTY	0	0	0	1	0		
L1_MU11_EMPTY	0	0	0	1	0		
L1A	52876.6	0	51165.1	1	0.0323689		
L1_EM3	0	0	0	-1	0		
L1_EM16V	0	0	0	-1	0		
L1_EM18VH	0	0	0	-1	0		
L1_EM10VH_XE35	0	0	0	-1	0		
L1_TAU15I_XE35	0	0	0	-1	0		
L1_TAU15_XS35	0	0	0	-1	0		
L1_2EM6	0	0	0	-1	0		
L1_XS55	0	0	0	-1	0		



Shows the L1 item rates, prescales and deadtime as well

L1 Table

L1 Item Name

Trigger Before Prescale

Trigger After Prescale

Trigger After Veto

Prescale

Deadtime

File Plots Help						
Overall Rates HLT @ M4 L1 Collision L1 Empty More Plots Tables History Tables						
Plot Plot Correlation Clear						
Filter: <input type="checkbox"/> Enable filter						
L1 HLT Busy DeadTimeCTP ROSAccess DFSummary Lumi Chains						
Name	TBP	TAP	TAV	PS	DT	
L1_RD0_FILLED	155680	51893.9	51159.3	3	0.0141563	
L1_TRT	5.89701	5.89701	5.79706	1	0.0169492	
L1_MU4	0	0	0	1	0	
L1_MU4_EMPTY	0	0	0	1	0	
L1_MU11_EMPTY	0	0	0	1	0	
L1A	52876.6	0	51165.1	1	0.0323689	
L1_EM3	0	0	0	-1	0	
L1_EM16V	0	0	0	-1	0	
L1_EM18VH	0	0	0	-1	0	
L1_EM10VH_XE35	0	0	0	-1	0	
L1_TAU15I_XE35	0	0	0	-1	0	
L1_TAU15_XS35	0	0	0	-1	0	
L1_2EM6	0	0	0	-1	0	
L1_XS55	0	0	0	-1	0	

Shows the HLT chains,
group and stream rates

HLT Table

HLT Name

input rate

after prescale

passed chains

passed+passed-through

run in 2nd pass

prescaled+passed-through

File Plots Help

Overall Rates | HLT @ M4 | L1 Collision | L1 Empty | More Plots | Tables | History Tables

Plot | Plot Correlation | Clear

Filter: ☒ Enable filter

L1 **HLT** Busy | DeadTimeCTP | ROSAccess | DFSummary | Lumi | Chains

Name	input	prescaled	raw	output	rerun	algoIn
total	51150.6	0	0	28.8	0	0
recording_physics_other	0	0	0	28.8	0	0
recording_physics	0	0	0	28.8	0	0
recording	0	0	0	28.8	0	0
str_HLTPassthrough_physics	0	0	0	23.35	0	0
grp_Calibration	51150.6	23.35	23.35	23.35	0	0
HLT_noalg_L1All	51150.6	23.35	23.35	23.35	0	23.35
str_IDCosmic_physics	0	0	0	5.45	0	0
grp_Minbias	5.45	5.45	5.45	5.45	0	0
grp_MinBias	5.45	5.45	5.45	5.45	0	0
HLT_noalg_idcosmic_L1TRT	5.45	5.45	5.45	5.45	0	5.45
str_express_express	0	0	0	0	0	0
str_Tile_calibration	0	0	0	0	0	0
str Standby physics	0	0	0	0	0	0

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TRP Chains Table

HLT chains

Shows the HLT rates mapped to the input L1 seeds and output data streams

L1 items

data streams

File Plots Help									
Overall Rates HLT @ M8 Correlations L1 @ M8 L1 Empty More Plots Tables History Tables									
Plot Plot Correlation Clear									
Filter: <input type="text"/>									
L1 HLT Busy DeadTimeCTP ROSAccess DFSummary Lumi Chains									
L1 Name	TBP	PS	TAV	HLT Name	input	prescaled	output	Stream Name	
L1_RD0_EMPTY	3.90556e+07	2.5034e-06	96.4851	HLT_ibllumi_L1RD0_EMPTY	76.5	76.5	76.5	IBLLumi_calibration	
L1_RD0_FILLED	3.90556e+07	2.5034e-06	90.9859	HLT_ibllumi_L1RD0_FILLED	75.95	75.95	75.95	IBLLumi_calibration	
L1_MU4_EMPTY	78.2379	1	72.4888	HLT_noalg_cosmicmuons_cmOnly_L1MU4_EMPTY	57.95	57.95	57.95	CosmicMuons_physics	
L1_BCM_AC_CA_BGRP0,L1_BCM_A0		0	0	HLT_noalg_L1MinBias	34.85	34.85	34.85	L1MinBias_physics	
L1_RD1_EMPTY	3.90556e+07	2.5034e-06	93.4855	HLT_noalg_cosmiccalo_L1RD1_EMPTY	74.65	20.25	20.25	CosmicCalo_physics	
L1_MU10	15.9975	1	14.9977	HLT_cscmon_L1MU10	12.85	12.85	12.85	CSC_monitoring	
L1_TRT	8.49869	1	8.24872	HLT_noalg_idcosmic_L1TRT	5.3	5.3	5.3	IDCosmic_physics	
L1_EM3_EMPTY,L1_EM7_EMPTY,L1_0		0	0	HLT_noalg_L1Calo_EMPTY	4.8	4.8	4.8	L1Calo_physics	
L1_RD0_EMPTY	3.90556e+07	2.5034e-06	96.4851	HLT_sct_noise	76.5	3.85	3.85	SCTNoise_calibration	
L1_RD0_EMPTY	3.90556e+07	2.5034e-06	96.4851	HLT_pixel_noise	76.5	3.8	3.8	PixelNoise_calibration	
L1_EM3_EMPTY	3.99938	1	3.74942	HLT_noalg_cosmiccalo_L1EM3_EMPTY	3.65	3.65	3.65	CosmicCalo_physics	
L1_MU4_EMPTY	78.2379	1	72.4888	HLT_noalg_cosmicmuons_ESonly_L1MU4_EMPTY	57.95	1.05	1.05	express_express	
L1_J12	0.999845	1	0.749884	HLT_j0_jes_L1J12	0.9	0.9	0.9	Main_physics	
L1_J12	0.999845	1	0.749884	HLT_j0_lcw_jes_L1J12	0.9	0.9	0.9	Main_physics	
L1_J12	0.999845	1	0.749884	HLT_j0_perf_L1J12	0.9	0.9	0.9	Main_physics	
L1_RD0_FILLED	3.90556e+07	2.5034e-06	90.9859	HLT_beamspot_alITE_L2StarB_L1RDO_FILLED	0	0	0	Main_physics	
EMPTY	0	0	0	HLT_costmonitor	0	0	0	CostMonitoring_calibration	
L1_EM3	3.99938	1	3.74942	HLT_cscmon_L1EM3	0	0	0	CSC_monitoring	
L1_J12	0.999845	1	0.749884	HLT_cscmon_L1J12	0	0	0	CSC_monitoring	
L1_EM3	3.99938	1	3.74942	HLT_e0_L2Star_perf_L1EM3	0	0	0	Main_physics	
L1_EM3	3.99938	1	3.74942	HLT_e0_perf_L1EM3	3.65	3.65	0	Main_physics	
L1_EM3	3.99938	1	3.74942	HLT_e0_perf_L1EM3	3.65	3.65	0	Main_physics	

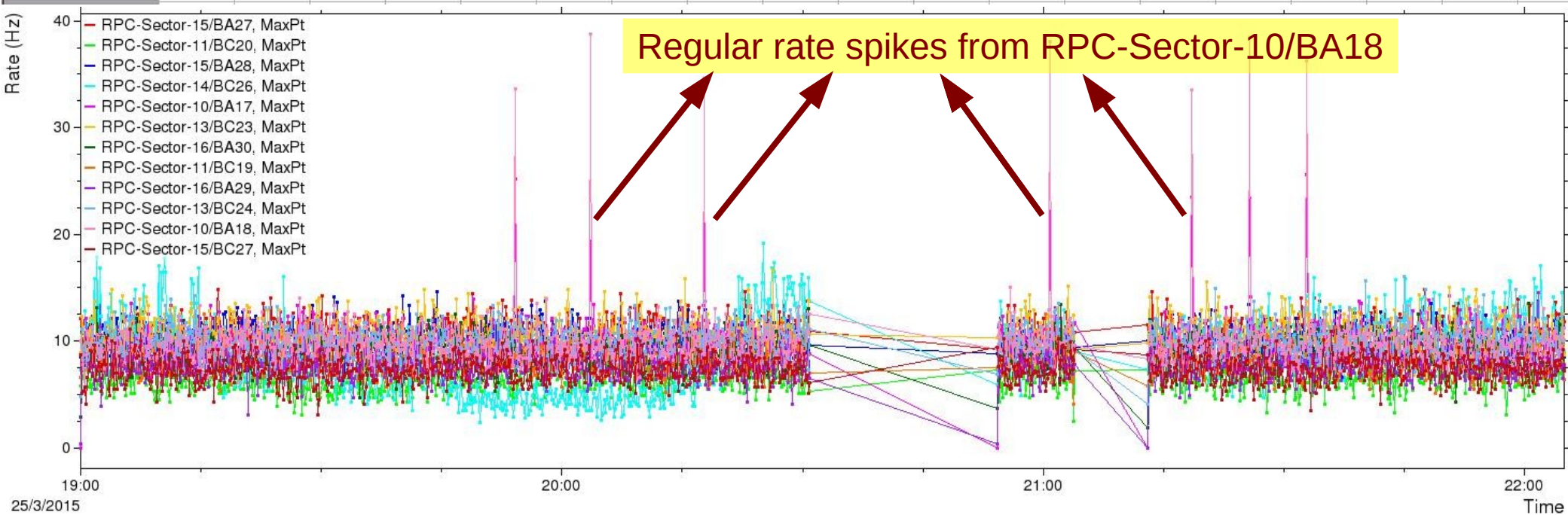
Shows the raw L1 muon rates per RPC/TGC sector of 2 candidates and 6 Pt thresholds

RPC/TGC sectors

Rates per candidate/threshold

Sort by max. rate

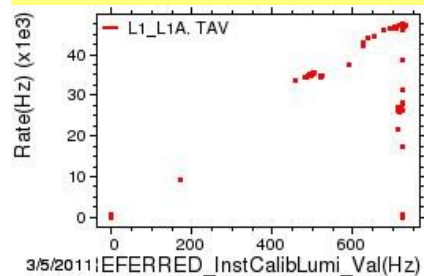
L1	HLT	ROSAccess	DFSSummary	Lumi	MIOCT	Chains														
Name	Slot	Input	Mode	Pipeline	Phase	nsertBCID	Cand1Pt1	Cand1Pt2	Cand1Pt3	Cand1Pt4	Cand1Pt5	Cand1Pt6	Cand2Pt1	Cand2Pt2	Cand2Pt3	Cand2Pt4	Cand2Pt5	Cand2Pt6	MaxPt	
RPC-Sector-15/BA27	21	1	1	6	0	1	12.3098	0.195394	0.390788	0.195394	0	0	0	0	0	0	0	0	12.3098	
RPC-Sector-13/BC23	10	1	1	4	4	1	11.1022	0.779099	0	0	0	0	0.194775	0	0	0	0	0	11.1022	
RPC-Sector-10/BA17	18	3	1	12	0	1	10.5379	0.390293	0.390293	0	0	0	0	0	0	0	0	0	10.5379	
RPC-Sector-10/BA18	19	0	1	10	0	1	10.154	0	0	0	0	0	0	0	0	0	0	0	10.154	
RPC-Sector-15/BA28	21	2	1	6	0	1	9.96509	0.195394	0	0	0	0	0.390788	0	0	0	0	0	9.96509	
RPC-Sector-13/BC24	10	2	1	2	4	1	9.73873	0.389549	0.194775	0.389549	0	0.194775	0.194775	0	0.194775	0	0	0	9.73873	
RPC-Sector-15/BC27	11	1	1	5	4	1	8.96523	0.389792	0.584689	0	0	0	0.194896	0.194896	0	0	0	0	8.96523	
RPC-Sector-11/BC19	9	1	1	11	4	1	8.95948	0.194771	0.194771	0.194771	0	0	0	0	0	0	0	0	8.95948	
RPC-Sector-14/BC26	11	0	1	5	4	1	8.77033	0.974481	2.72855	0	0	0	0	0	0	0	0	0	8.77033	
RPC-Sector-16/BA29	21	3	1	7	0	1	8.59734	0	0	0.195394	0	0	0	0	0	0	0	0	8.59734	
RPC-Sector-11/BA19	19	1	1	11	0	1	8.39654	0	0.390537	0	0	0	0.390537	0	0	0	0	0	8.39654	
RPC-Sector-11/BA20	19	2	1	7	0	1	7.61547	0.390537	0.390537	0.195268	0	0	0.390537	0	0	0	0	0	7.61547	



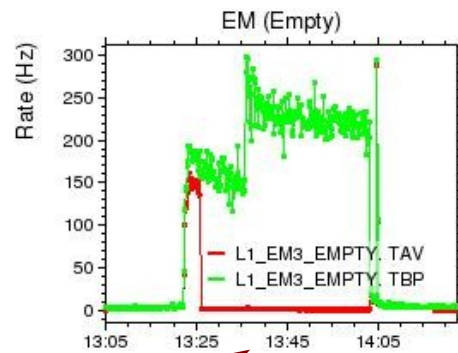
1 Tabs to check regularly

Appropriate for cosmic data taking

2D correlation plots

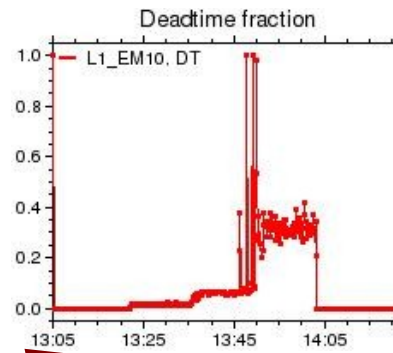


E.g. rate vs luminosity
X-axis (click), Y-axis (double-click)



2 Tabs for more detailed investigations

Configuration may change during data taking



Show only enabled
L1 items

Overall Rates HLT Correlations L1 L1 Empty More Plots Tables History Tables

Plot Plot Correlation Clear

Filter: ☒ Enable filter

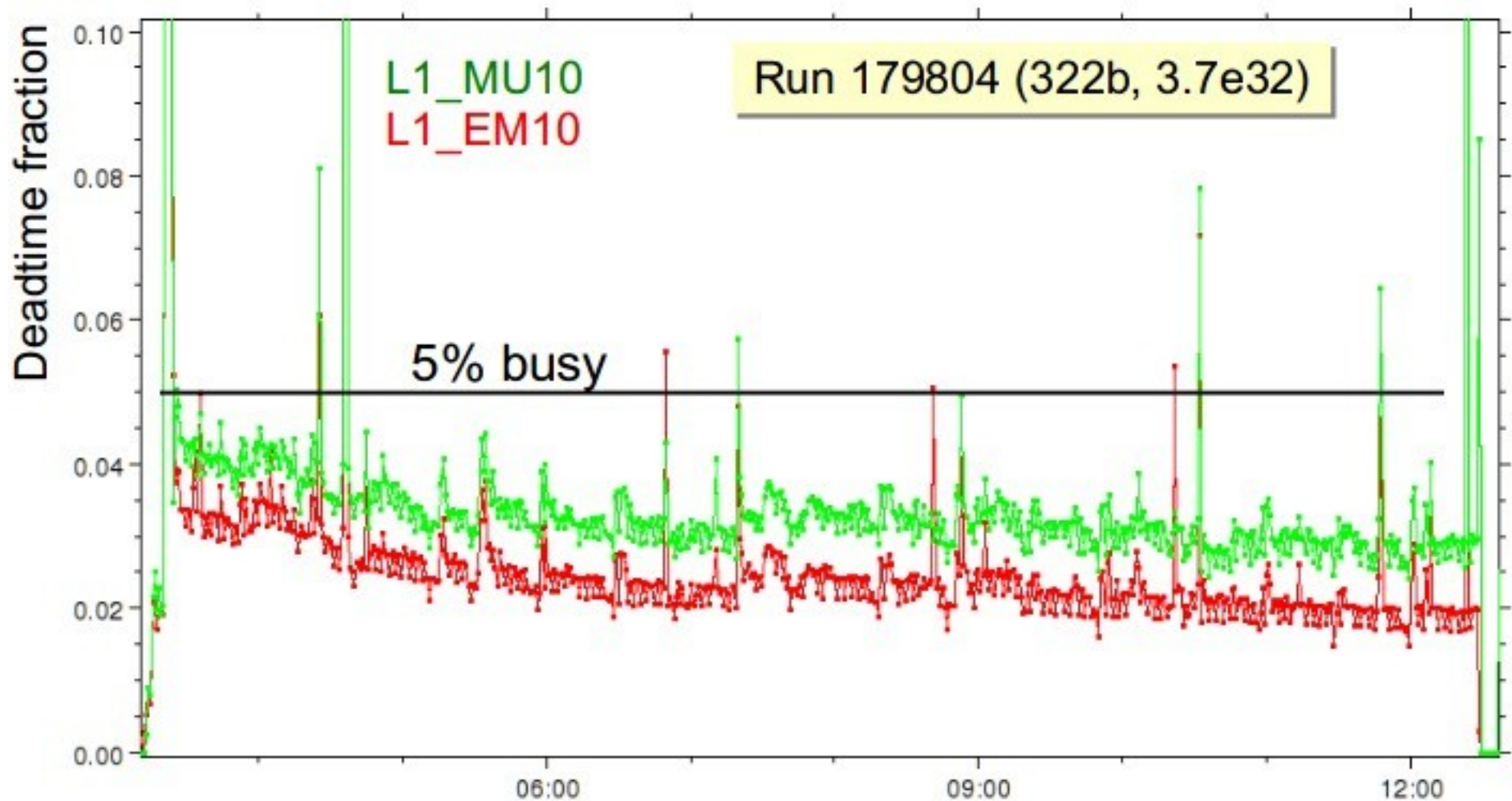
L1 HLT ROSAccess DFSummary Lumi MIOCT Chains

☐ L1 Enabled

Name	0
ROS.ROS-TDQ-CTP-00_rosLoad	0
ROS.ROS-TDQ-CTP-00_requestRateHz	0
ROS.ROS-TDQ-CTP-00_numberOfQueueElements	4.29497e+09
ROS.ROS-PIX-DISK-00_rosLoad	0
ROS.ROS-PIX-DISK-00_requestRateHz	0
ROS.ROS-PIX-DISK-00_numberOfQueueElements	4.29497e+09
ROS.ROS-PIX-BL-01_rosLoad	0
ROS.ROS-PIX-BL-01_requestRateHz	0
ROS.ROS-PIX-BL-01_numberOfQueueElements	4.29497e+09
ROS.ROS-PIX-BL-00_rosLoad	0
ROS.ROS-PIX-BL-00_requestRateHz	0
ROS.ROS-PIX-BL-00_numberOfQueueElements	4.29497e+09
ROS.ROS-PIX-B-05_rosLoad	0
ROS.ROS-PIX-B-05_requestRateHz	0
ROS.ROS-PIX-B-05_numberOfQueueElements	4.29497e+09
ROS.ROS-PIX-B-04_rosLoad	0

Name	0
DFSummary_OutputDataBW	1.46042e+08
DFSummary_DcReqRate	41181
DFSummary_DcReqRateAvg	40292.8
DFSummary_cpuUsageProc	2906.4
DFSummary_cpuUsageNode	595
DFSummary_OutRate	245.197
DFSummary_EbRate	244.397
DFSummary_L1Rate	241.198
DFSummary_OutRateAvg	236.756
DFSummary_EbRateAvg	236.755
DFSummary_L1RateAvg	236.68
DFSummary_DcActiveConnections	0
DFSummary_DcConnectionErrors	0
DFSummary_DcConnectionTimeouts	0
DFSummary_DcPendingRequests	0
DFSummary_DcROBRRequests	0

- **Collection of few examples showing TRP usage during**
- **Run 1 data taking and 2014/2015 Milestone Weeks (M4-M9)**
- **Note 1**
 - Not necessarily applicable to cosmic data taking, however
 - TRP configuration can be adjusted to running conditions as needed
- **Note 2**
 - Some features still going to be added and tested

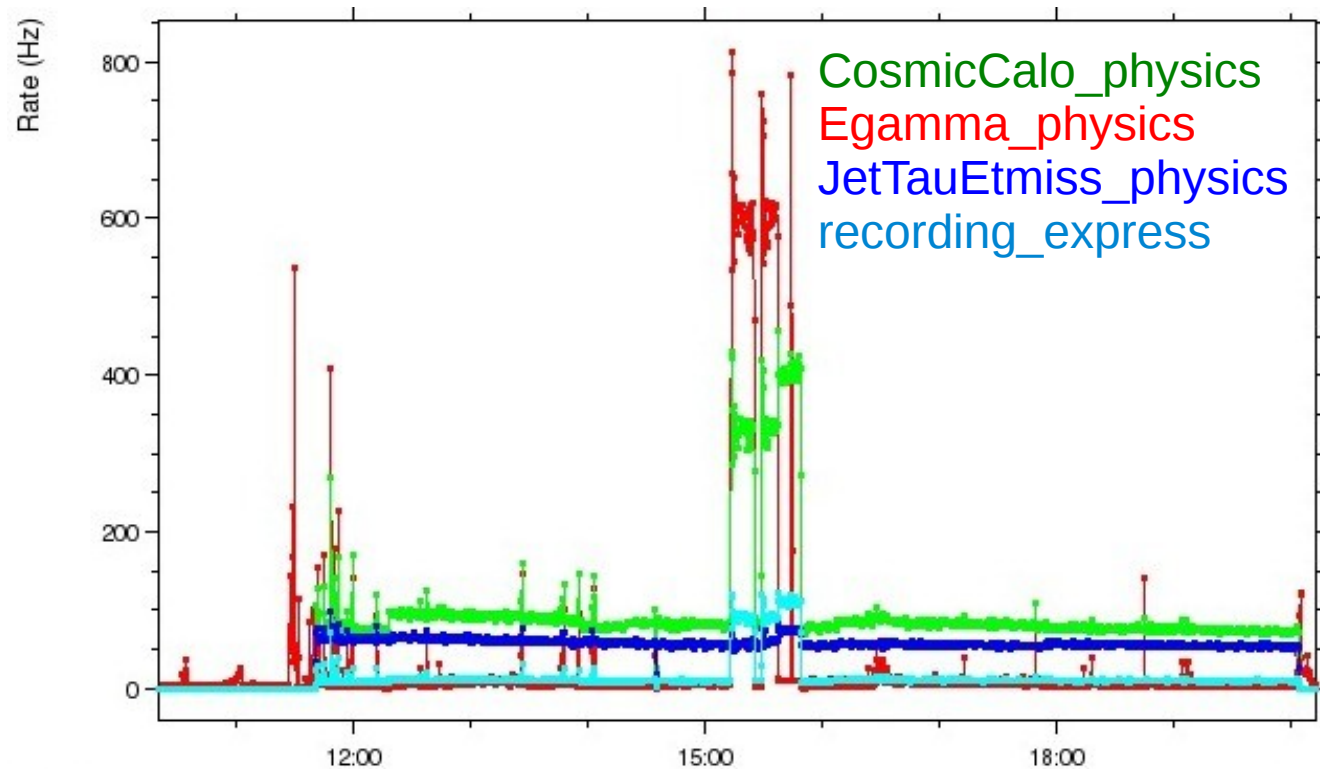
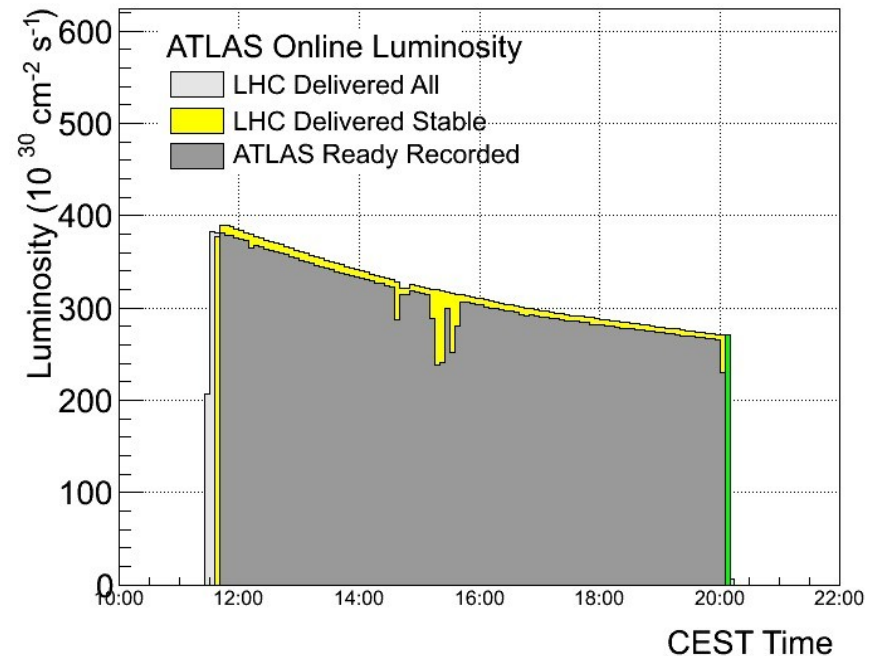


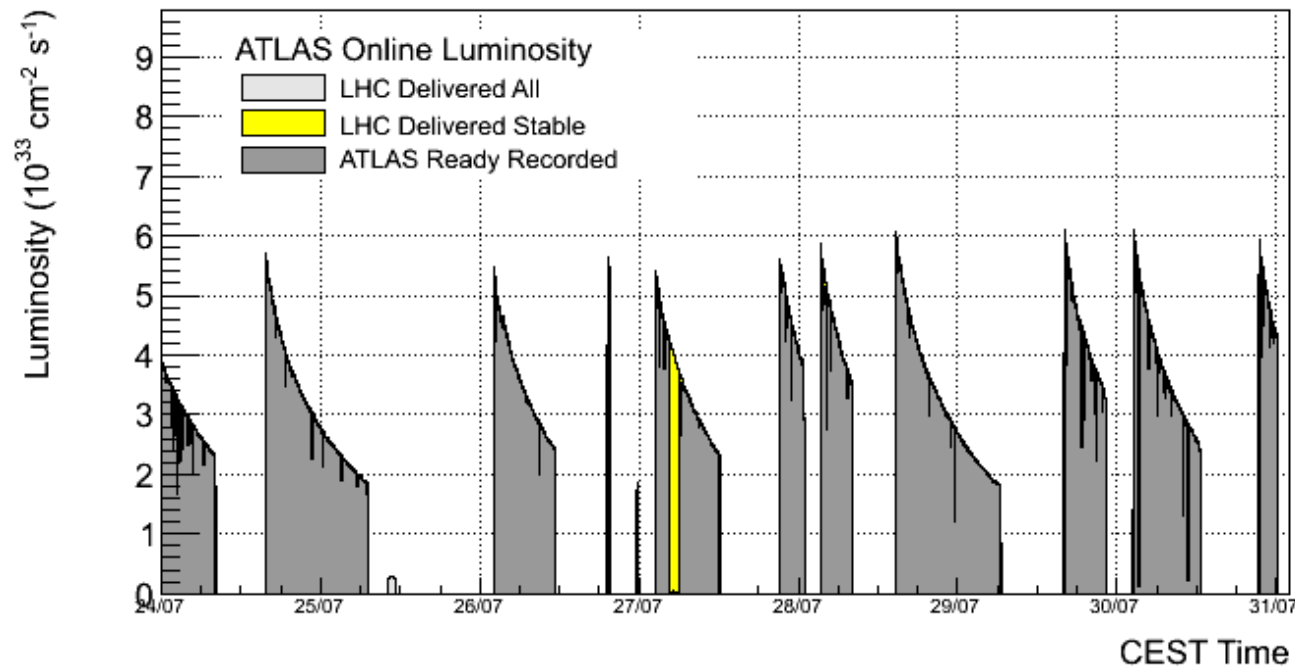
- Busy display shows deadtime in all bunches (filled or not) → “Operational deadtime”
- “Physics deadtime” can be trigger specific
- Deadtime fraction = $1 - (L1_XYZ_TAV / L1_XYZ_TAP)$
- This includes preventive (simple/complex) deadtime and DAQ busies
- Difference probably coming from background. Under investigation...

Frank Winklmeier

- Several days of increased rate of “high energetic” LAr noise spikes
- Busy due to DAQ backpressure
- Unprescaled L1_J30_EMPTY added to autoprescale mechanism
- But also physics triggers affected
- Express / CosmicCalo stream reconstruction delayed by factor 10 / 60

Martin Wessels, Anna Sfyrlla

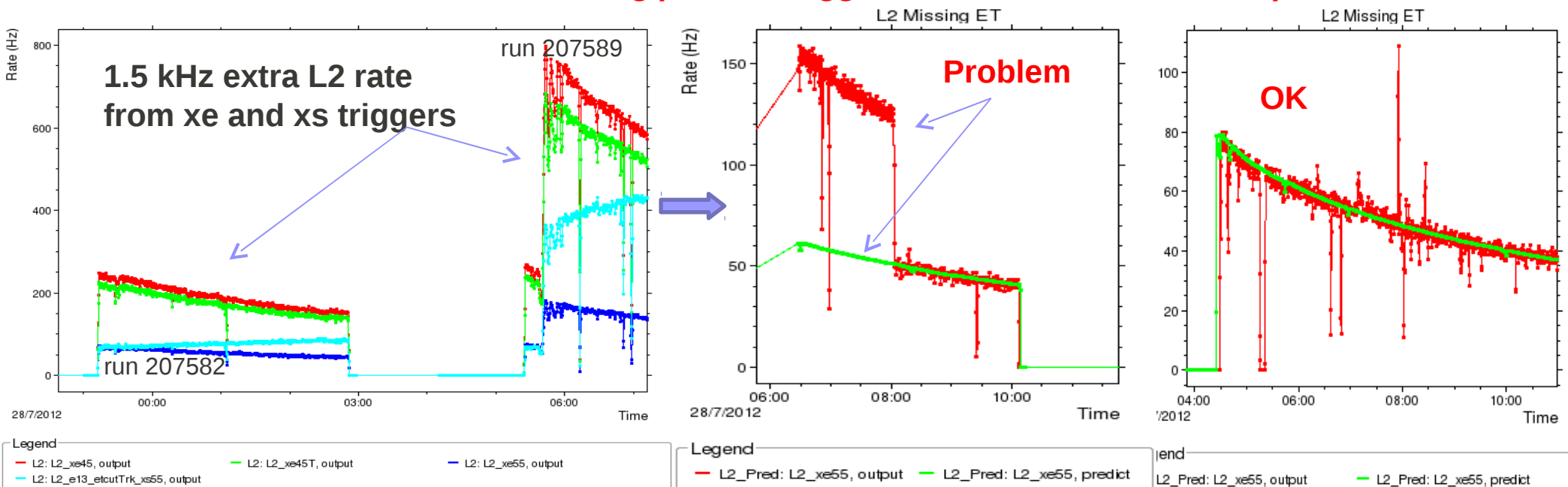




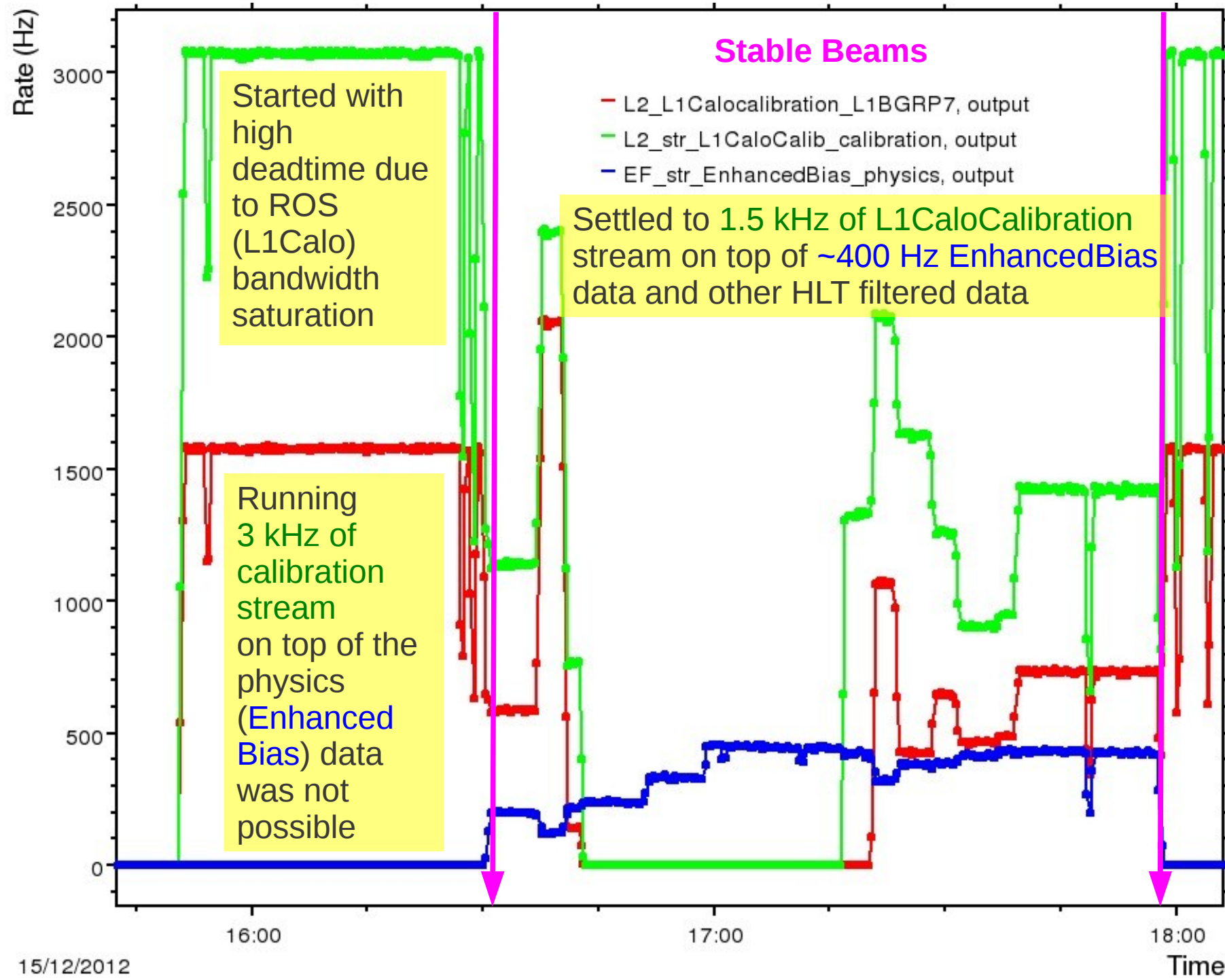
- Still problems with high rates from L2 MET in XE and XS triggers due to corrupted data from Tile Module
- 1.5 kHz extra rate at L2 causing backpressure for 20 min.
- High L2 rate persisted for 2h
- Misunderstanding between Trigger, Tile Shifters and Shift Leader and no expert on call phoned
- Improved shifter instructions and trigger monitoring

Alessandro Tricoli

New Rate Monitoring plot for Trigger Shifter: L2 MET rate compared to Prediction



L1Calo 7 time slices readout

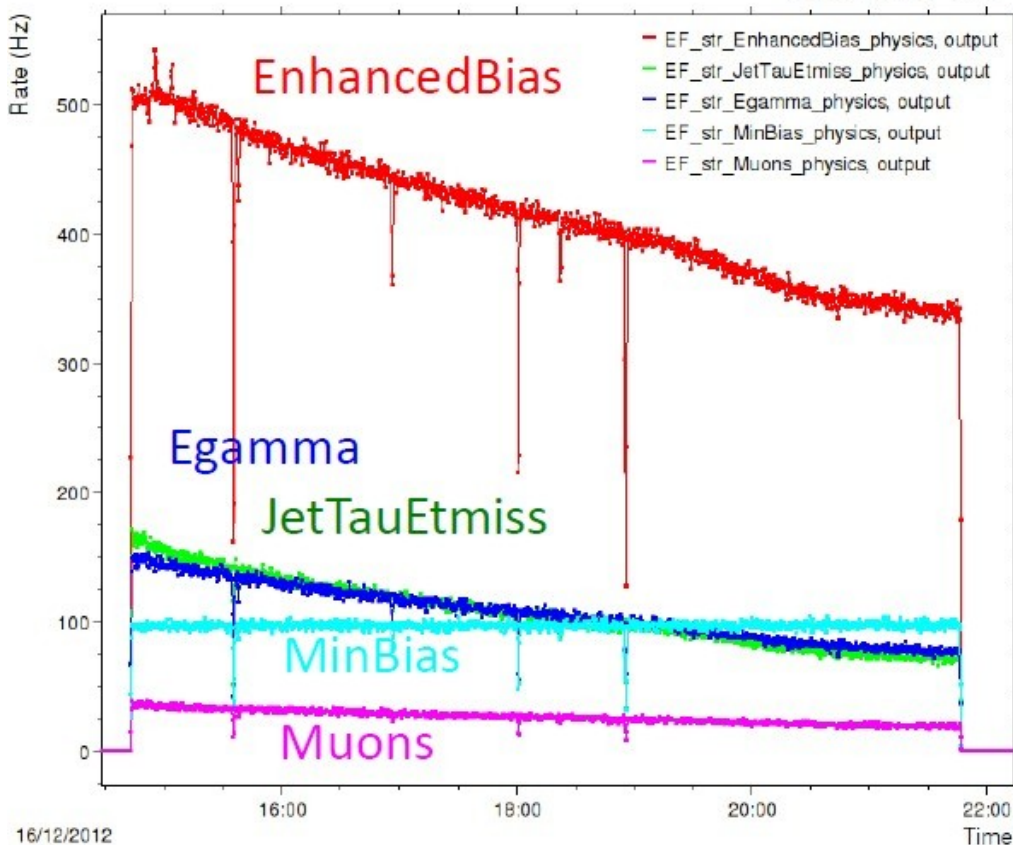


- Stable running recording HLT filtered data, EnhancedBias data [randoms and L1 pass-through] and L1Calo Calibration data
- Trigger performance to be evaluated. The plot below shows trigger rate compared to the prediction (for 50 ns) given the luminosity

Elisabetta Pianori

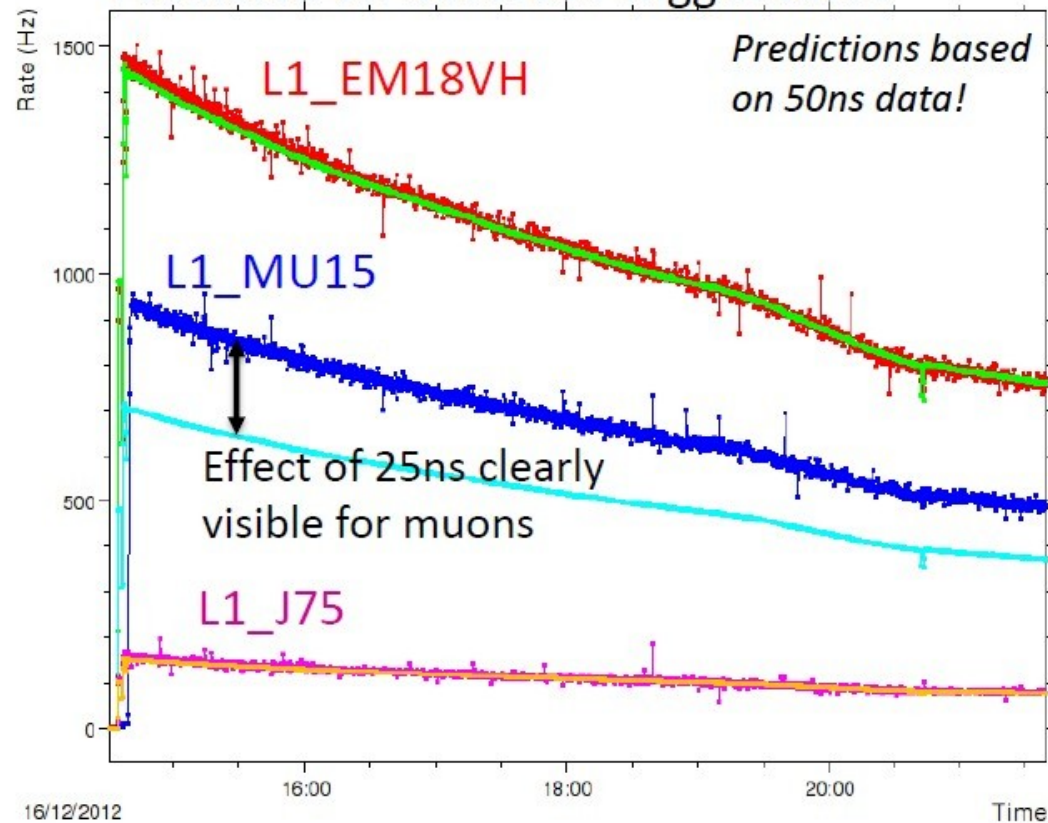
Physics streams rates

Run 216432



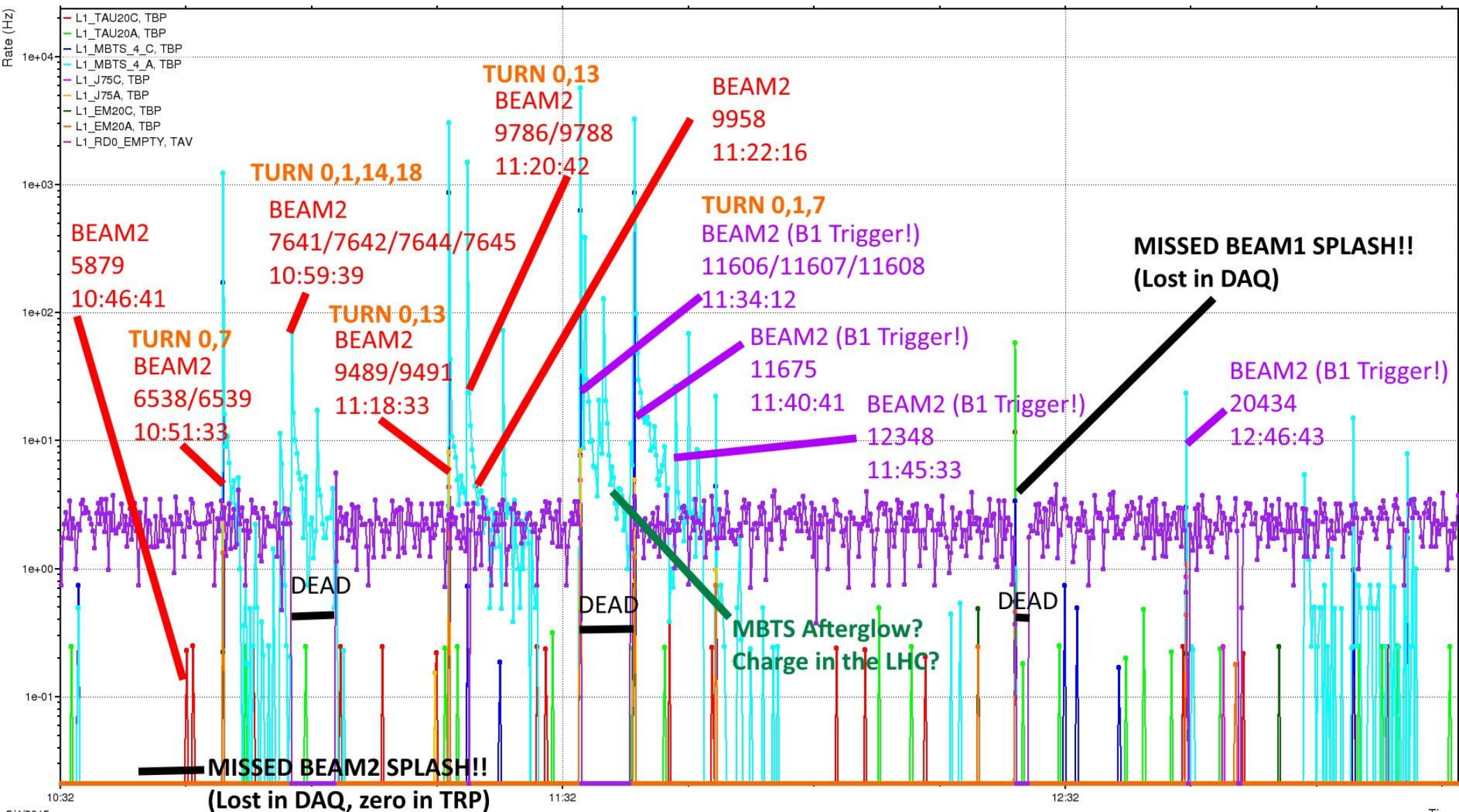
Rate predictions

Predicted vs. observed trigger rates



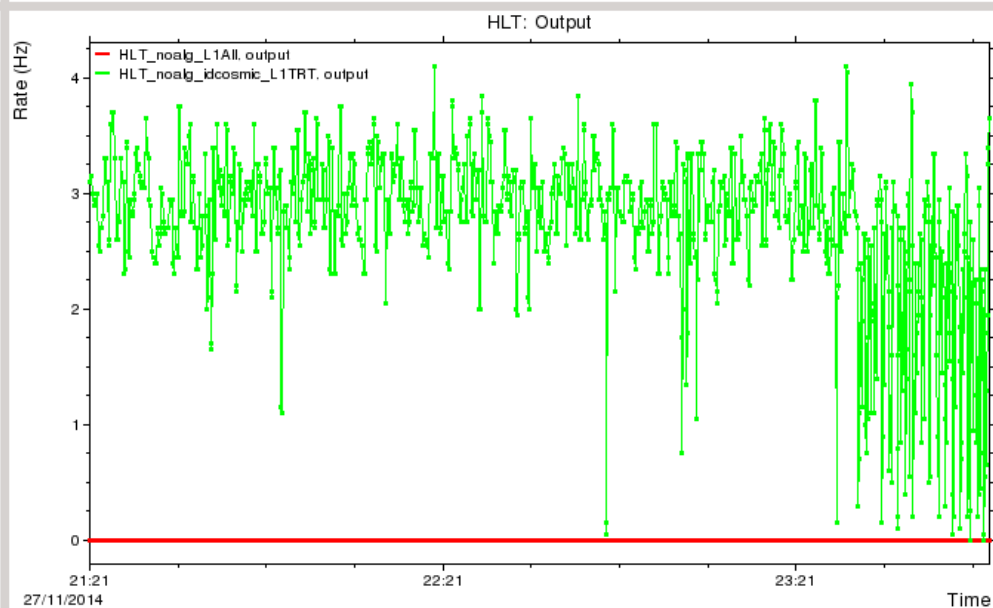
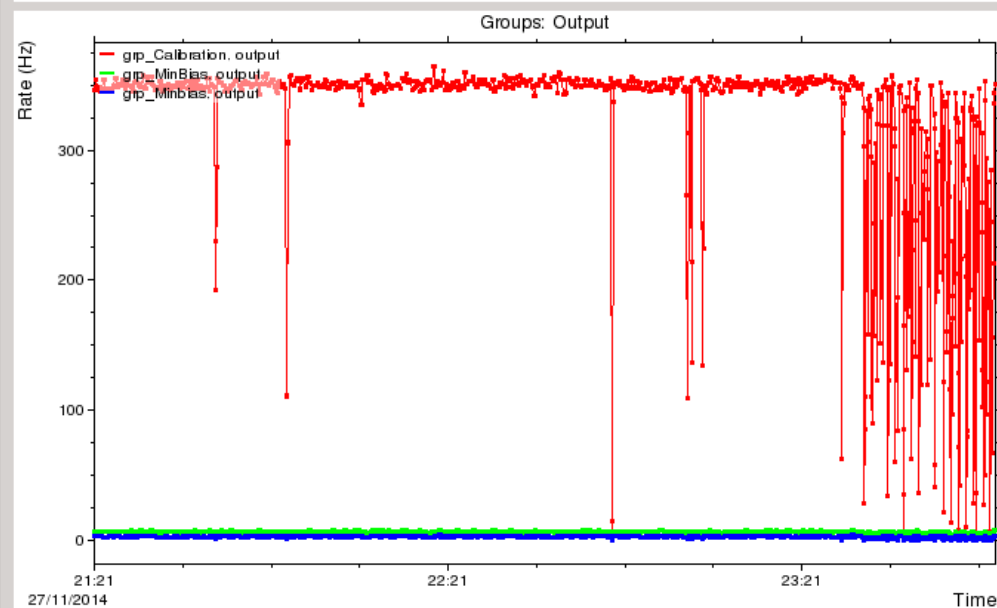
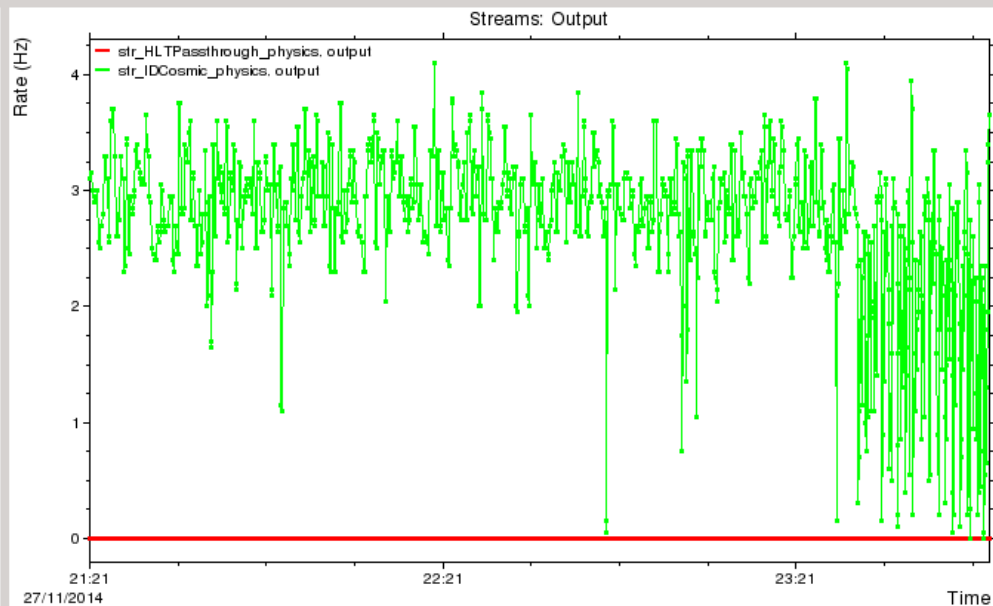
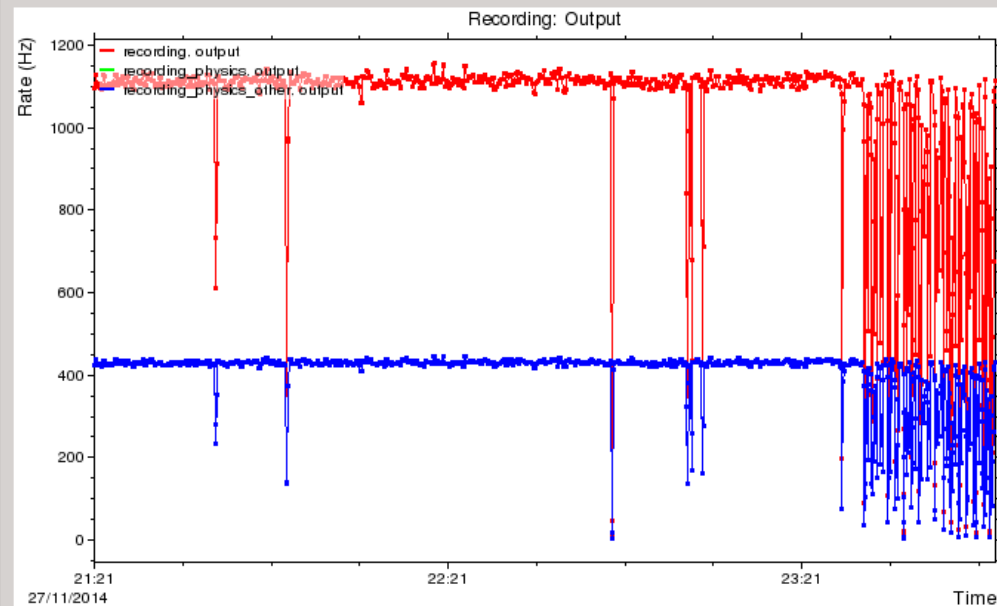
- 0.5 Hz of RD0 to MinBias stream to keep dataflow active. Also initially to express stream to confirm event display pickup
- L1_EM20_A or L1_EM20_C splash triggers to MinBias L1Calo and express streams

Tim Martin

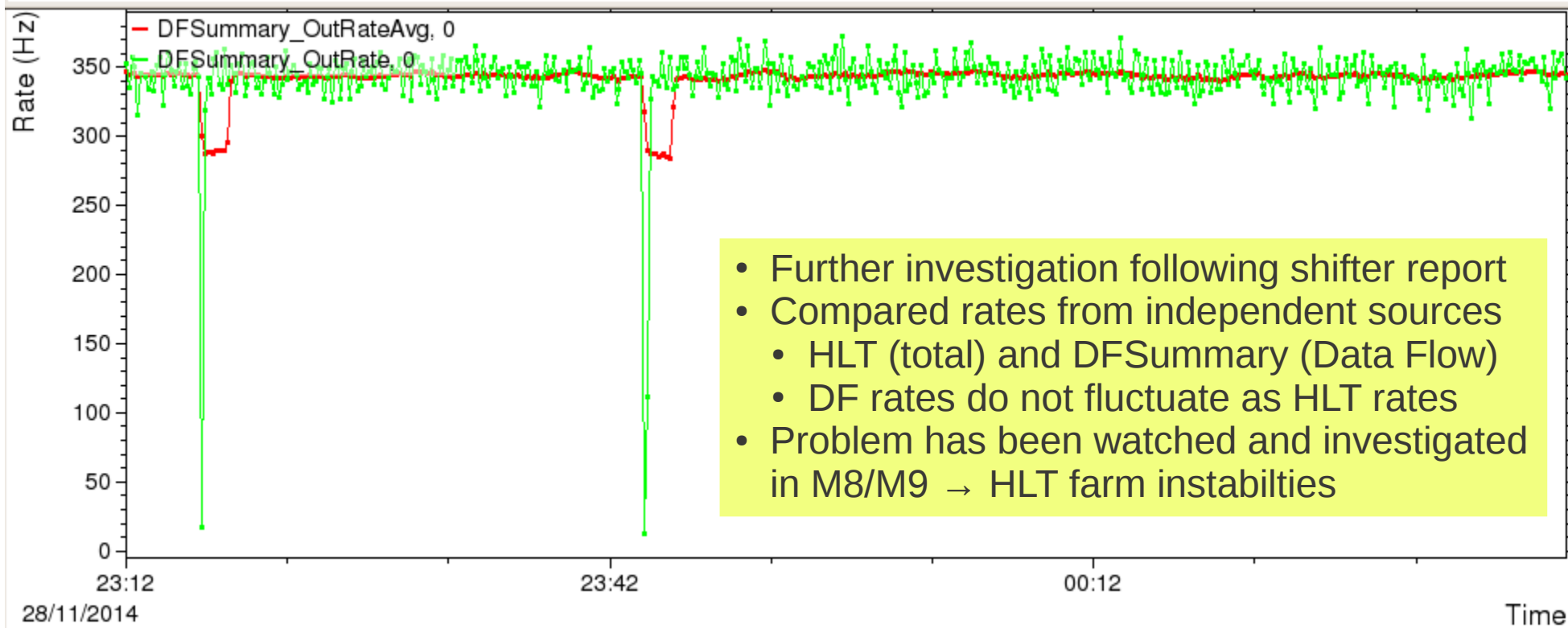
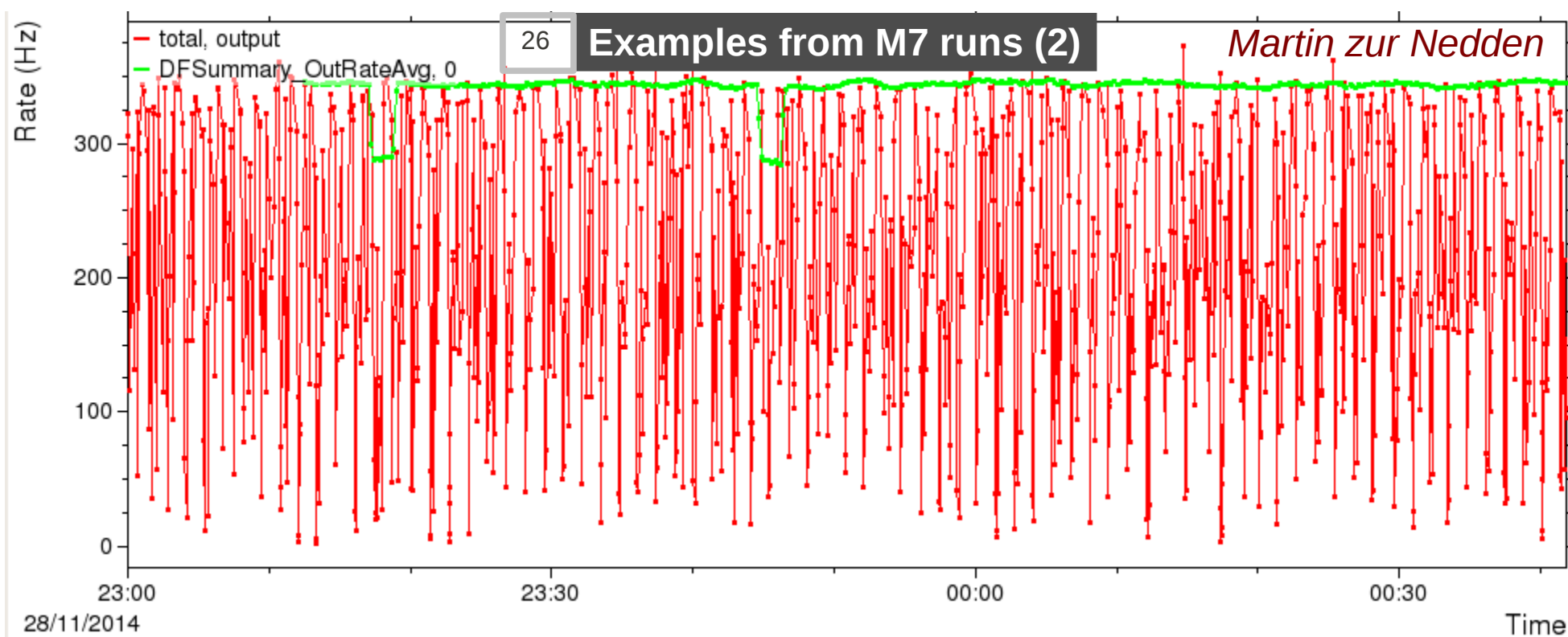


File Plots Help

Overall Rates HLT @ M5 Correlations L1 Collision L1 Empty More Plots Tables History Tables



- Rapid HLT rate fluctuations observed in 1-st week of M7
- Sharp onset after few hours into combined overnight cosmic run
- TRP not much nice / usable from this time onwards till the end of run



File Plots Help

Overall Rates

HLT

Correlations

L1

L1 Empty

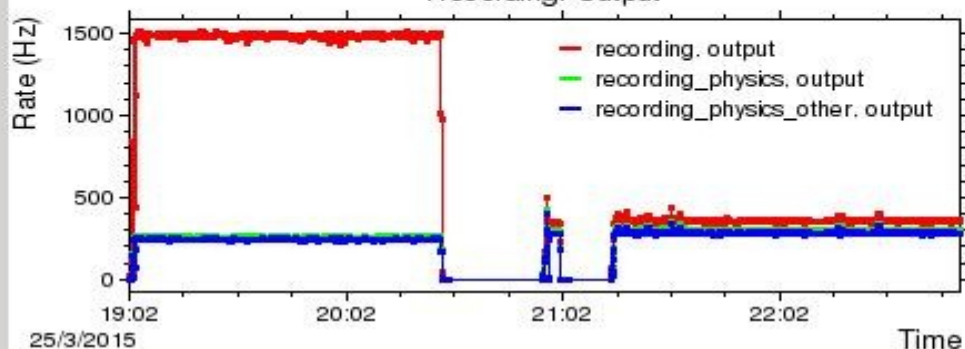
More Plots

Tables

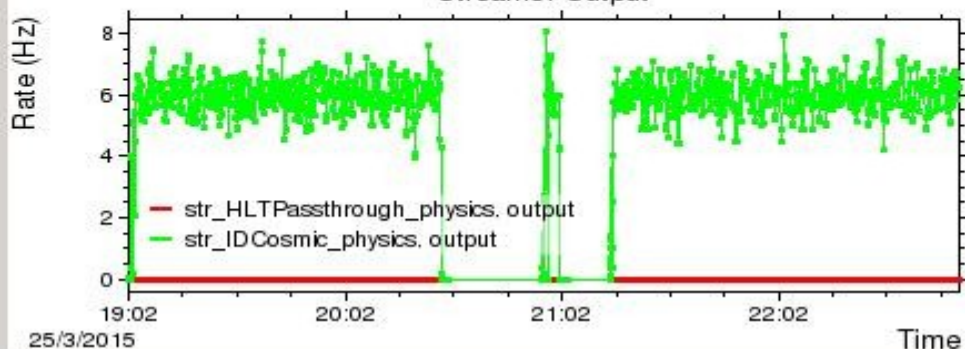
History Tables

HLT rates stable as expected

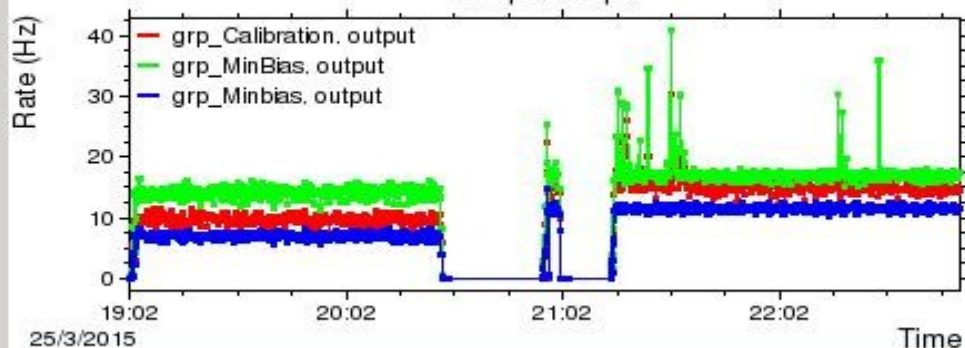
Recording: Output



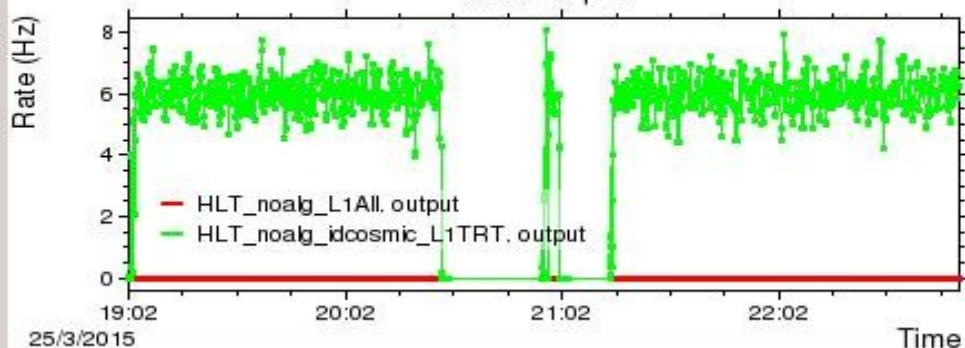
Streams: Output



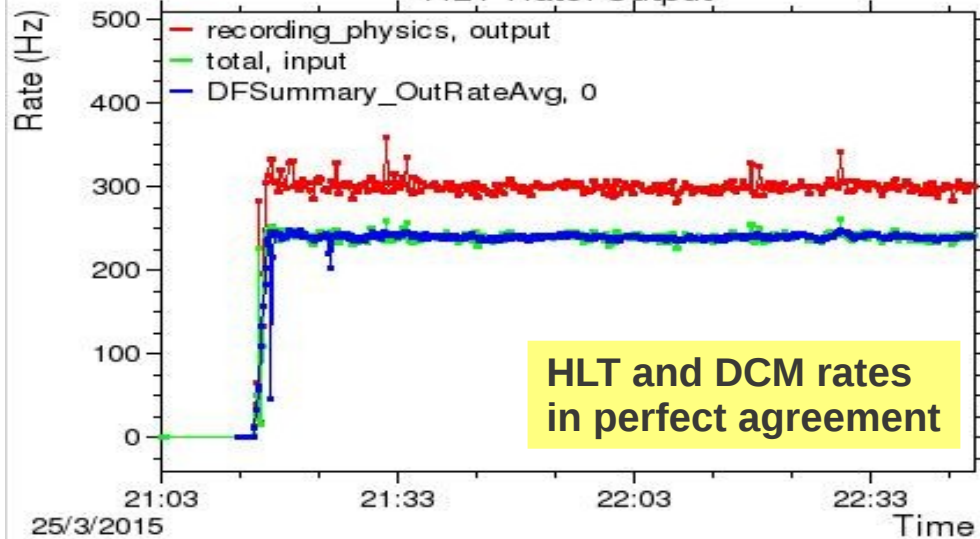
Groups: Output



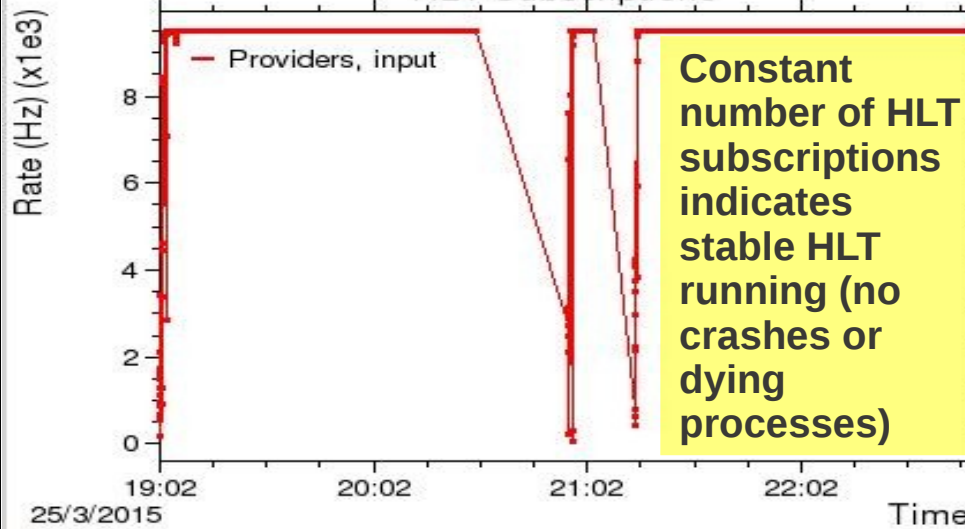
HLT: Output



HLT Rate: Output



HLT Subscriptions



- TRP application in Run Control crashes too often, needs to be restarted
- TRP GUI crashes several times per day
- TRP L1 Table shows L1 items even if they have been disabled
- TRP L1 Table shows 0s even if the rates are non-zero when plotted
- L1 Enabled checkbox loses effect after Filter has been applied
- DEBUG stream rates are not displayed in the TRP
- Need to extend time period of displayed rates beyond last few hours
- Rate predictions for several activated items/chains would be useful
- Need possibility to check rates from previous run(s)
- Some TRP root files with archived rate get corrupted
- HLT rates missing in some TRP root files

 fixed
 in progress
 to do



- Very helpful reports from the shifters who frequently use the tools. Thanks!
- The above issues are being investigated and fixes will be applied/tested

- **TRP archiving application runs from the ATLAS partition**
- **Archiving based on ROOT and the DAQ CoCa/MDA service**
- **Archives stored on EOS and available for browsing / copy**

- Online rates stored in ROOT files, a separate file per run is created named

TriggerRates_<partitionName>_<runNumber>.root

- Quick view/download of available files

<https://atlasdaq.cern.ch/info/mda/coca/TRP-Rates>

- Alternative access from lxplus (see below)

2012+ runs (after migration to EOS storage)

```
> source /afs/cern.ch/atlas/project/tdaq/cmt/bin/cmtsetup.sh tdaq-05-05-00  
> coca_get_info -d TRP-Rates -s 2014-10-01 -u 2014-11-01  
> coca_get_files -v -v TriggerRates_ATLAS_242364.root
```

2010-2012 runs (before migration to EOS storage)

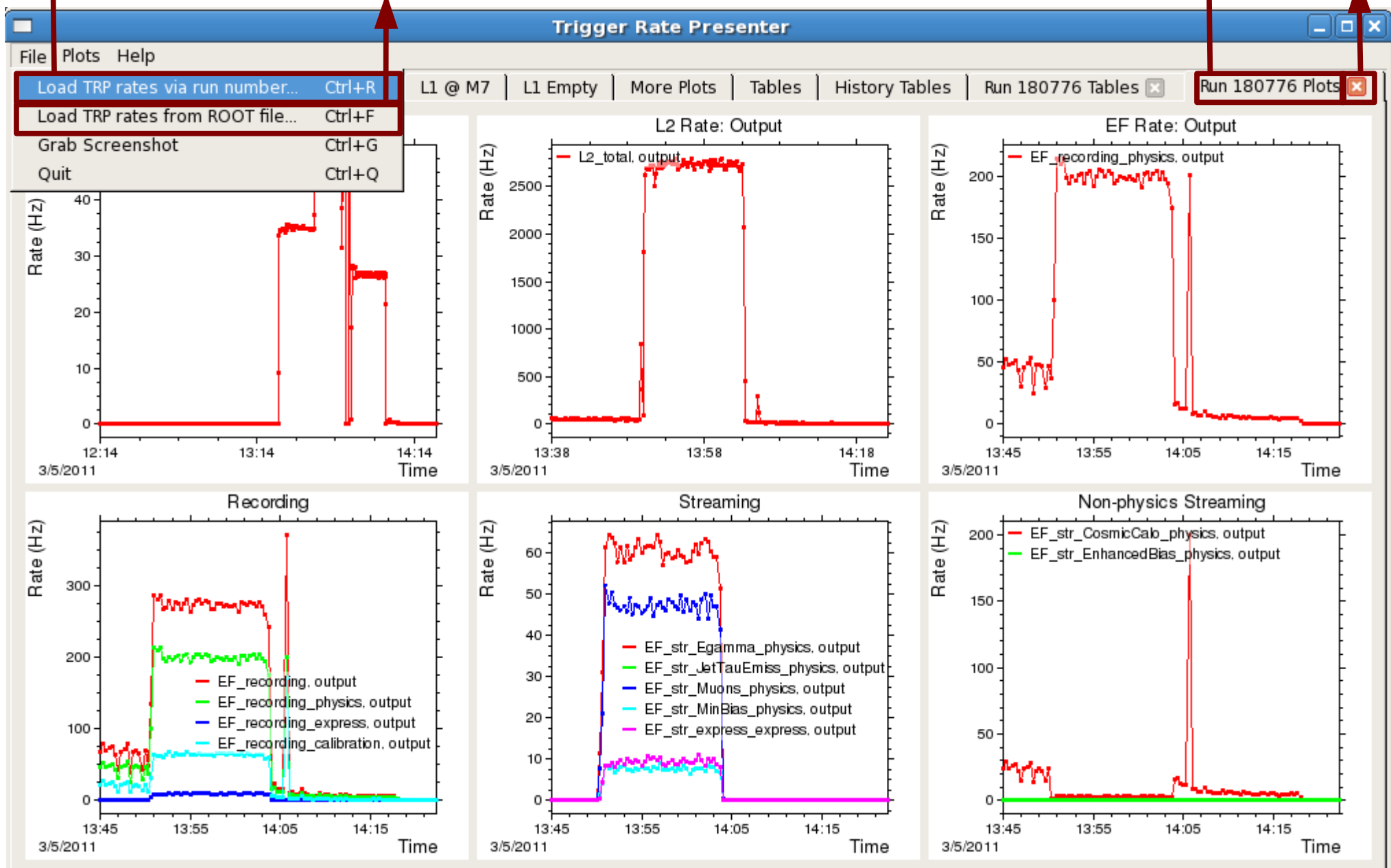
```
> source /afs/cern.ch/atlas/project/tdaq/cmt/bin/cmtsetup.sh tdaq-05-04-00  
> coca get info -d TRP-Rates -f TriggerRates_ATLAS_189660.root  
> xrdcp root://eosatlas.cern.ch//eos/atlas/atlascerngroupdisk/tdaq-mon/coca/  
coca_TRP-Rates_001343.zip .
```

Load file from CoCa archive, e.g. 180776

Preconfigured Plots Tab for loaded run

Load file from local directory, e.g. ./TriggerRates_ATLAS_180776.root

Closeable




Plot archived rates
(works as expected)

Table Tab for loaded run

Closeable

File Plots Help

Overall Rates | HLT @ M7 | Correlations | L1 @ M7 | L1 Empty | More Plots | Tables | History Tables | Run 180776 Tables  | Run 180776 Plots 

Plot

Plot Correlation





Clear

Filter: ☒ Enable filter

Table browsable
by time stamp or
lumiblock

Time:

LB:

2011-05-03 14:22:19   133  

Current: 2011-05-03 14:22:19 LB:133

L1 | L2_Rate | HLT | Lumi

Name	TBP	TAP	TAV	PS	DT
L1_ZDC_UNPAIRED_ISO	0	0	0	-1	0
L1_ZDC_EMPTY	0.0981386	0.0981386	0	-1	1
L1_ZDC_C	0	0	0	-1	0
L1_ZDC_A_C_EMPTY	0	0	0	-1	0
L1_ZDC_A_C	0	0	0	-1	0
L1_ZDC_AND_EMPTY	0	0	0	-1	0
L1_ZDC_AND	0	0	0	-1	0
L1_ZDC_A	0	0	0	-1	0
L1_ZDC	0	0	0	4e+06	0
L1_ZB	0	0	0	10	0
L1_XS50	0.0981386	0.0981386	0	1	1
L1_XS45	0.0981386	0.0981386	0	1	1
L1_XS40	0.0981386	0.0981386	0	1	1
L1_XS35	0.0981386	0	0	10	0

- **These tools allow shifters to monitor and assess the data quality in real time**
- **Data Quality Monitoring Display (DQMD)**
 - Spot major, critical issues that require expert action in ACR
 - Minimal set of histograms for: coverage, timing, data integrity (although capable of supporting large number of histograms)
 - Fast and easy navigation based on graphical view of the system
 - DQ flags propagated to top level: **ERROR**, **WARNING**, **OK**
- **Online Histogram Presenter (OHP)**
 - Complementary tool to DQMD for more detailed investigation
 - Allows for comparison of online distributions against reference histograms
- **Shifter task**
 - Check DQ flags and OHP histograms regularly during the shift
 - Take screenshots and report problems according to the urgency of the issue

Action View Navigation Bookmarks DQM Display

PIXEL

OHP GNAM AthenaPT

Select system

History of Histogram flags

Logs and debugging

Flags propagated to top level
 Click box to expand

History for "PIXEL"

Alarms & Logs

	Acknowledgment	DQ Status	Time	Name
1			Tue 20:57:09	/TRT/TRT-Physics/TRT_...
2			Tue 20:57:09	/TRT/TRT-Physics/TRT_...
3			Tue 20:57:09	/TRT/TRT-Physics/TRT_...
4			Tue 20:57:09	/TRT/TRT-Physics/TRT_...
5			Tue 20:55:54	/TRT/TRT-Physics/TRT_...
6			Tue 20:55:54	/TRT/TRT-

Partition 'ATLAS' is running for 02h 37m 40s in Physics mode. Run Number is 246060 62147 updates received, last one at Tue

Currently L1 and HLT trigger histograms are being reviewed and implemented in DQMD

Action View Navigation Bookmarks DQM Display

TriggerSystems

HLT

TRBJT

TRBPH

TRCAL

TRELE

TRGAM

TRHLT

TRIDT

TRJET

TRMBI

TRMET

TRMUO

TRTAU

L1CAL

L1MU

BCID Alignment

Data Integrity Errors

Events of this stream p...

Events processed per t...

Fraction of good events

LVL1 Alignment

Rod Errors

SL inputs minus CMS ...

SL trigger multiplicity p...

SL triggers per trigger s...

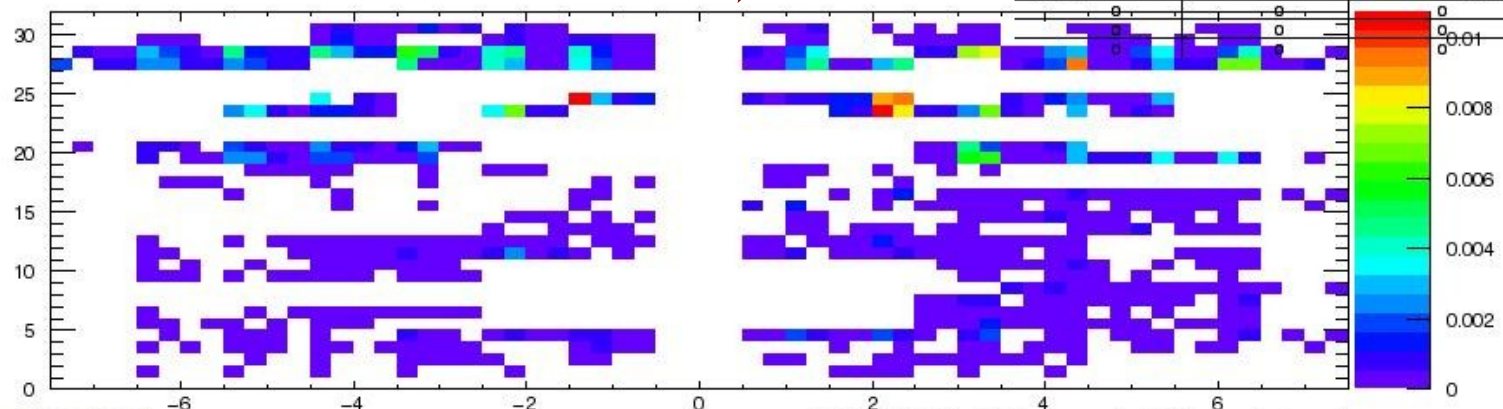
Trigger rate for high pT ...

Trigger rate of the low ...

Trigger rate of the low pT muons

SFI - Low Pt, CM triggers / processed Events

Trigger Sector



2015-Feb-24 22:43:54

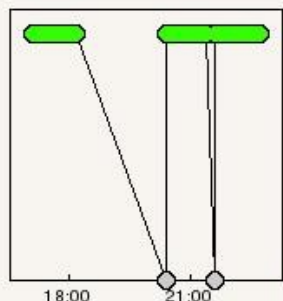
(Side C | Side A) Tower+1 (4 CM in each tower)

Result	Configuration	Description	Troubleshooting
2015-Feb-24 22:45:54	Trigger rate of the low pT muons Histogram(s): RPC_Histogramming.RPCEventGnam./SHIFT/RPC/SFI/ LowTrigRate Weight: 0 Algorithm: Histogram_Not_Empty Thresholds:	Rate of the low pT triggers	For experts only

Description and troubleshooting information especially provided to aid the shifter

History for "Trigger rate of the low pT muons"

Alarms & Logs



Trigger rate of the low pT muons

	Acknowledgment	DQ Status	Time	Name
1			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Cbottom/ I2_B19_S1_M4C
2			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Cbottom/ I2_B19_S1_M4C/ NumOfClusters_Modu...
3			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Cbottom/ I2_B18_S1_M3C
4			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Cbottom/ I2_B18_S1_M3C/ NumOfClusters_Modu...
5			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Abottom/ I2_B17_S1_M1A
6			2015-Feb-24 22:47:27	/ InnerDetector/ PIXEL/ AthenaPT/ B_12_Abottom/ I2_B17_S1_M1A/ NumOfClusters_Modu...
7			2015-Feb-24 22:47:26	/ InnerDetector/ PIXEL/ AthenaPT/ B_L0_Abottom/ L0_B07_S2_M1A
			2015-Feb-24	

Action and menu buttons

Status bar

System Actions View Window Help



Plugins

Timing

Inner D
Calo
Muons
Trigger

Select
systemView
plots

L1Calo

L1RPC

L1TGC

L2

Histogramming/
l1calo-athenaPT-stability/
SHIFT/
L1Calo/
PPRStabilityMon/
FineTime/

ppm_em_1d_profile_adc_fineTime

is not found

Histogram navigation tabs

Histogramming/
l1calo-athenaPT-stability/
SHIFT/
L1Calo/
PPRStabilityMon/
FineTime/

ppm_had_1d_profile_adc_fineTime

is not found

Run Status

Partition ATLAS

Run # 246060

Run Type Physics

Started at 18/ 11/ 14

Run State RUNNING

OHP Status

Status ACTIVE

Input Rate

Received #

Routed #

Servers up:

Histogramming
Histogramming-Combi
Histogramming-TRT
Histogramming-Global

Servers down:

LArHistogramming
Histogramming-LCD
Histogramming-MDT
Histogramming-RPC
Histogramming-tgc
HistogrammingHLT

Currently L1 and HLT trigger histograms are being reviewed and implemented in OHP

System Actions View Window Help

Plugins

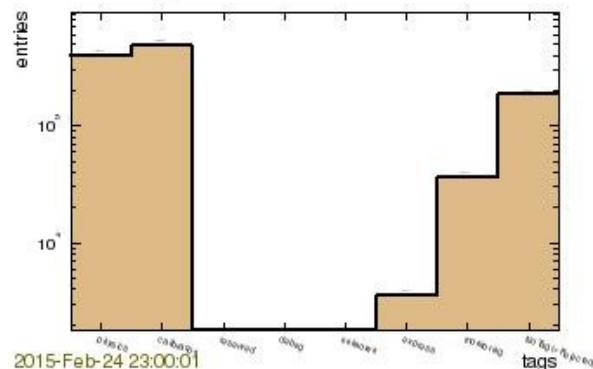
Browser

Histograms

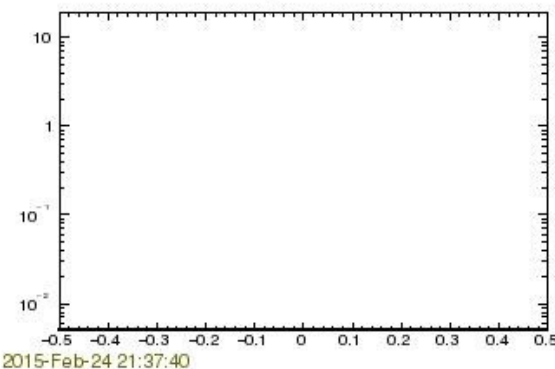
HLTInfrastructure
 HLTSteering
 HLTSteeringExpert
 Errors in HLT chains
 Problems in HLT chains
 HLTCosmicBjet
 HLTCosmicBPhysics
 HLTCosmicCalo
 HLTCosmicEgamma
 HLTCosmicID
 HLTCosmicJets
 HLTCosmicMET
 HLTCosmicMinBias
 HLTCosmicMuon
 HLTCosmicTau
 L1CaloErrorOverview
 L1CaloInput
 L1CaloOutput

HLTSteering

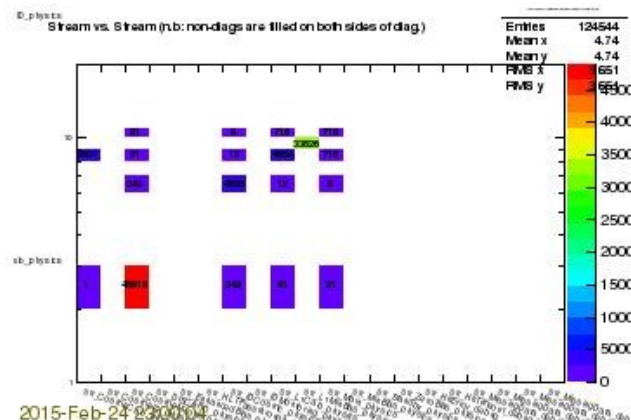
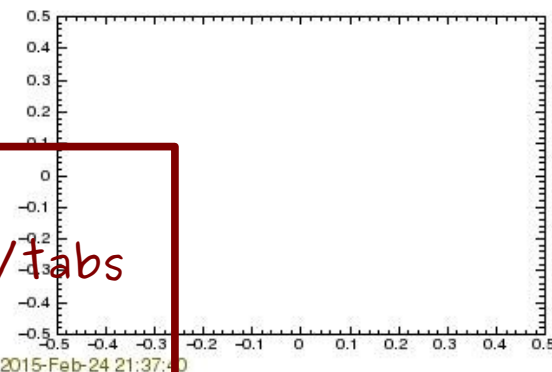
Stream tags



Number of events per stream



Stream Correlation



Histograms grouped in folders/tabs for each signature

Status

Status ACTIVE

Input Rate 0

Received # 501

Routed # 37

Servers up:

Histogramming
 HistogrammingHLT
 L1CT

Servers down:

Run Status

Partition ATLAS

Run # 253247

Run Type Physics

Started at 24/2/15

Run State RUNNING

- Shift task
 - Regularly check histograms and report deviations from reference histograms
 - Consult and inform the expert in case of unexpected behaviour
- Help and documentation (to be reviewed and updated) at this twiki
<https://atlasop.cern.ch/twiki/bin/view/Main/TriggerOhpHelp>

- **TRP is a shifter tool to monitor trigger rates in real time**
- **TRP allows the shifter to spot problems in the Trigger as well as in other systems**
- **DQMD and OHP provide detailed monitoring information from the Trigger and other relevant systems**
- **These monitoring tools complement and aid the shift work**
- **Your Trigger shift reports and feedback are welcome**

<https://atlasop.cern.ch/twiki/bin/view/Main/TrpTraining>