

Overview of work done



Carlos Solans
Valencia TileCal meeting
19th May 2009



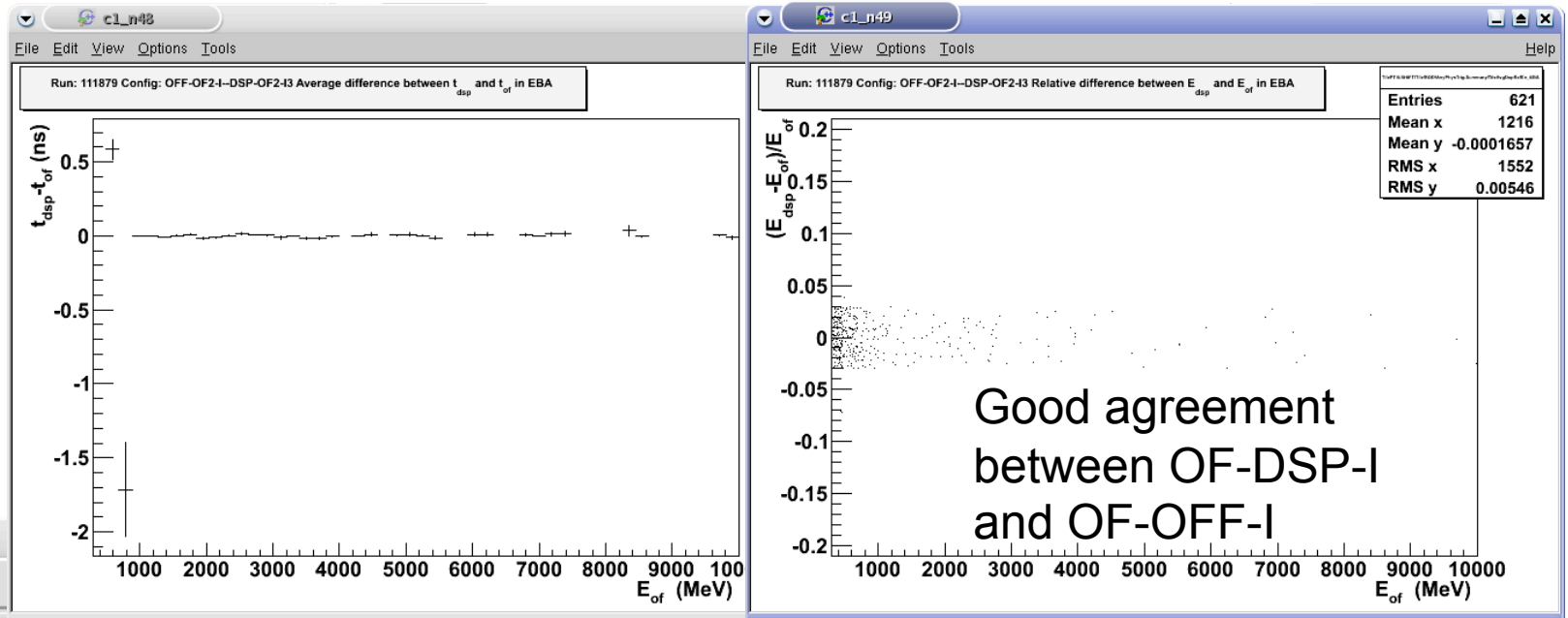


- Contributed to calorimeter (Tile+LAr +L1Calo+CTP) slice week (20-26 April)
 - Good agreement between DSP and offline magnitudes
 - ROD/DSP monitoring producing results
 - Steadily running at 80kHz (DSP only) for 30 min
 - ROD busy/ROS not accepting events issue not understood.
 - ROD configuration patch applied.
- Contributing to HLT slice (Calo+ID+Muon+HLT) week (4-10 May)
 - Taking DAQ on call shifts whole week.
 - Couple of DSP not booting problems and a misbehaving drawer.
- Compiled 2 Tile online releases (tile-2.0.1, tile-2.0.1.1)
 - Installed tdaq-02-00-01 in the lab (Valencia, CERN)



Plots produced by
EF monitoring
running online.
(AKA Mike's tool)

ROS status after
a non-recoverable
busy



EBA								LBA								LBC								EBC							
robId	Koff	pagesFree	MayCome	NeuerToCome	NotDeleted	frags		robId	Koff	pagesFree	MayCome	NeuerToCome	NotDeleted	frags		robId	Koff	pagesFree	MayCome	NeuerToCome	NotDeleted	frags		robId	Koff	pagesFree	MayCome	NeuerToCome	NotDeleted	frags	
0	1	8189	0	0	0	85378346		0	1	7939	641	4	20913	20913		0	1	8000	264	2	20913	20913		0	1	8184	837	0	20913	20913	
1	1	8189	0	0	0	85378346		1	1	8172	645	0	20913	20913		1	1	7941	264	2	20913	20913		1	1	8112	837	0	20913	20913	
2	1	8189	0	0	0	85378346		2	1	7976	643	2	20913	20913		2	1	8182	266	0	20913	20913		2	1	8151	836	1	20913	20913	
3	1	8189	0	0	0	85378346		5	1	8175	645	0	20913	20913		3	1	8188	0	266	20913	20913		7	1	8183	837	0	20913	20913	
4	1	8189	0	0	0	85378346		6	1	7997	645	0	20913	20913		4	1	8170	75	191	20913	20913		8	1	8180	658	0	20913	20913	
5	1	8189	0	0	0	85378346		7	1	7995	642	3	20913	20913		5	1	8114	266	0	20913	20913		9	1	8096	658	0	20913	20913	
6	1	8189	0	0	0	85378346		8	1	8132	672	0	20913	20913		6	1	7953	262	4	20913	20884		10	1	8184	658	0	20913	20913	
7	1	8189	0	0	0	85378346		9	1	8104	669	3	20913	20913		7	1	8166	266	0	20913	20913		11	1	8177	658	0	20913	20913	
8	1	8188	0	0	87	85378260		10	1	8184	672	0	20913	20913		8	1	8133	6	0	20913	20913		12	1	8014	652	6	20913	20913	
9	1	8188	0	0	87	85378260		11	1	8167	672	0	20913	20913		9	1	8102	6	0	20913	20913		13	1	7970	654	4	20913	20913	
10	1	8188	0	0	87	85378260		12	1	8162	672	0	20913	20913		10	1	8184	6	0	20913	20913		14	1	7931	649	9	20913	20913	
11	1	8188	0	0	87	85378260		13	1	8173	672	0	20913	20913		11	1	7961	6	0	20913	20913		15	1	8085	656	2	20913	20913	
12	1	8188	0	0	87	85378260		14	1	8150	671	1	20913	20913		12	1	8174	6	0	20913	20913									
13	1	8186	0	0	87	85378262		15	1	8180	671	1	20913	20913		13	1	8136	6	0	20913	20913									
14	1	8189	0	0	0	85378346										14	1	8173	6	0	20913	20913									
15	1	8189	0	0	0	85378346										15	1	8184	6	0	20913	20913									
																16	1	8189	0	0	20913	20913									

ATLAS TDAQ Software Graphical User Interface - Status Display

File Commands Access Control Tools Settings Help

Partition ATLAS

Run control

RUN CONTROL STATE **RUNNING**

Shutdown Boot

Terminate Initialize

Unconfig Config

Stop Start

Pause Continue

Run Information

Run type **Physics**

Run number 112831

Lumi block 9

Recording **Enable**

Run Start Time 22/04/09 16:24:34

Run Stop Time

Total run time 00:20:50

	Number	Rate
Level 1	83681200	79.46 kHz
Level 2	9271	6.58 Hz
Event Builder	9331	6.38 Hz
Event Filter	9267	6.48 Hz
Recorded Events	9267	6.48 Hz

Run Control Run Parameter MRS Monitor Segment & Resource Data Set Tags PmgISPanel L1Calo Trigger TileCal

RUNNING RootController

- RUNNING** TDAQ:pc-tdq-onl-19
- RUNNING** Tile
 - RUNNING** TileEBA
 - RUNNING** TileLBA
 - RUNNING** TileLBC
 - RUNNING** TileEBC
 - RUNNING** DQM_Tile_Controller
 - RUNNING** Tile-MDAController
 - RUNNING** TileEFMon-Segment:pc-tdq-mon-17
 - RUNNING** TileMBM
 - RUNNING** TileEFMonitoring:pc-atlas-cr-10

DataFlow RootController

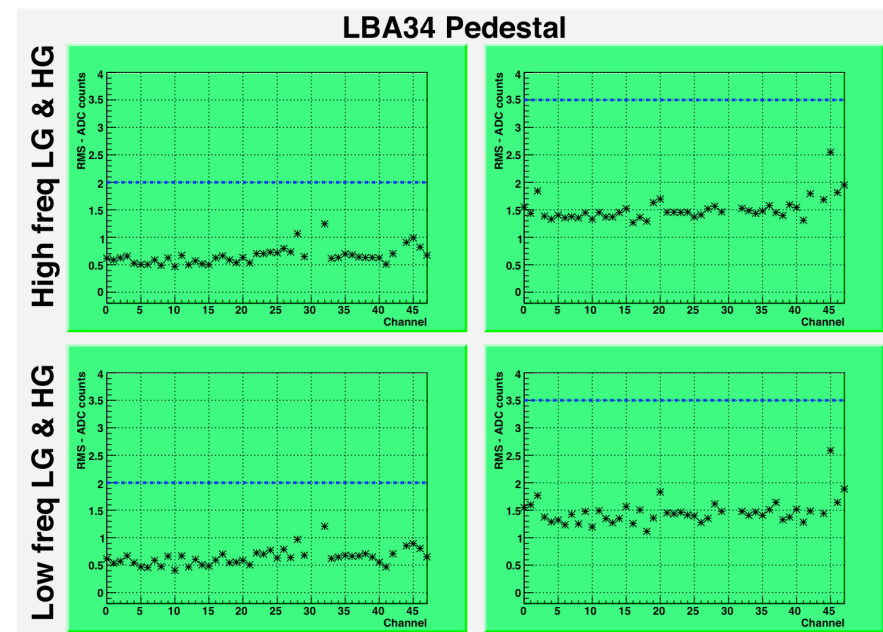
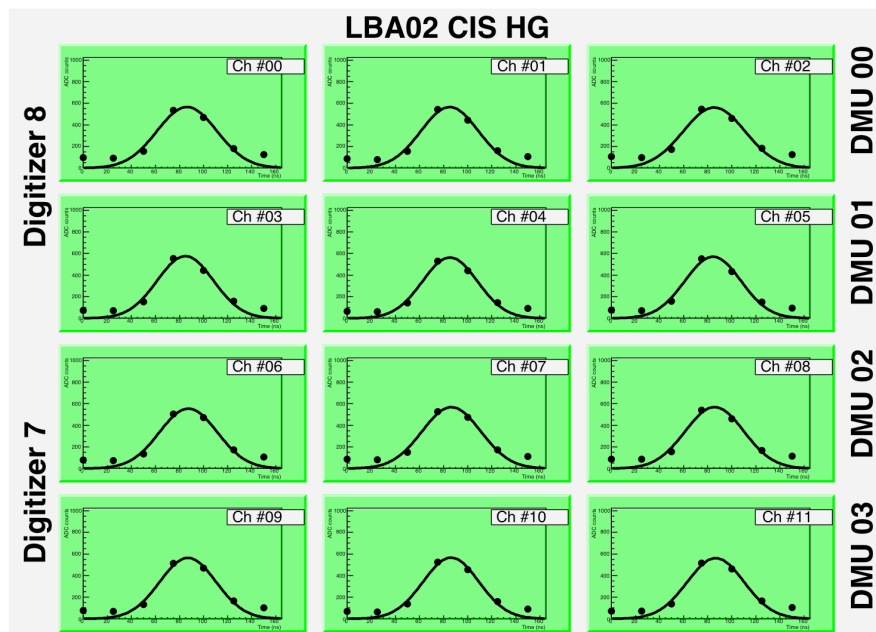
DFM-1

- current XOFF 0
- number of XOFF 0
- Rate of LVL2 accepts 6.585
- Rate of LVL2 rejects 79387.953
- Rate of assigned events 6.386
- Rate of built events 6.386
- Rate of cleared events 79394.339**
- Averaging time for rates 10.022
- Number of disabled SFIs 0

80 kHz!

Status Informations Commands Infrastructure

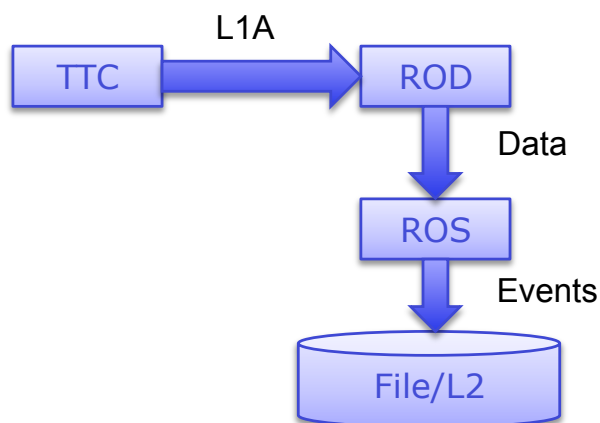
16:45:26	WARNING	CheckBCIDGnam	bcidcheck:AnyError	Run 112831 Evt 2089 Ref 1 L1 0xf2016c5b TT 0x84 BC 0xb92 Status 0x 0 - TDAQ_LVL2, module=30270 (opt=0) (ROB 0x7b763e) new ROB added -- 116 similar messages suppressed, last occurrence was at 2009-Apr-22 16:45:25
16:45:26	WARNING	CheckBCIDGnam	bcidcheck:AnyError	Run 112831 Evt 2089 Ref 1 L1 0xf2016c5b TT 0x84 BC 0xb92 Status 0x 0 - TDAQ_LVL2, module=32675 (opt=0) (ROB 0x7b7fa3) missing ROB removed -- 116 similar messages suppressed, last occurrence was at 2009-Apr-22 16:45:25
16:44:55	WARNING	CheckBCIDGnam	bcidcheck:AnyError	Run 112831 Evt 1972 Ref 1 L1 0xec006fdc TT 0x84 BC 0x764 Status 0x 0 - TDAQ_LVL2, module=30188 (opt=0) (ROB 0x7b75ec) new ROB added -- 112 similar messages suppressed, last occurrence was at 2009-Apr-22 16:44:54
16:44:55	WARNING	CheckBCIDGnam	bcidcheck:AnyError	Run 112831 Evt 1972 Ref 1 L1 0xec006fdc TT 0x84 BC 0x764 Status 0x 0 - TDAQ_LVL2, module=29033 (opt=0) (ROB 0x7b7169) missing ROB removed -- 112 similar messages suppressed, last occurrence was at 2009-Apr-22 16:44:54
16:44:24	WARNING	CheckBCIDGnam	bcidcheck:AnyError	Run 112831 Evt 1859 Ref 1 L1 0xe505033d TT 0x84 BC 0xb7f Status 0x 0 - TDAQ_LVL2, module=29089 (opt=0) (ROB 0x7b71a1)



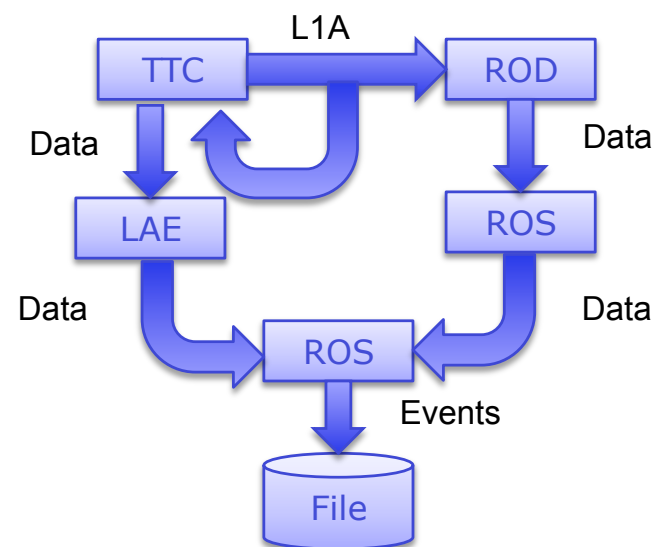
- In situ tests on the super-drawers
- Response to charge injection
- Pedestal level
- CRC check under stress conditions (100kHz pedestal)
- Mezzanine address checking (response to pedestal change)



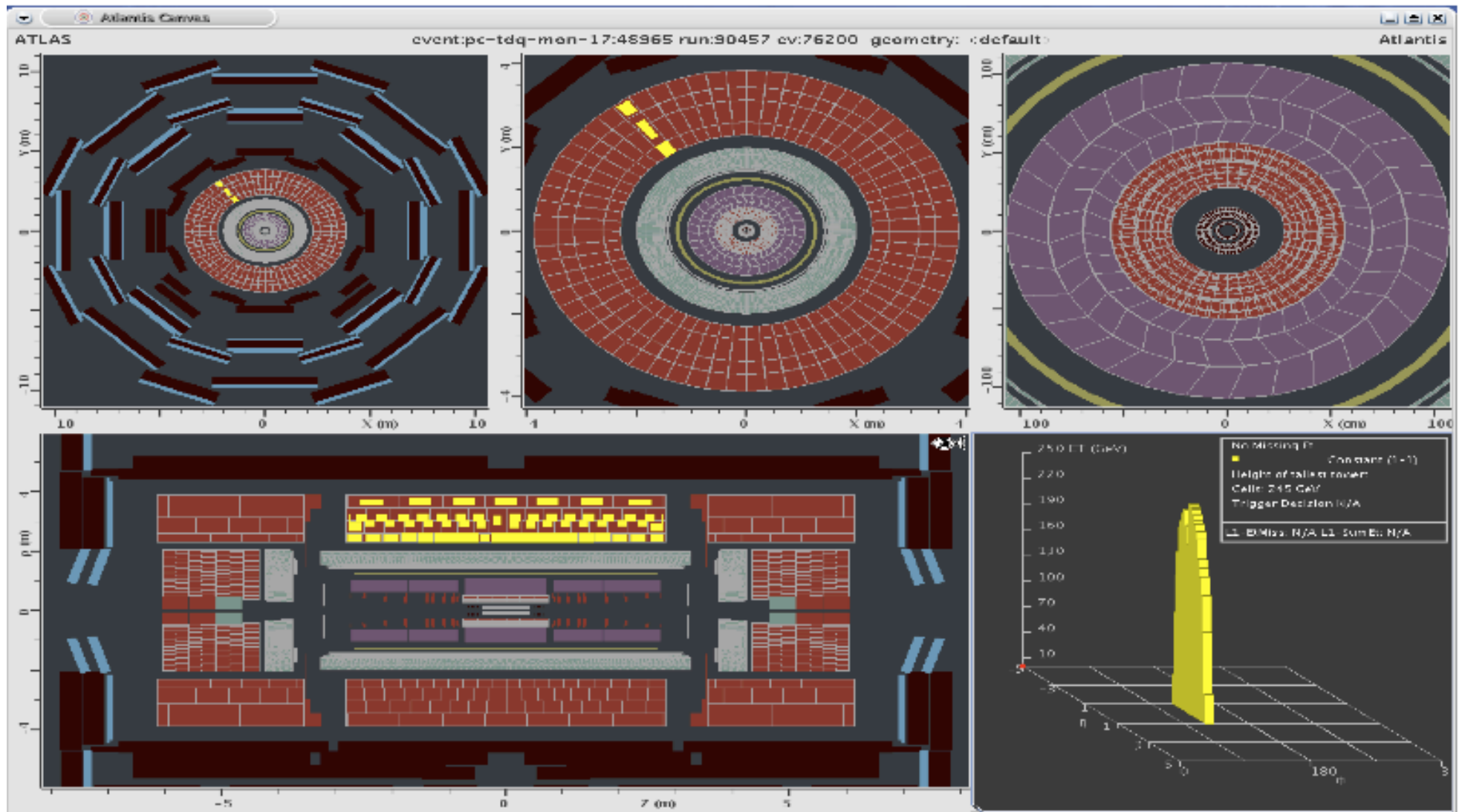
- Two data flow schemas
 - Combined running (high rate)
 - CIS calibration (storage of calibration params with the data)

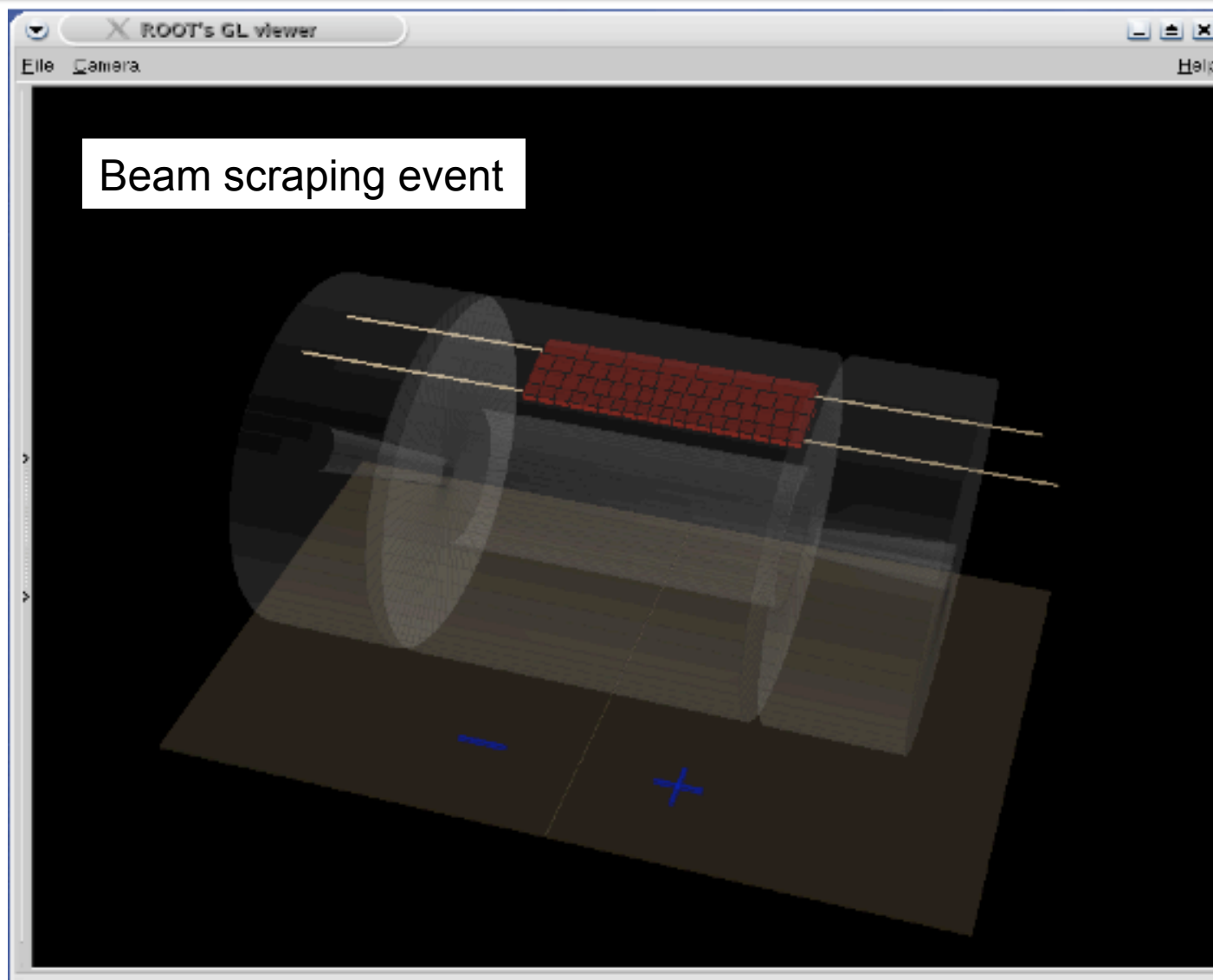


Combined
 High rate DAQ
 DVS development
 ROD/DSP testing
 Monitoring
 Reconstruction validation



Calibration
 CIS development







- Exclusion limit and expected sensitivity for MSSM Higgs to tau tau in the lepton hadron channel

- Visible mass observable

$$M_{vis} = |p_l^\alpha + p_h^\alpha + p_{miss}^\alpha| \quad p_{miss}^\alpha = \left(p_{miss}^x, p_{miss}^y, 0, \sqrt{(p_{miss}^x)^2 + (p_{miss}^y)^2} \right)$$

- MSSM Higgs to tau tau lh selection cuts ([Link](#))

- Likelihood fit of the S+B to B only pseudo-experiments

$$\mu_i = L\sigma_A A_i + L\sigma_Z Z_i$$

$$x_i = Pois(Z_i)$$

$$\mathcal{L}(\mu|x) = \frac{\exp(-\mu)\mu^x}{x!} + G(L, \hat{L}, \varepsilon(L)) + G(\sigma_Z, \hat{\sigma}_Z, \varepsilon(\sigma_Z)) + G(f_j, \hat{f}_j, \varepsilon(f_j))$$

- Status presented [last week](#)



- ATLAS Tile DAQ and DVS under control
 - Few developments missing for running
- Still lot of work to do on my analysis
 - Increase the number of morphings, backgrounds
 - Higgs mass scan
 - Event selection efficiency
 - Work on sensitivity code
 - Running feynhiggs