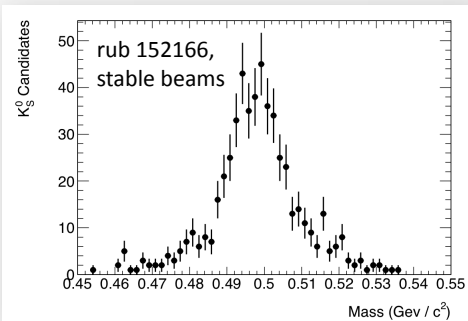


Trigger rates, Luminosity, Luminous region – Feedback from ATLAS –

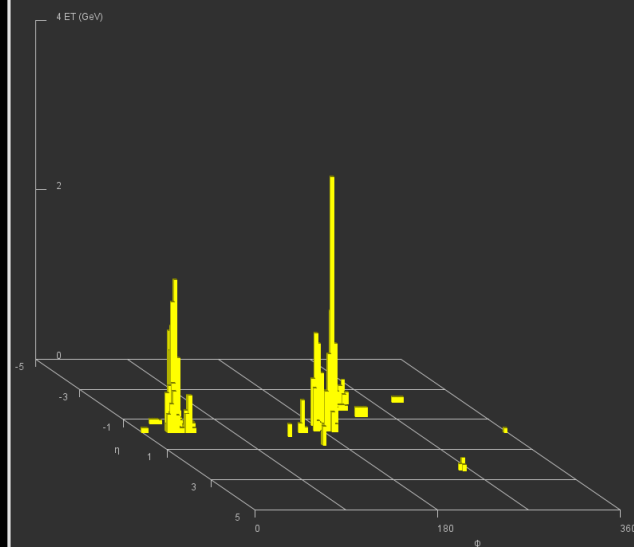
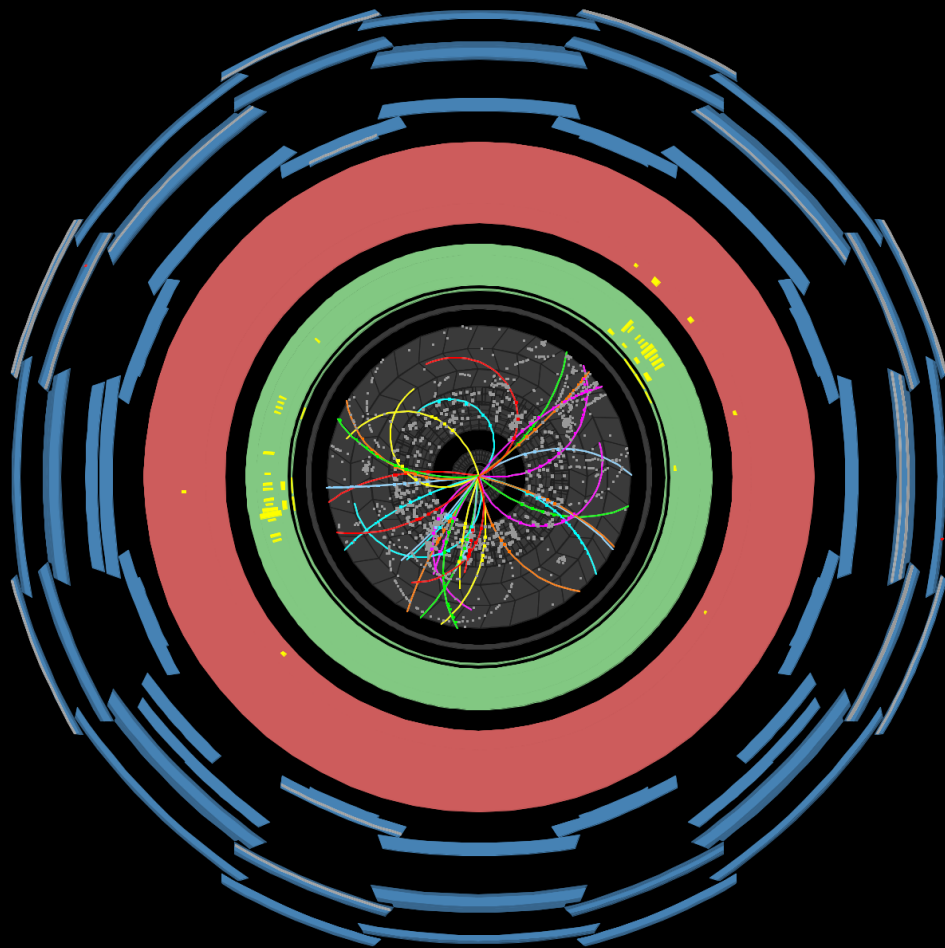
Benedetto Gorini, Martin Aleksa (CERN)

March 30, 2010



K_S peak from data
quality monitoring

<http://atlas.web.cern.ch/Atlas/public/EVTDISPLAY/events.html>

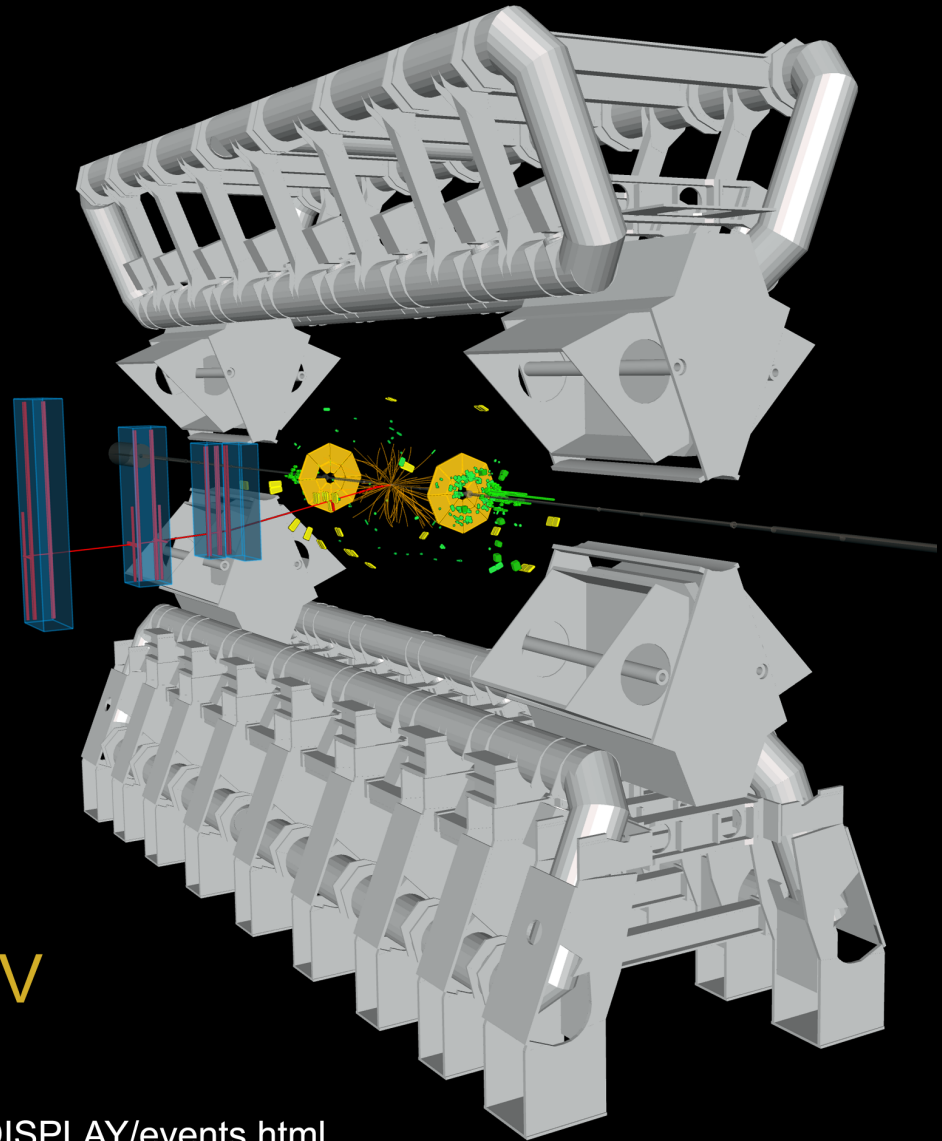
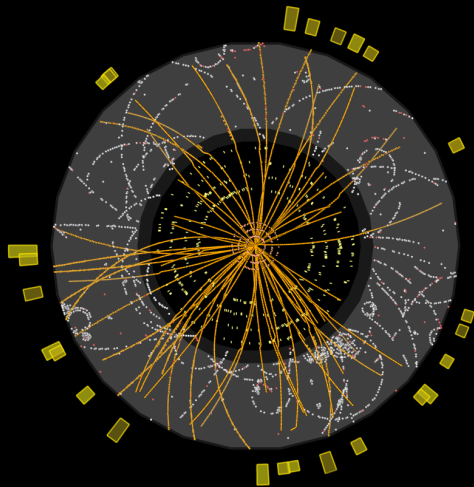


Run Number: 152166, Event Number: 347262

Date: 2010-03-30 13:05:04 CEST



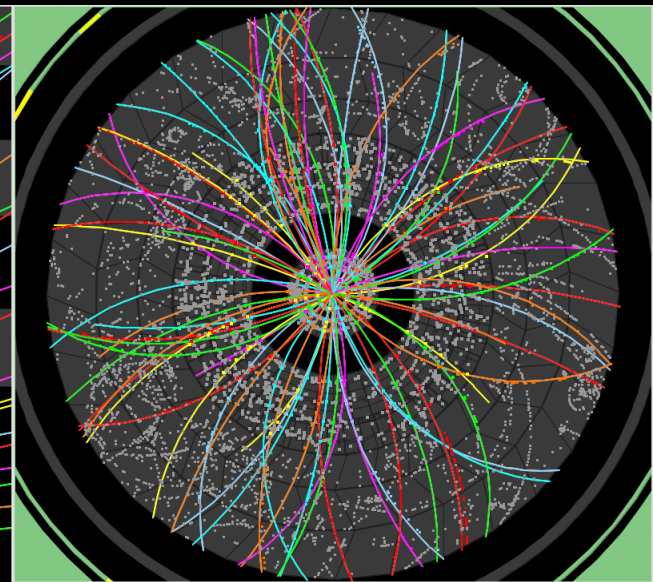
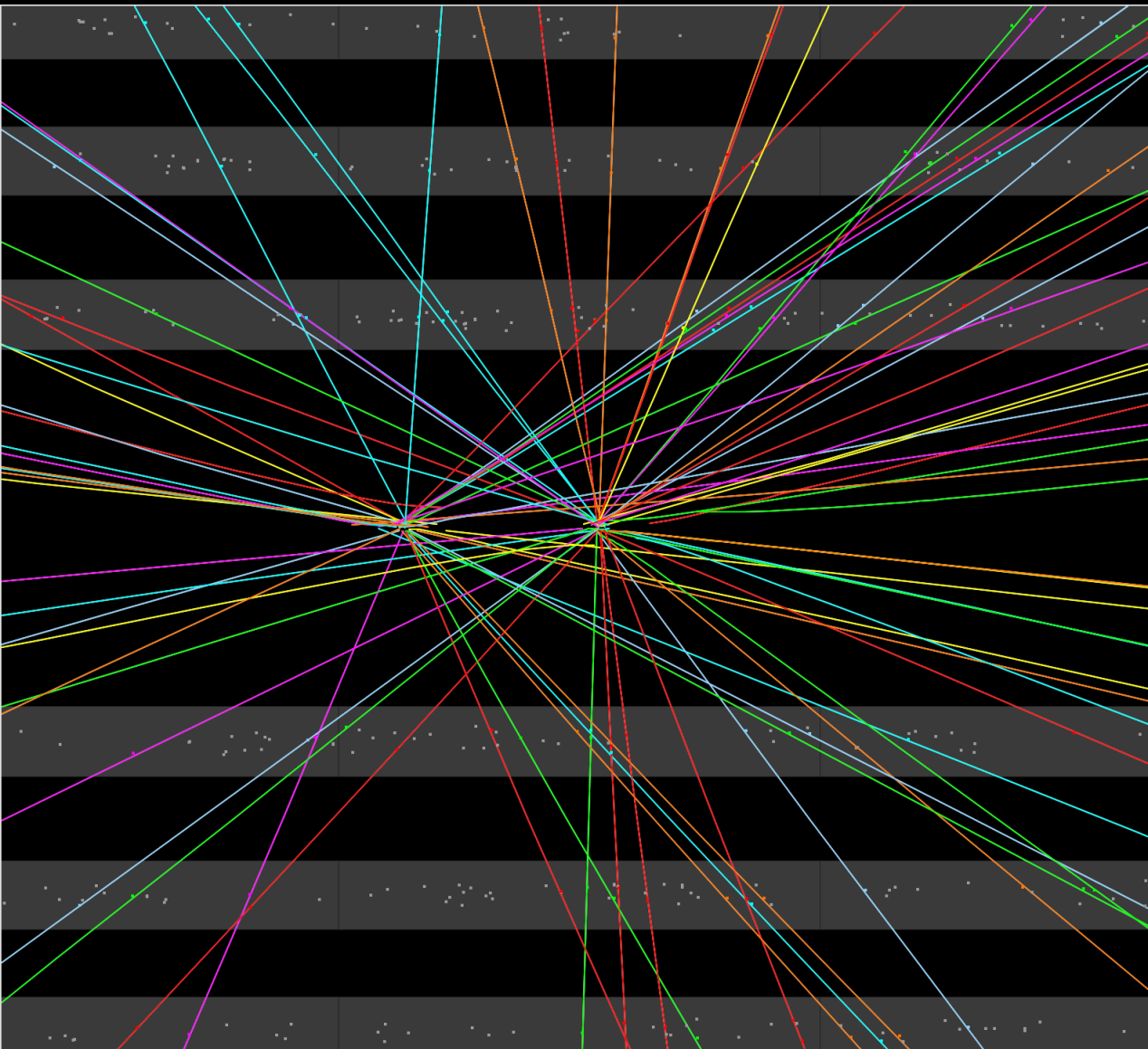
2010-03-30, 14:12 CEST
Run 152166, Event 639756



Collision Event at 7 TeV with Muon Candidate

<http://atlas.web.cern.ch/Atlas/public/EVTDISPLAY/events.html>

A pileup event in ATLAS



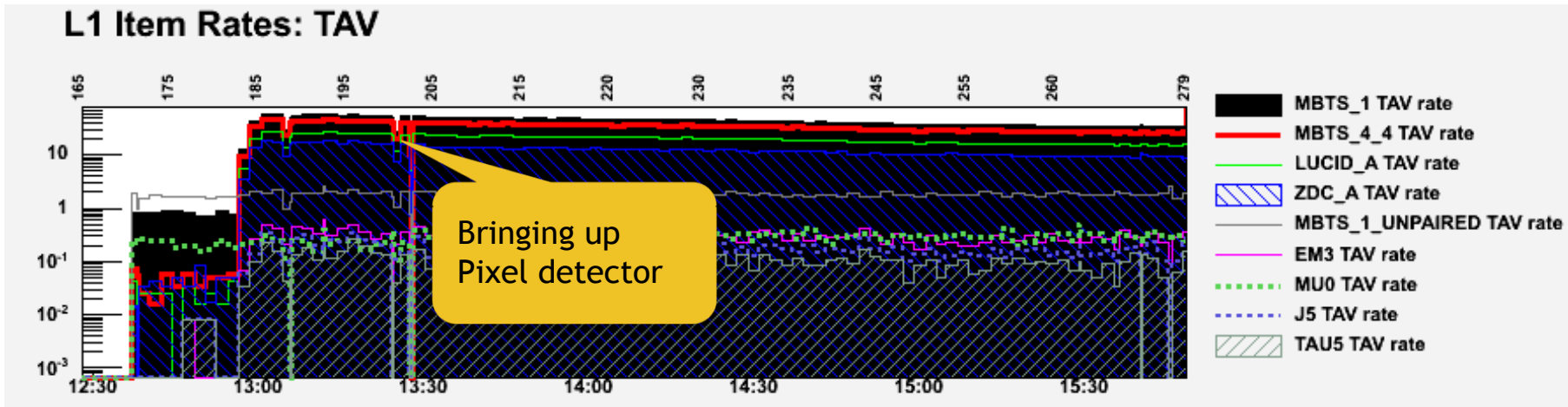
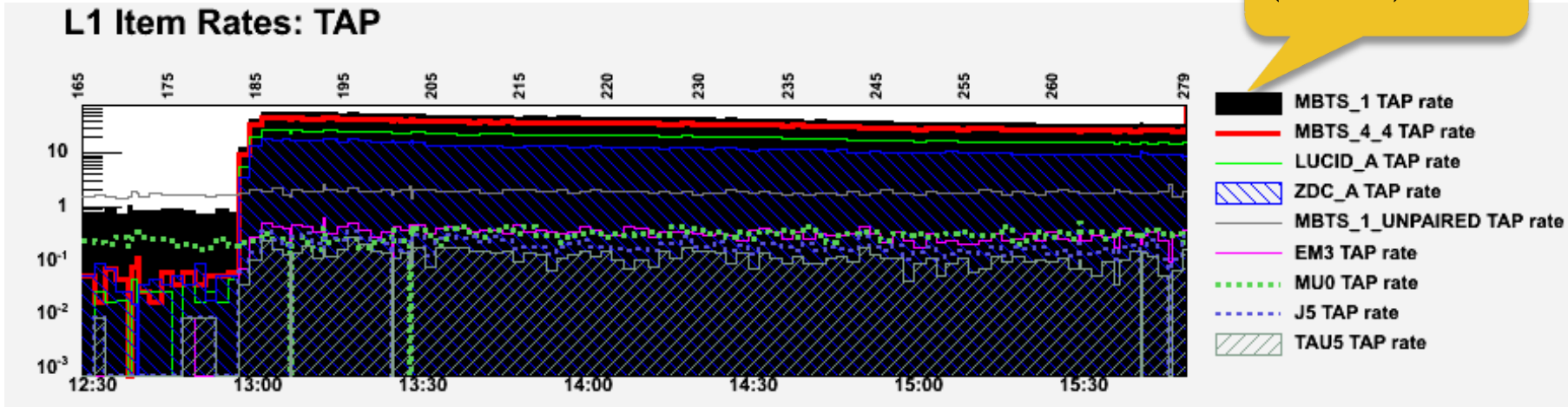
Run Number: 152166, Event Number: 467774

Date: 2010-03-30 13:31:46 CEST

Trigger rates for representative Level-1 trigger items

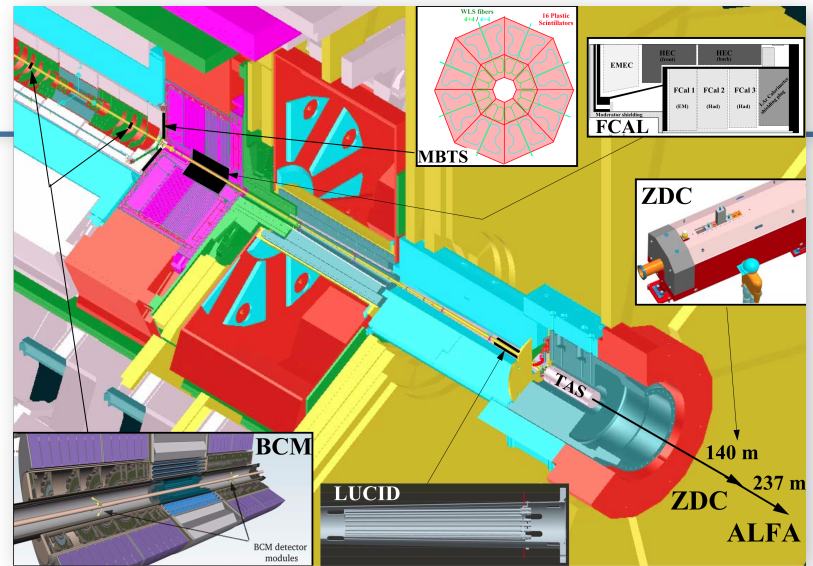
- After trigger prescale (top) and trigger veto (bottom):

Peak L1 rate
(MBTS_1): 61 Hz

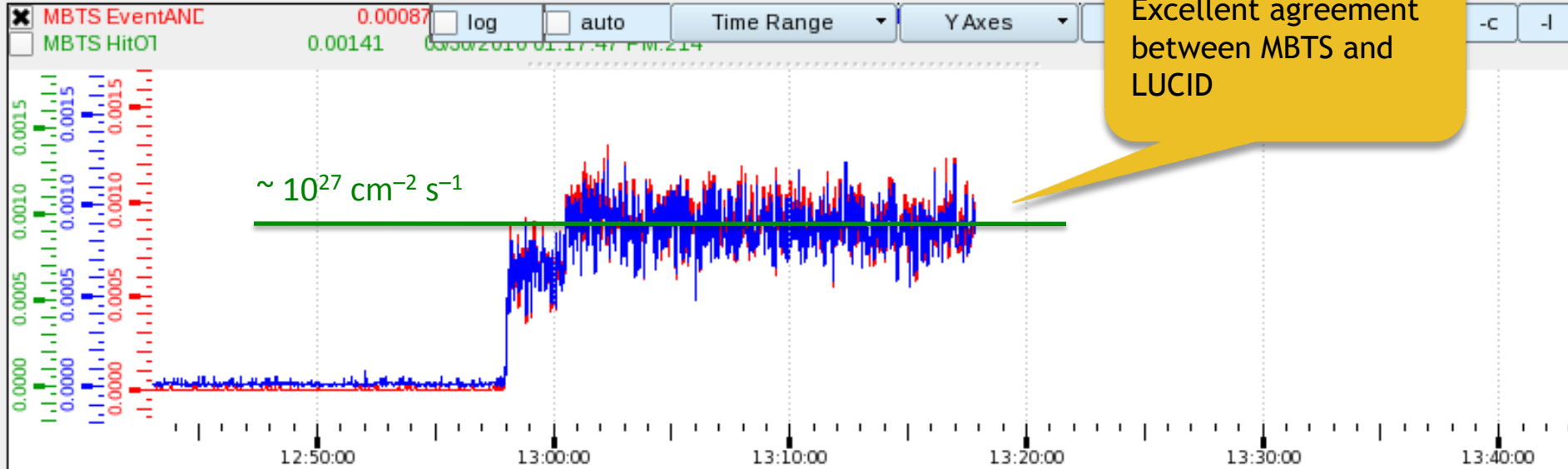


Online luminosity

- From ATLAS forward detectors

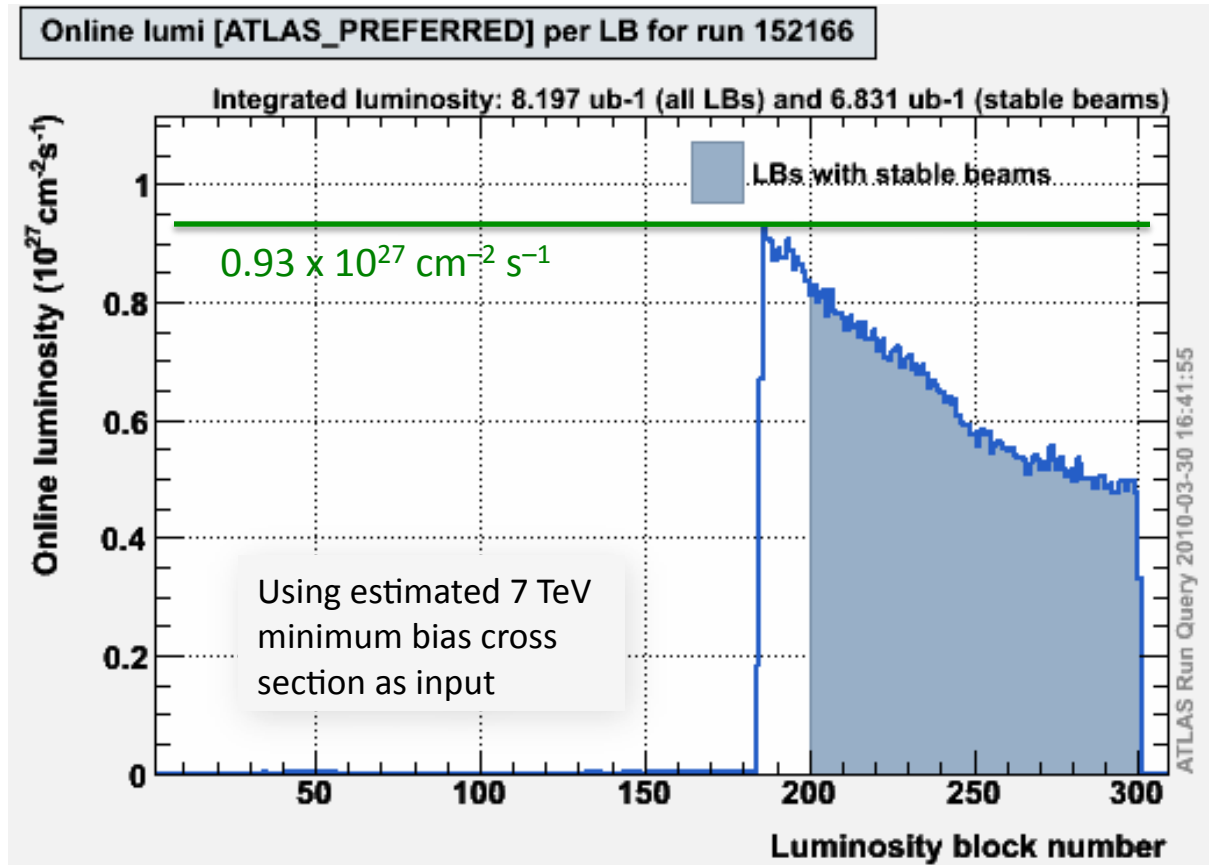


Instantaneous Luminosity



Online luminosity

- Online luminosity from MBTS counters requiring colliding bunches



Estimated peak luminosity:
0.93 x 10²⁷ cm⁻² s⁻¹

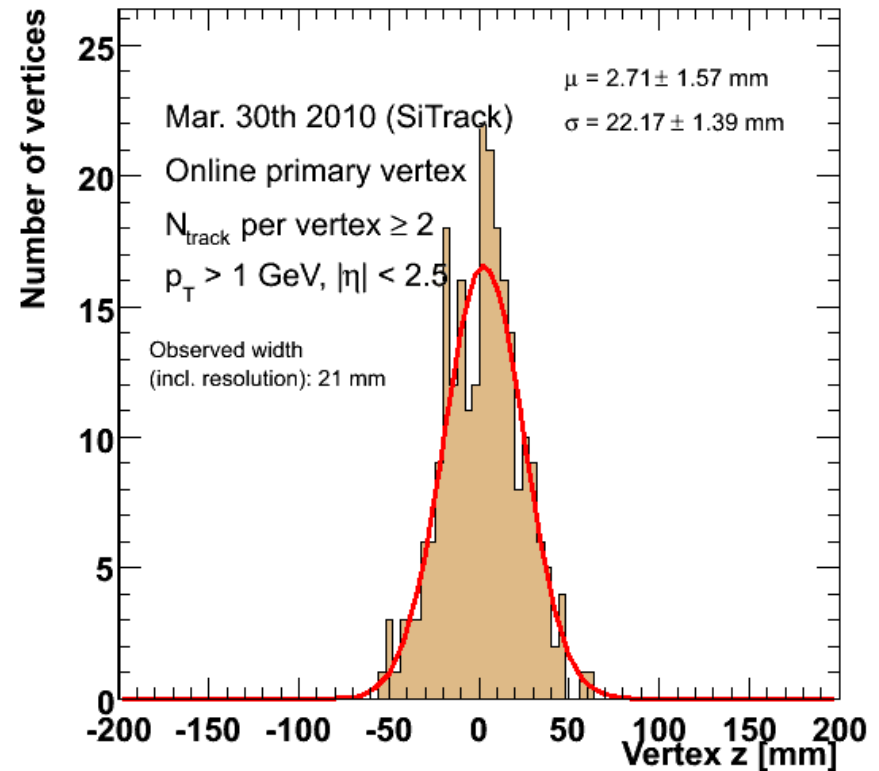
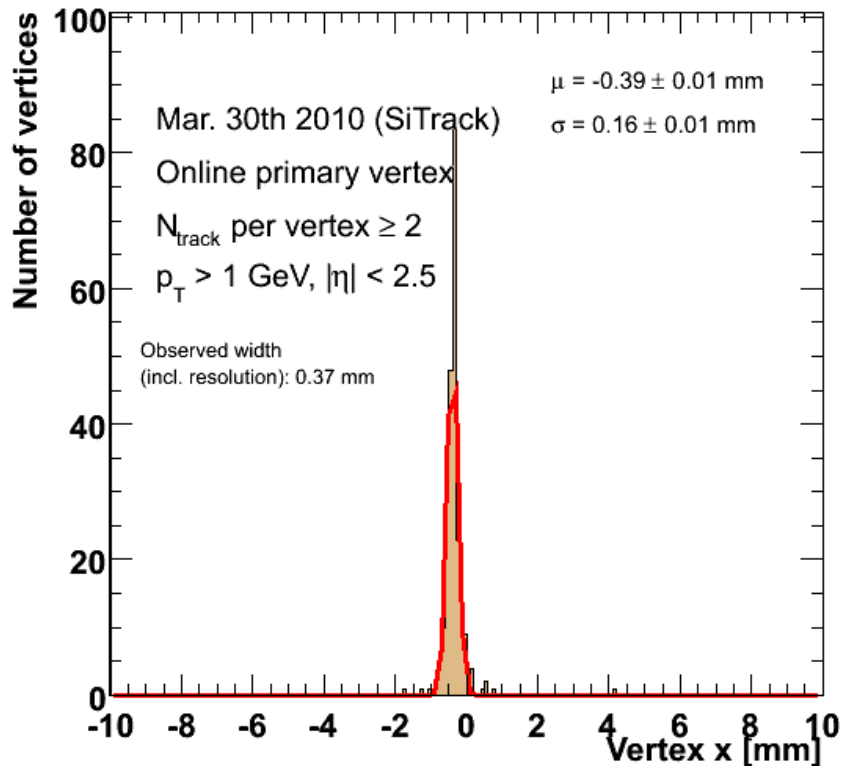
Estimated integrated
luminosity (from online):
8.2 ub⁻¹ (6.8 ub⁻¹ stable
beams)

Approximately 5h lifetime

At that moment, collected
more than half a million
collision triggers

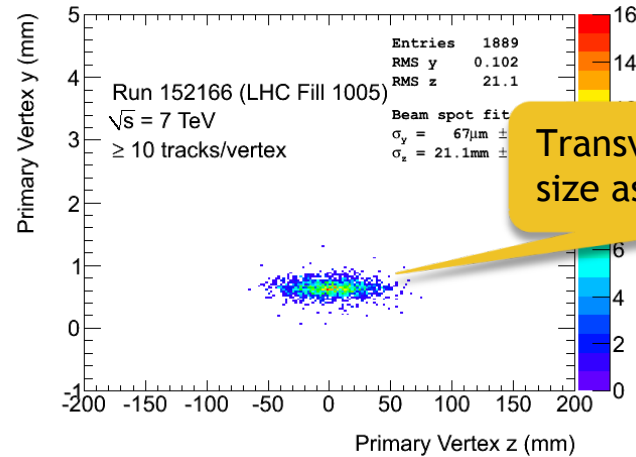
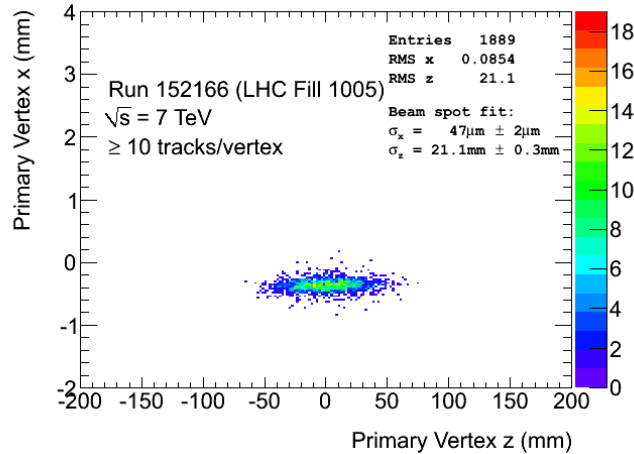
Luminous region from online fit in High-Level Trigger

- Extremely fast feedback, once HLT in operation



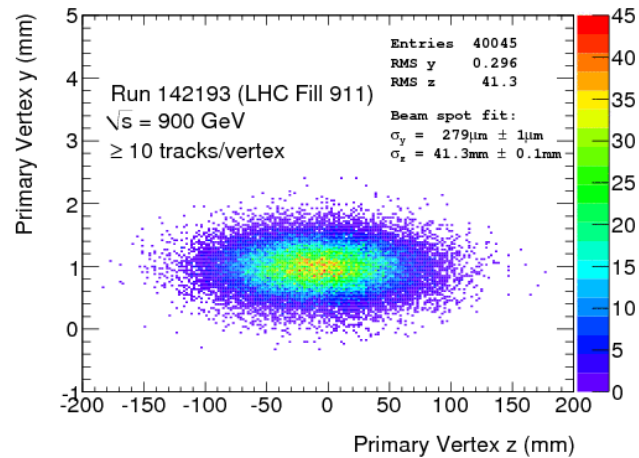
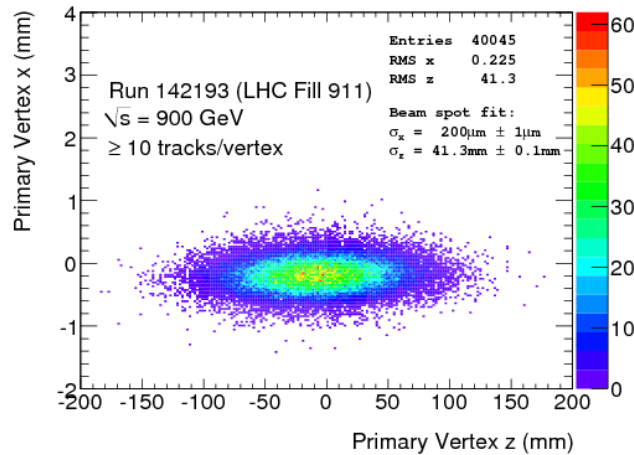
Luminous region from prompt offline processing

- 7 TeV beam spot (offline tracking resolution unfolded):



Transverse beam-spot size as expected

- For comparison, 900 GeV run (Dec 12, 2009)



Equal scales !

Luminous region from prompt offline processing

- Results from prompt beam-spot fits

Run	CM Energy	pos-X	pos-Y	pos-Z	sig-X	sig-Y	sig-Z
152166	7 TeV	-0.37	0.63	1.5	0.047	0.067	21.1
142193	900 GeV	-0.19	0.98	-8.0	0.20	0.28	41.2

Units in [mm]