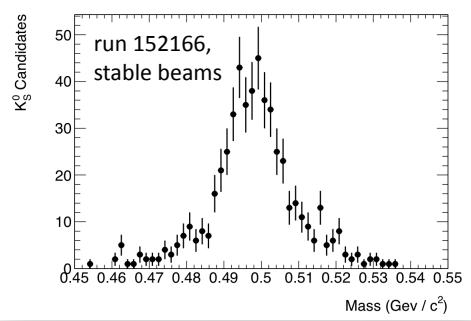
LHC Fill 1005, run 152166

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

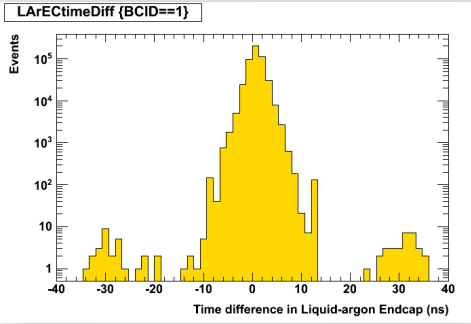
Benedetto Gorini, Martin Aleksa (CERN), on behalf of ATLAS

March 31, 2010

Shown here only the information useful for the machine – of course we have numerous beautiful physics and performance plots



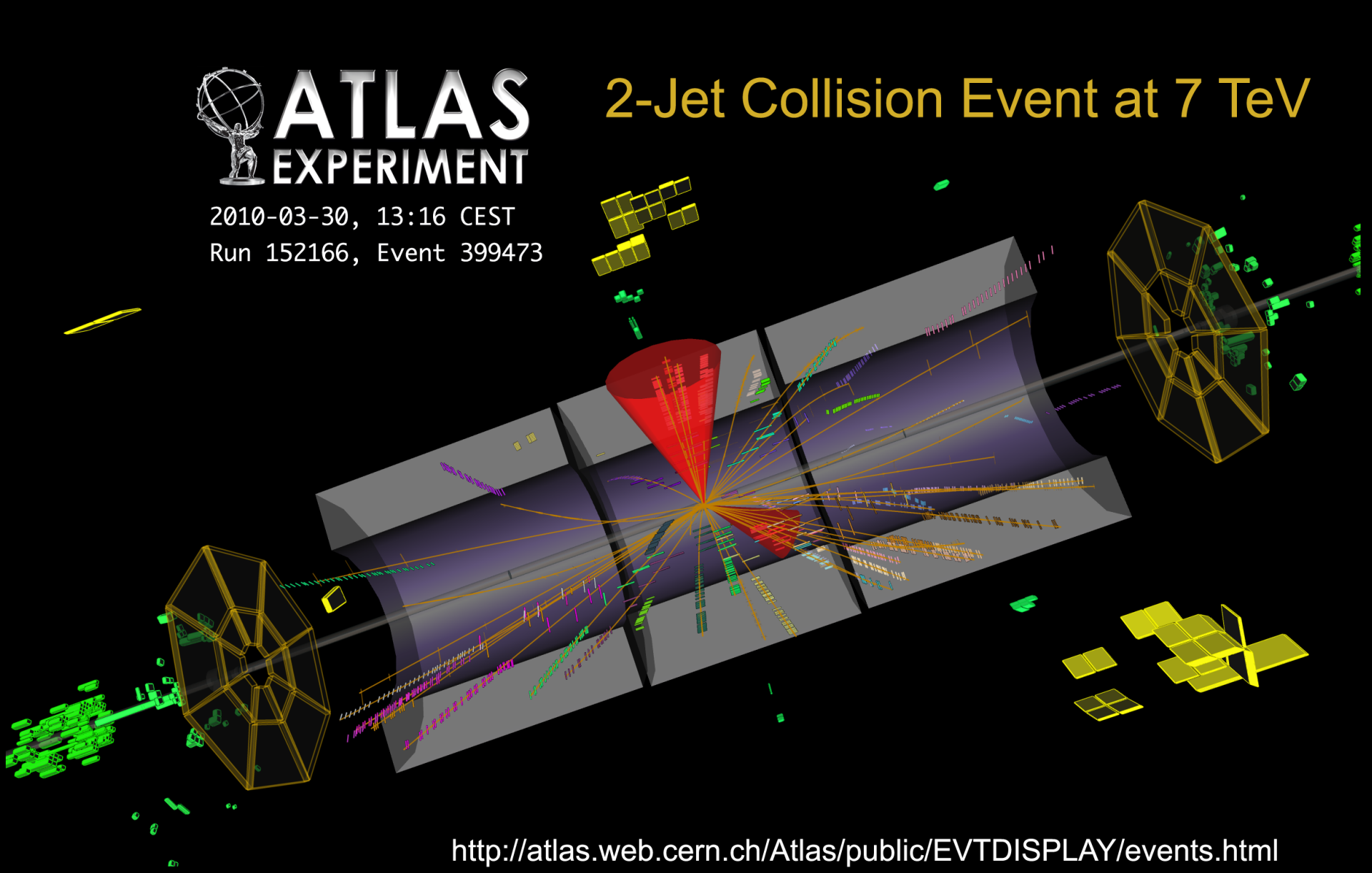
K_S peak from *data quality monitoring*



LAr-EC timing difference:
Tiny background with collision trigger (log scale!)

Bkg fraction: 4.3 10^{-4}
Time resolution: 1.3 ns

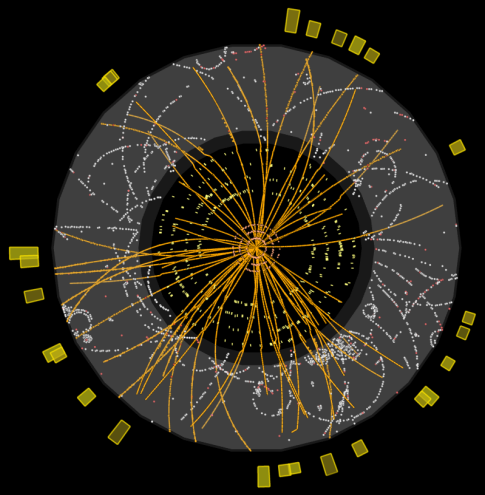
2-Jet Collision Event at 7 TeV

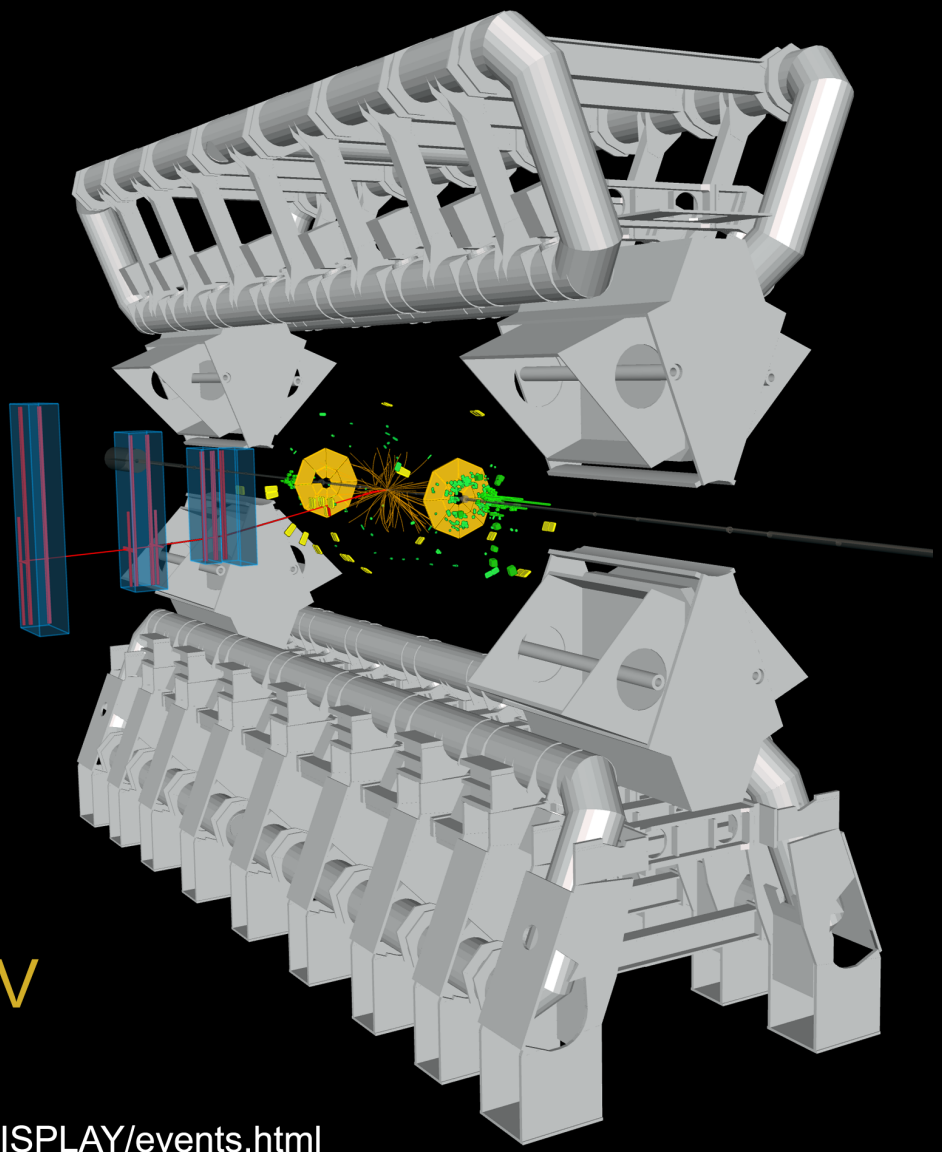


http://atlas.web.cern.ch/Atlas/public/EVTDISPLAY/events.html

ATLAS EXPERIMENT

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

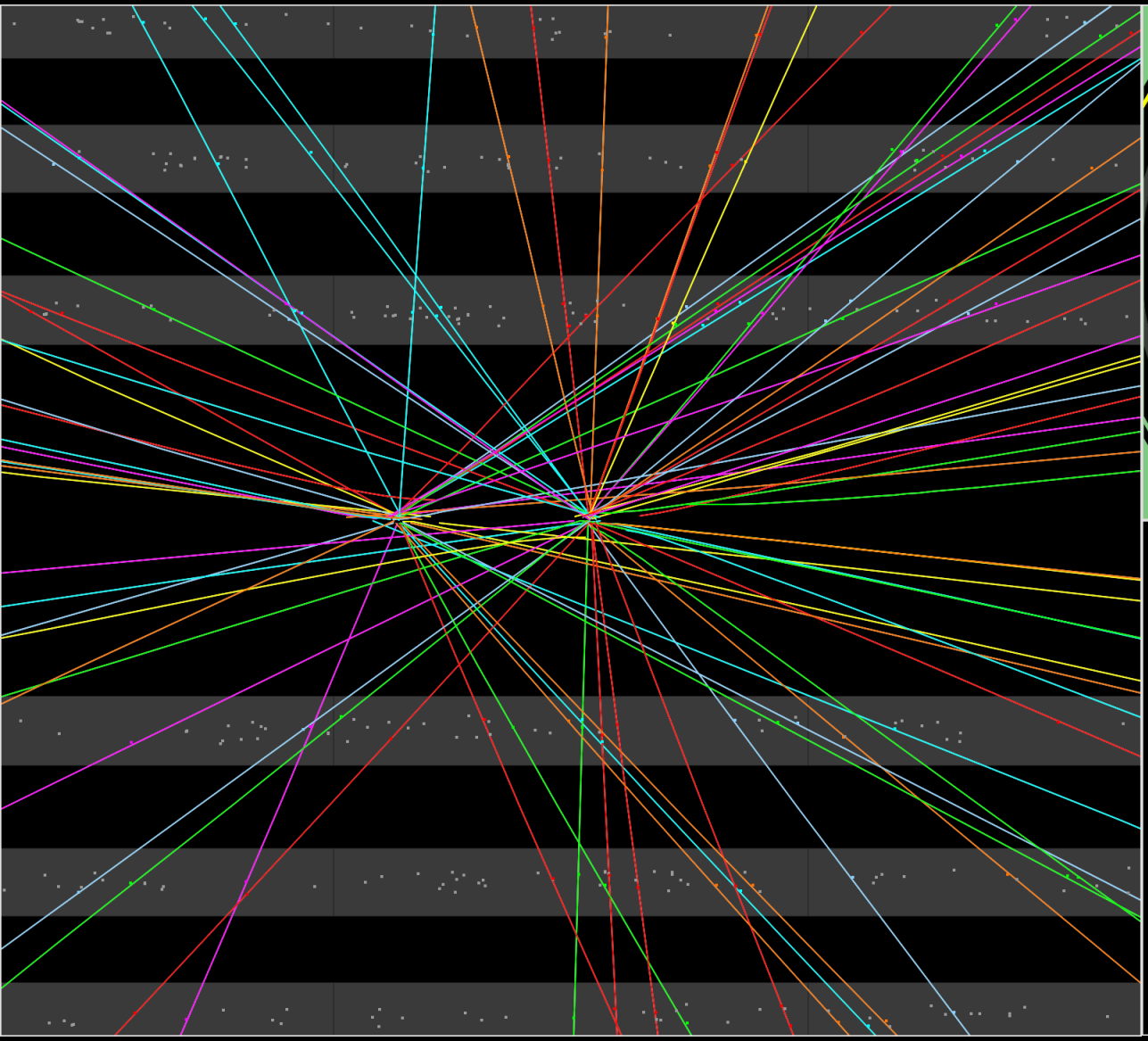


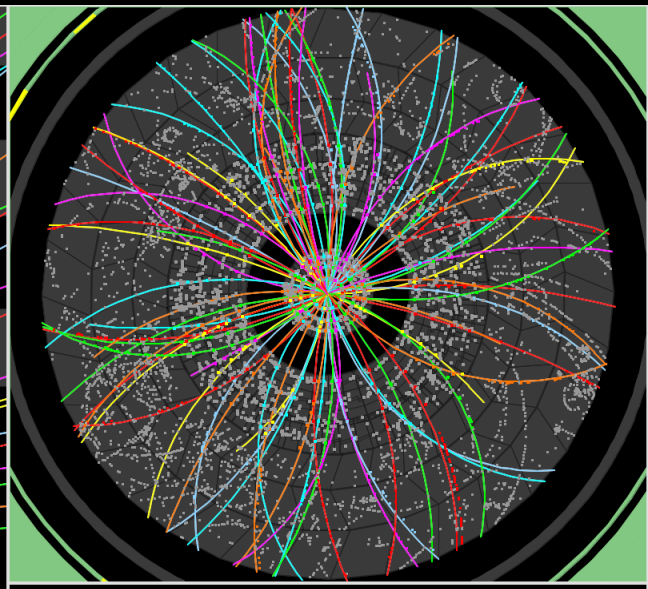


Collision Event at 7 TeV with Muon Candidate

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

A pileup event in ATLAS





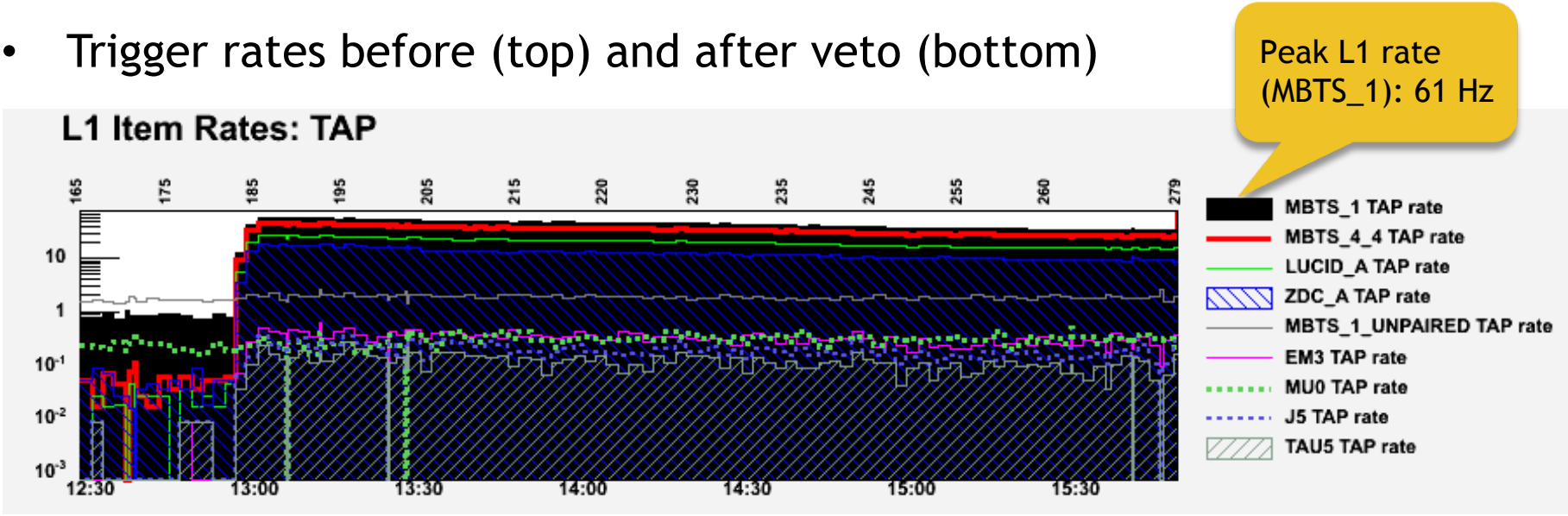
ATLAS EXPERIMENT

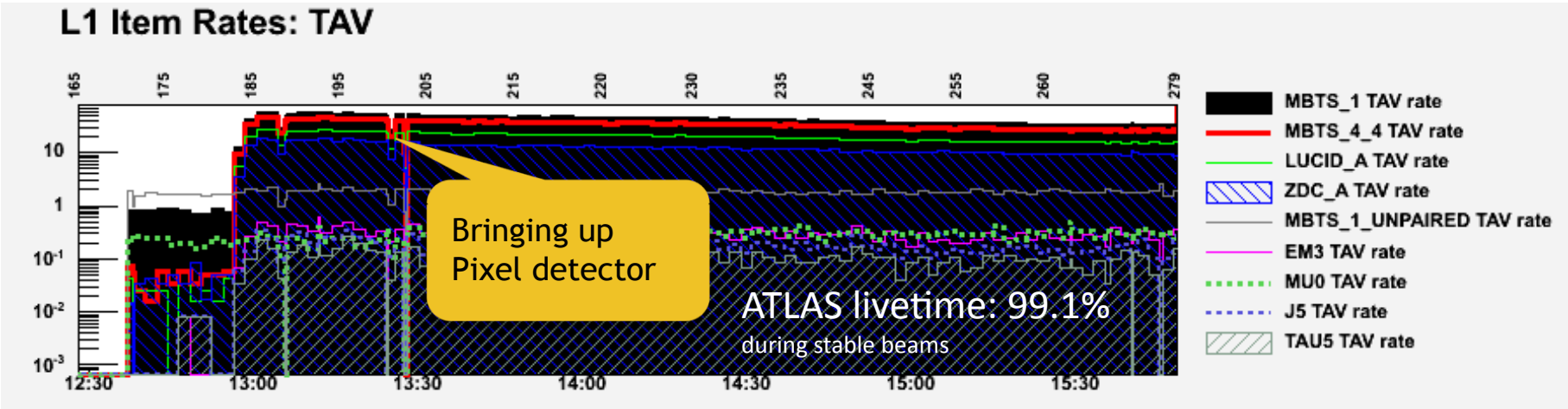
Run Number: 152166, Event Number: 467774

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

Trigger rates for representative Level-1 trigger items

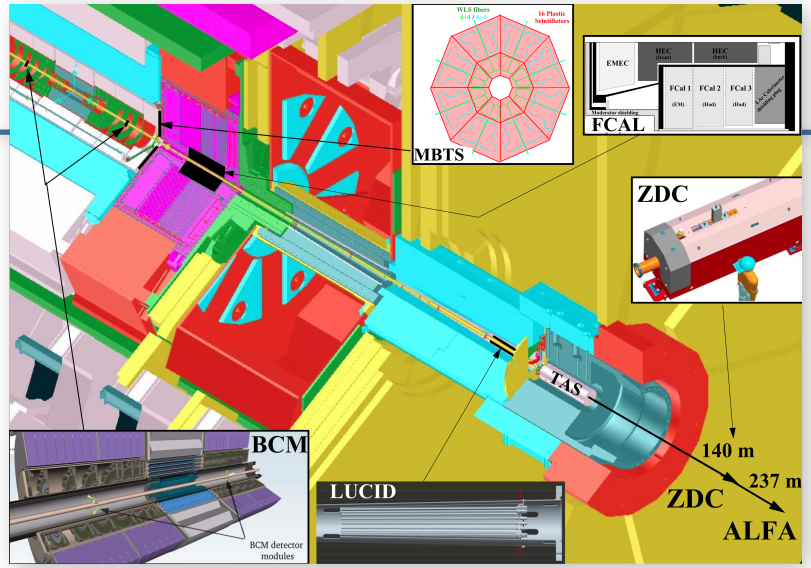
- Trigger rates before (top) and after veto (bottom)

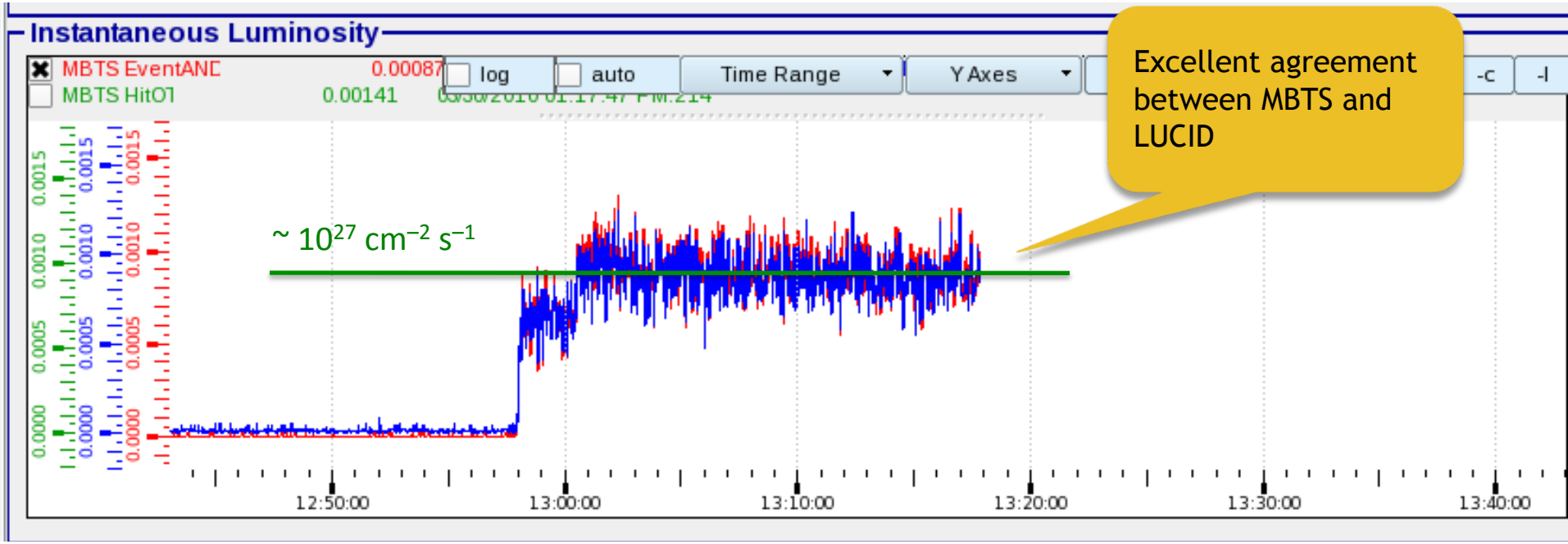




Online luminosity

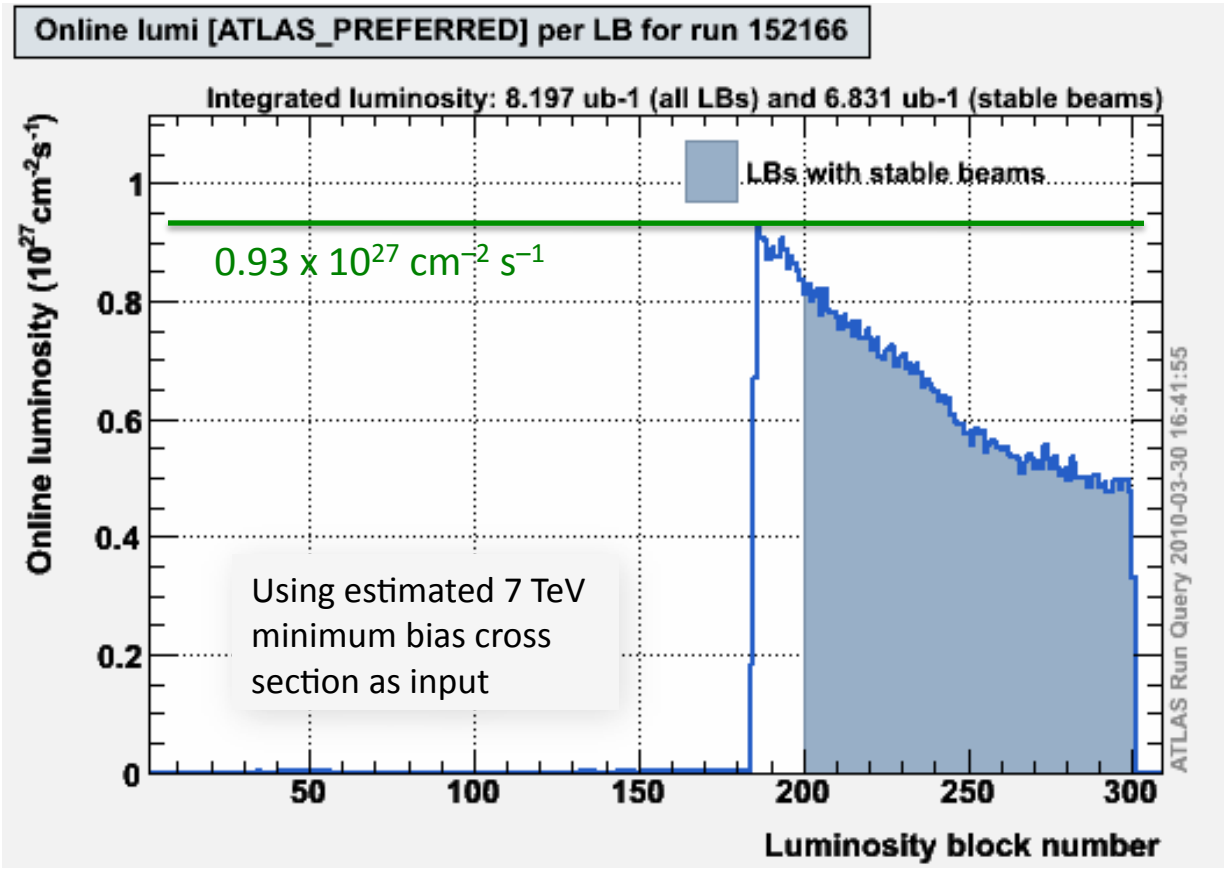
- From ATLAS forward detectors





Online luminosity

- Online luminosity from MBTS counters requiring colliding bunches



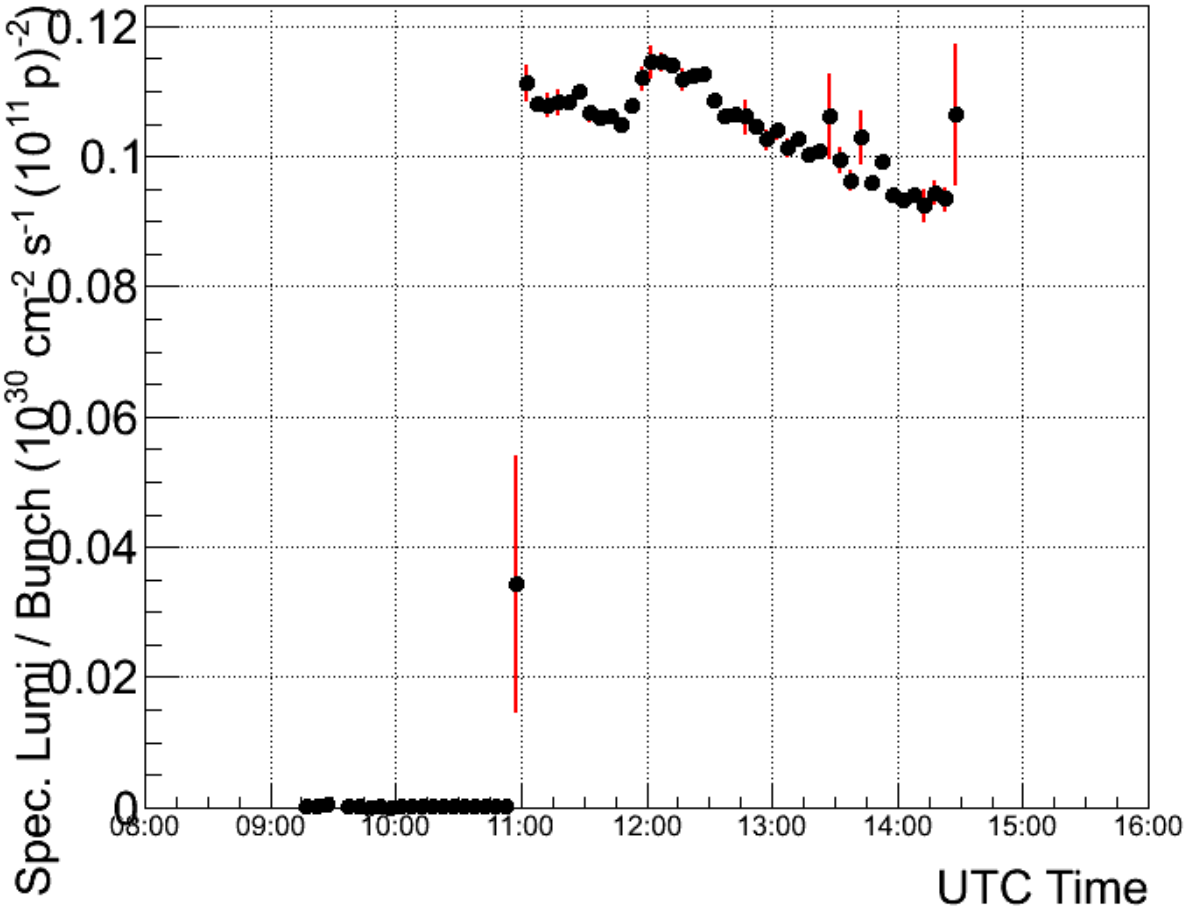
Estimated peak luminosity: 0.93×10^{27} cm^{-2} s^{-1}

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

Approximately 5h lifetime

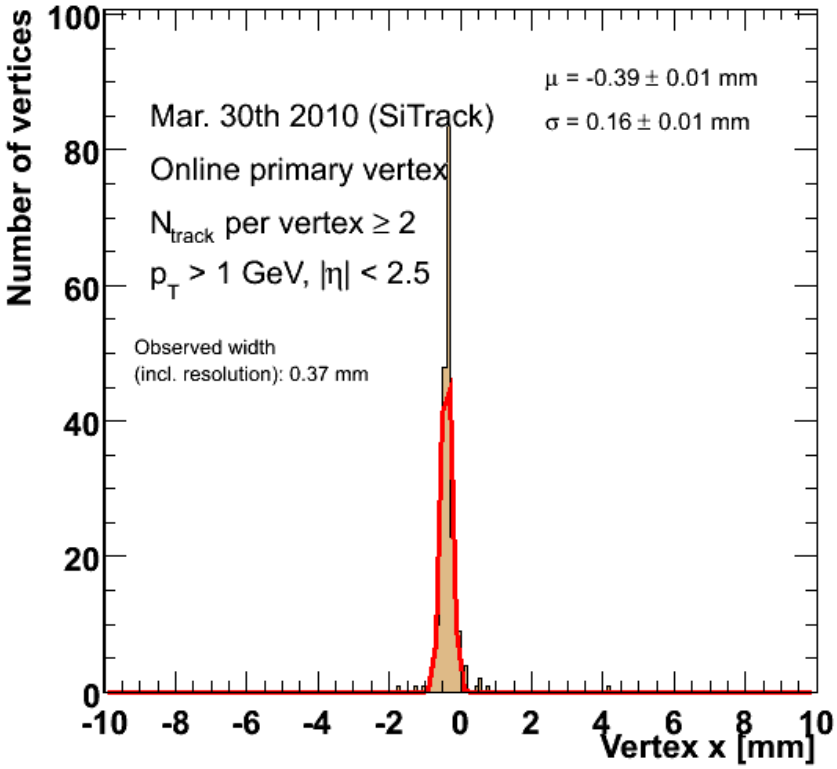
Collected 462k collision events, 387k during stable beams [MBTS_1_1 trigger]

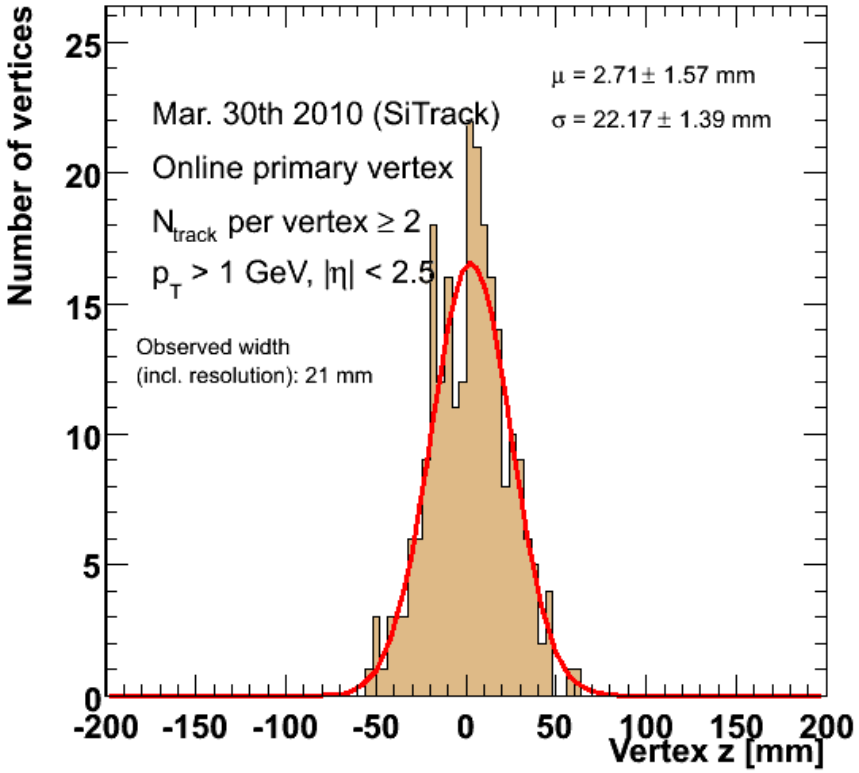
Online specific luminosity



Vertex coordinates from High-Level Trigger algorithm

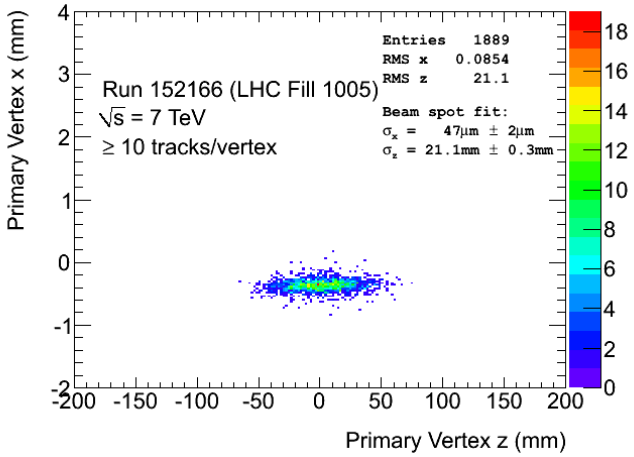
- Extremely fast feedback, once HLT came in operation

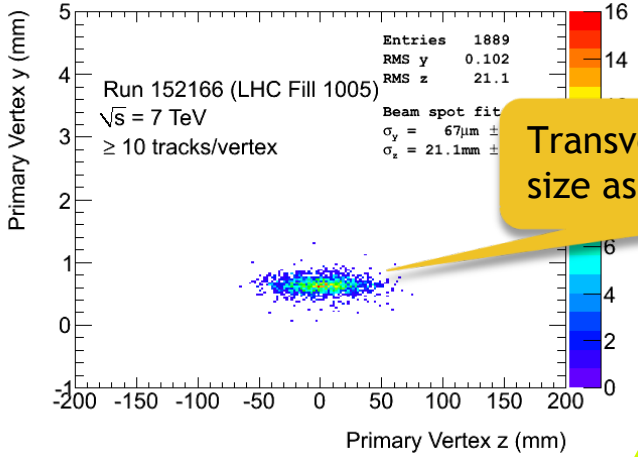




Luminous region from prompt offline processing

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

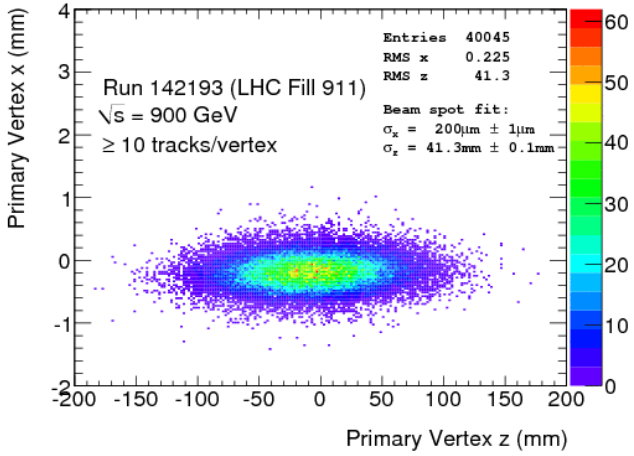


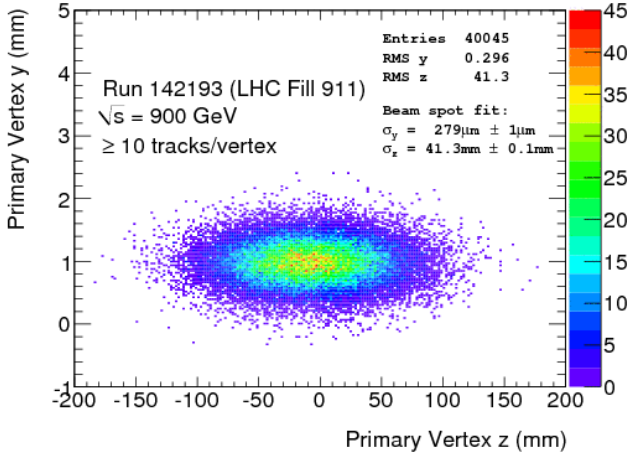


Transverse beam-spot size as expected

Equal scales !

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





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]

Many thanks indeed on behalf of the entire ATLAS Collaboration for the fantastic performance !