Special Report

EPS Early Posters Showing Up to 1.21/fb from ATLAS

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Abstract

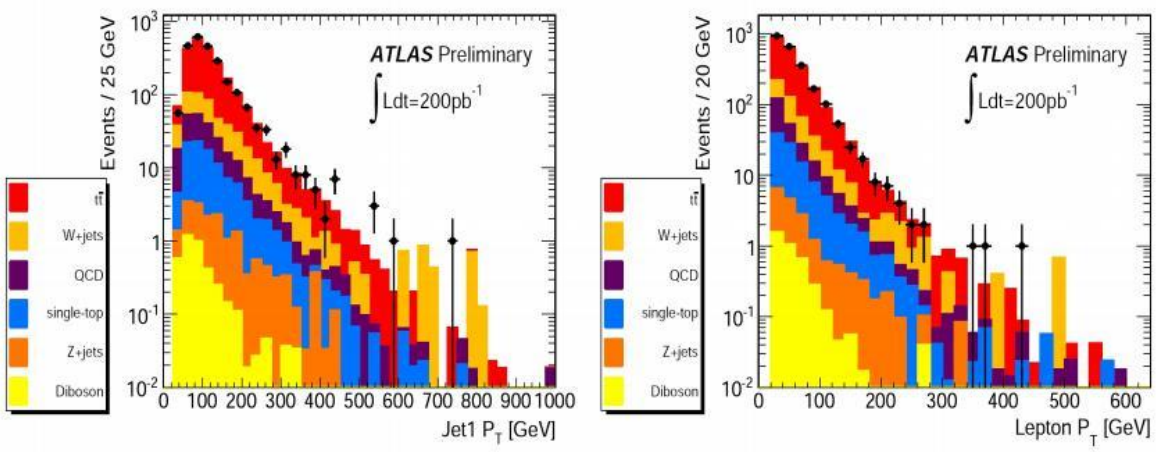
The Europhysics HEP conference (EPS) starts in earnest on July 22, 2011 with a good chance that some very strong results on Higgs searches will be revealed. There is likely to be either a plausible signal or an extensive exclusion, and maybe both.

Key Words: LHC, ATLAS, Higgs, ESP-HEPS, 2011.

The conference will include hundreds of talks during parallel sessions followed by the plenary talks. In addition there will be some posters which traditionally display some less important results on one poster-size page so that anyone interested can go and talk to the authors about them.

The LHC collaborations are being careful not to reveal their best results in advance of the big show, but some posters have already been made available and some are not so unimportant. Already five of them are showing plots using up to 1.21/fb of recorded data from ATLAS. Here are some brief summaries.

ttbar resonance searches in ATLAS by Reina Camacho: reports a search for heavy particles decaying into t-tbar pairs with 200/pb worth of data. At least some of these results were shown at PLHC last month but nice colourful plots are always worth looking at again.



Leading jet (left) and charged lepton (right) p_T distributions after all cuts (electron and muon channels combined). Statistical uncertainties only. ***The data is well described by Monte Carlo prediction.***

Measurement of the top quark pair production cross section in dilepton final states with ATLAS by Hovhannes Khandanyan: measures the top quark cross-section using 0.7/fb.

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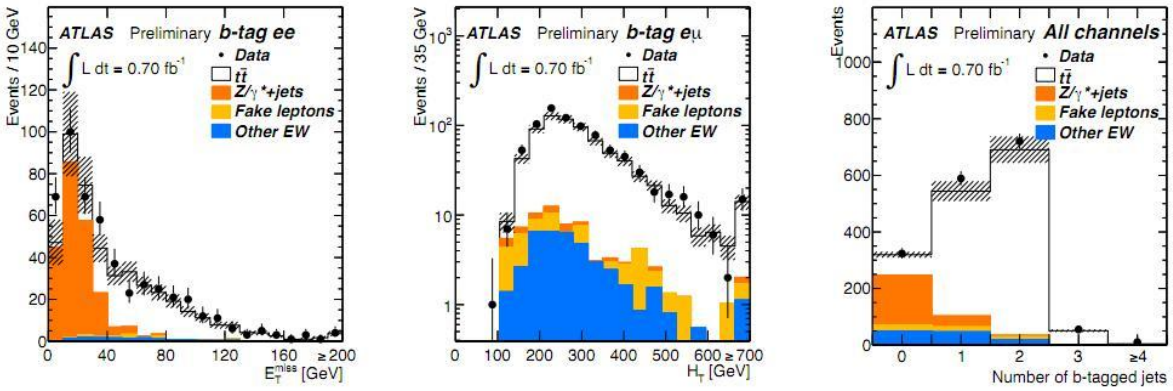
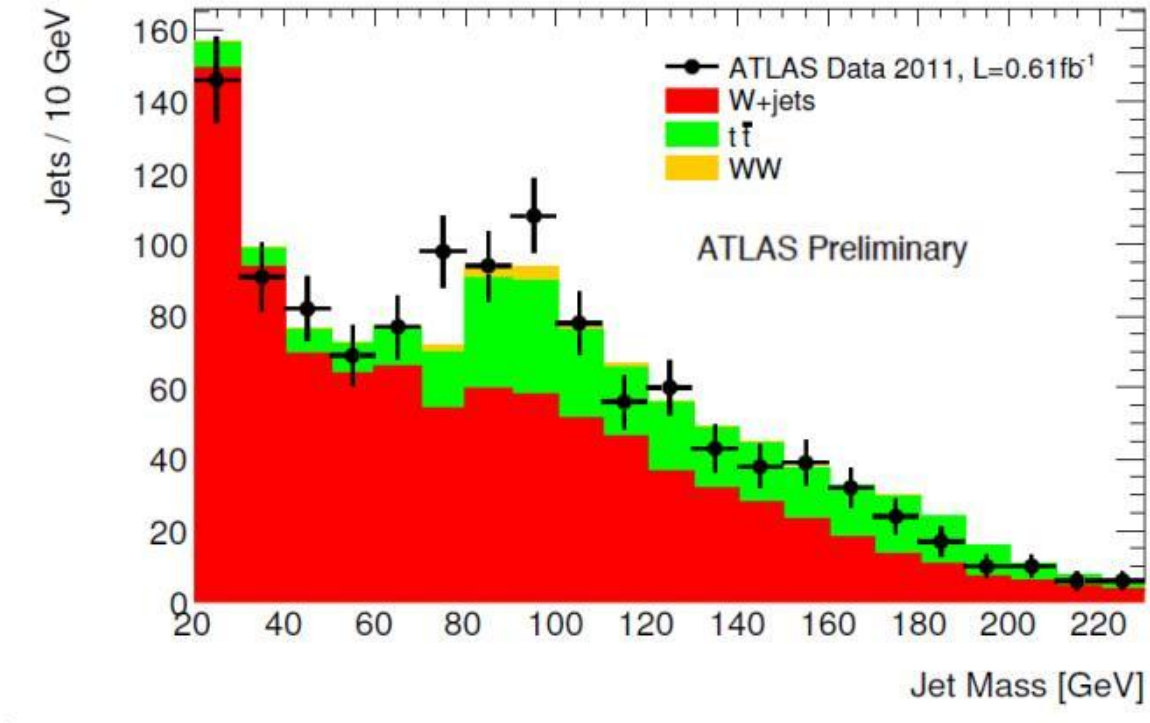
The answer is 176 ± 6 (stat) ± 10 (syst) ± 6 (lum) pb

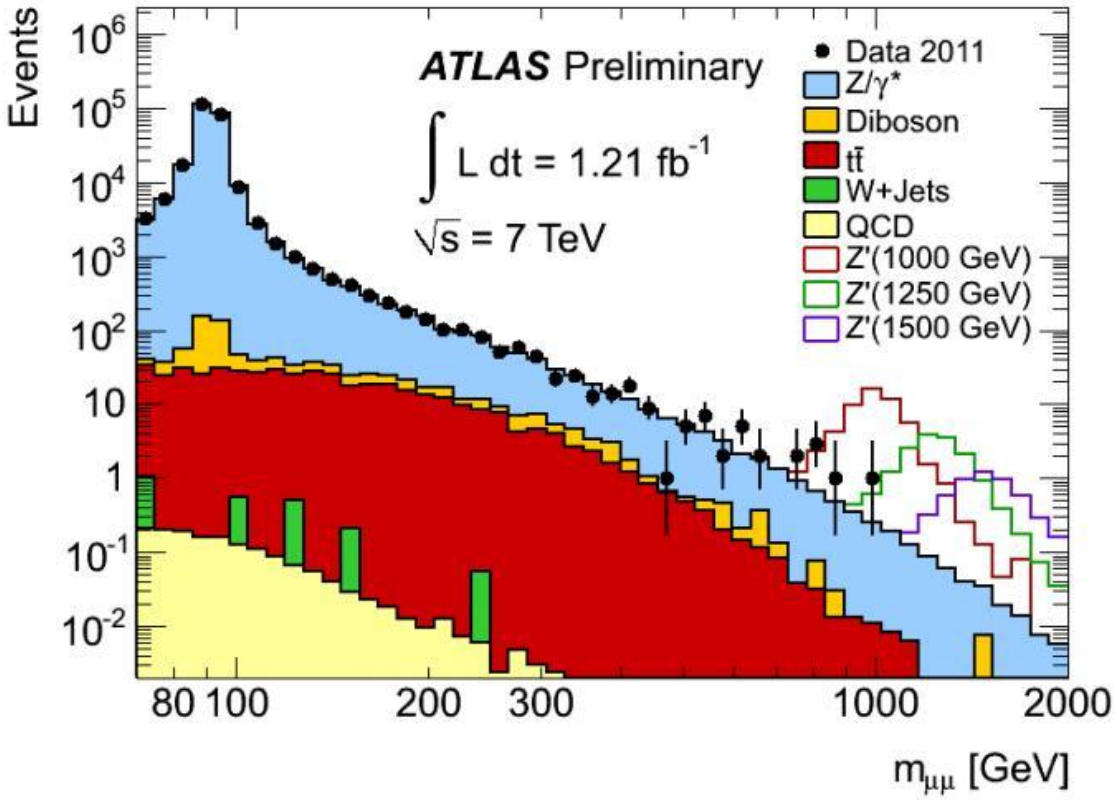
This poster refers to an ATLAS conference note number 117 whereas the latest note available is number 94. This gives an indication of just how many new results are being held back to release in the next few days.



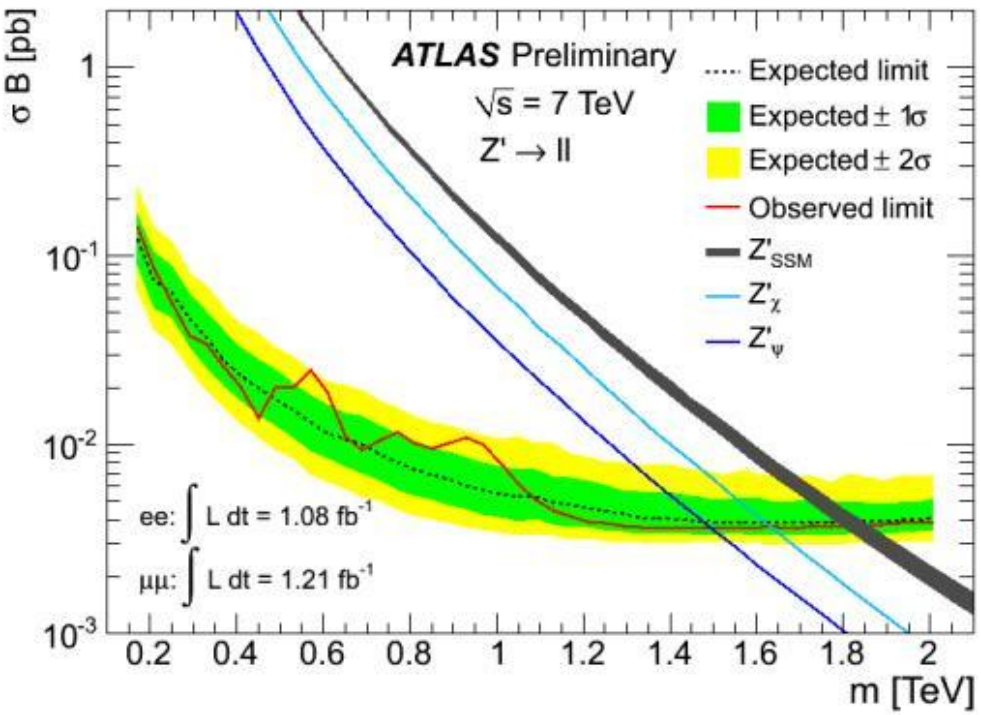
First measurements of jet substructure in ATLAS by David Miller: is a technical note about how to squeeze more information out of QCD jets. The poster includes this plot using 0.6/fb



Search for high mass dimuon resonances in ATLAS by Simon Viel: ATLAS must be congratulated for showing plots using almost all the data recorded before the conference, 1.21/fb no less.



Search for high mass dielectron resonances at ATLAS by Sarah Heim: is doing the same thing using electrons instead of muons. 1.08/fb is searched for dielectron resonances.



Both these last two posters report that no new resonances are found and new limits are set on Z' and Randall-Sundrum gravitons

	Observed limit mass [TeV]	Expected limit mass [TeV]
$Z'_{SSM} \to e^+e^-$	1.69	1.68
$Z'_{SSM} \to \mu^+\mu^-$	1.60	1.60
$Z'_{SSM} \to \ell^+\ell^-$	1.83	1.82
	Observed limit mass [TeV]	Expected limit mass [TeV]
$G^* \to e^+e^-$	1.50	1.49
$G^* \to \mu^+\mu^-$	1.45	1.44
$G^* \to \ell^+\ell^-$	1.63	1.61

Dielectron, dimuon and combined 95% confidence level mass limits on Z'_{SSM} and G* with a coupling of $k/m_{Pl} = 0.1$.

If any more posters with new LHC data turn up today I will update this post.

References

1. http://blog.vixra.org/2011/07/20/eps-early-posters-showing-up-to-1-21fb-in-atlas/