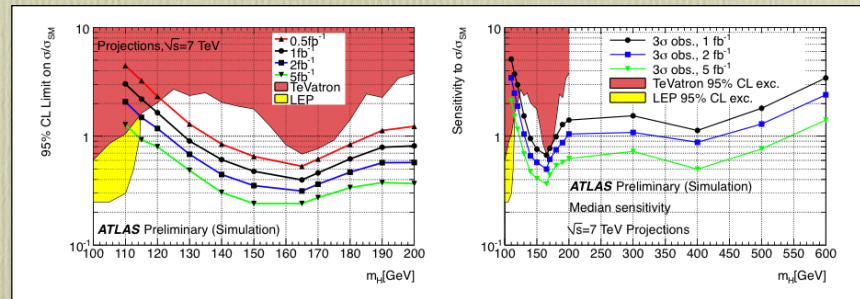




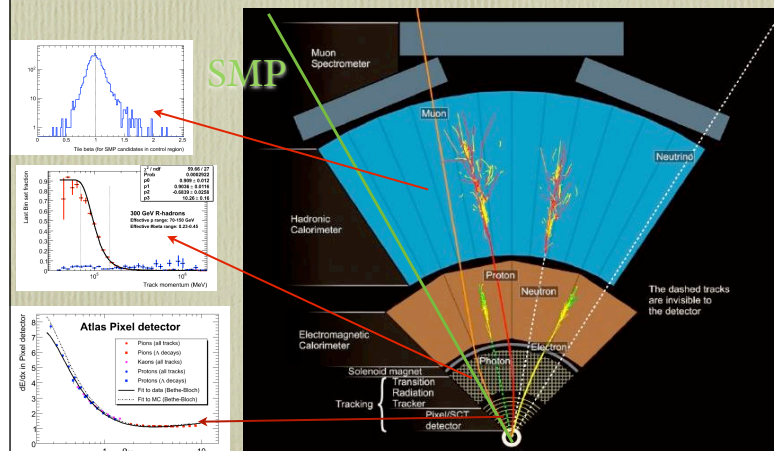
Peter Hansen, 25/3-2011

Higgs search 2012



- LHC and Atlas performed well in 2010 and have headroom for further improvements.
- This means that a realistic goal is to close the Higgs window down to the LEP limit.
- We will contribute with a new approach to the hadronic and leptonic tau channels.

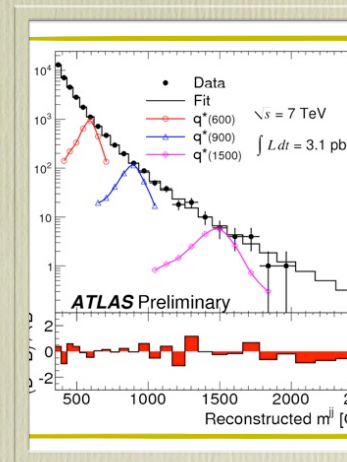
Stable Massive Particles



In some models (eg split SUSY) the gluino is metastable.
 An NBI analysis put mass limit to $\sim 300-600$ GeV. We will
 extend it into the TeV range in 2012.

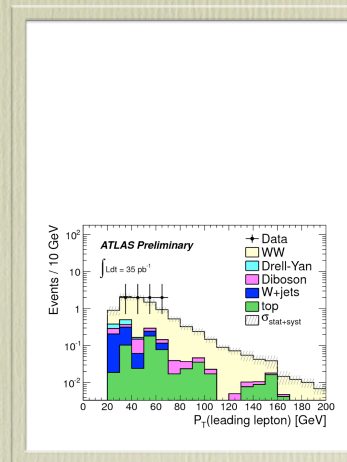
Quark substructure

- Limits on quark substructure (angular distribution and resonance structures) will be extended to $\sqrt{s} = 3$ TeV in 2012.



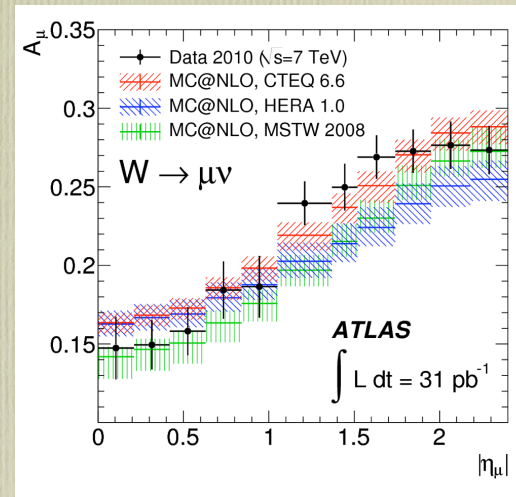
Dibosons

- The final state of two leptons and missing p_T or that of four leptons get contributions from only a few SM processes - plus new physics. A combined fit may increase sensitivity



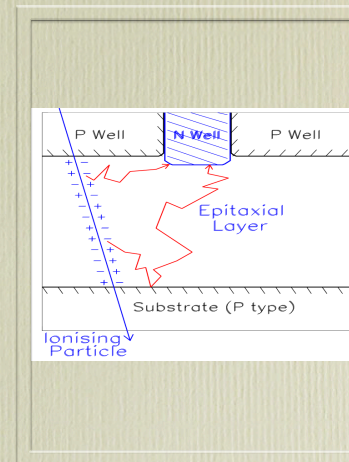
SM parameters

- In collaboration with theorists, we will constrain SM parameters using LHC data:
- Parton density functions.
- W mass
- Zee forward-backward



CMOS chip beam telescope

- Possibility of a totally integrated detector chip (System-On-Chip). Aim is a 20 micron thick, cheap pixel sensor with 1.5 micron accuracy.
- Collaboration with Strassbourg and Aarhus.
- For NA63, testbeams, CLIC....



Other projects

- Track-trigger for LHC upgrade.
- Cosmic ray stations for use of schools. Three stations mounted at the NBI complex. Dedicated outreach person in Aarhus (Uffe Amelung Petersen) integrates data in HiSparc.
- “High technology” proposal (computer centres in ship containers).

The NBI Atlas group

- 4 permanent + 1 emeritus (KU financed)
- 8 post doc (Discovery, NICE, Lundbeck, Freja, Steno, Centre for scientific computing)
- 10 PhD (same sources + Bergen university)
- Hope in 2012 to NICE finance: 1 PhD (Almut Pingel, Higgs in tau hadronic channel - with 1/3 cofinancing from NBI) and 1 post-doc (NN, hardware projects and track-trigger).

NBI-ATLAS budget 2012

- Post doc kkr 536
- PhD student kkr 300 (hope 1/3 cofinance)
- Equipment kkr 200 (cut down 35%)
- Travel kkr 864 (cut down 12%)
- M&O kkr 800 (747 in 2011)
- Total is 2696 (17% down from (2009+2010)/2)