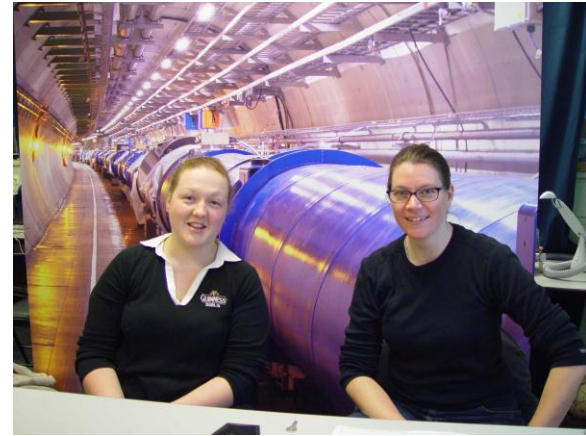


IPPOG International Masterclasses



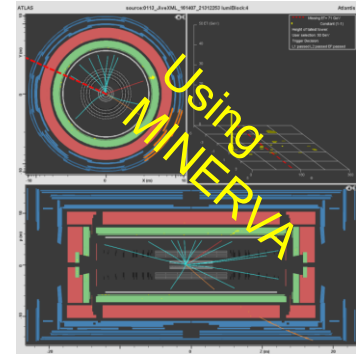
Report of New Measurements Working Group

ATLAS W-Path

- 995 *real data* preselected events ($\sim 200 W \rightarrow \ell\nu$)
- W charge asymmetry \rightarrow structure of the proton
- 5 *simulated* $H \rightarrow WW$ \rightarrow search for yet undiscovered

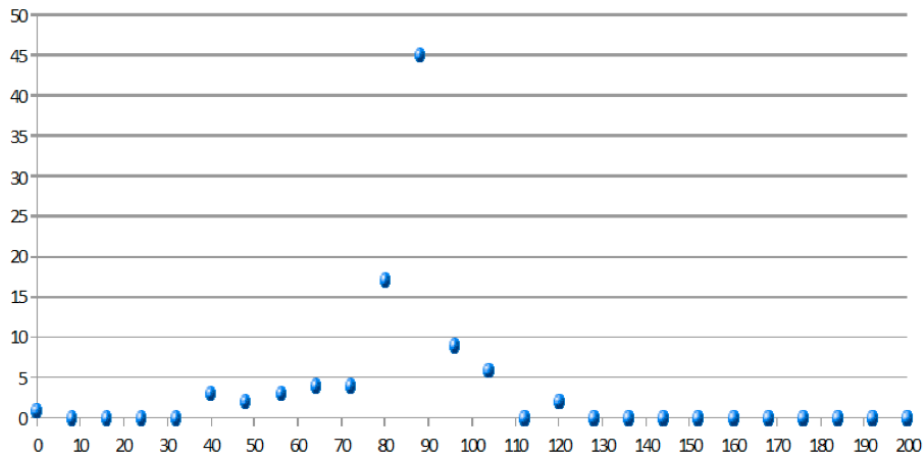
Plans for 2012:

- 10 000 *real data* preselected events ($\sim 2000 W \rightarrow \ell\nu$)
 - different set of data for each institute, can be compared for consistency and combined in the video conference.
 - include 250 *candidates* $WW + 0$ jets at an early stage of the selection, (i.e. including considerable) background corresponding to about 0.3 fb^{-1}
 - too early for 2012? Fallback solution: MC data
- \rightarrow students measure opening angle between 2 leptons and combine their results in histogram for angular distribution



ATLAS Z-Path

- 700 *real data* preselected events ($\sim 300 Z \rightarrow \ell\ell$)
- Find Dilepton events \rightarrow calculate invariant mass
- 300 *simulated* $Z' \rightarrow \ell\ell$ \rightarrow search for yet undiscovered
- Derive mass spectrum

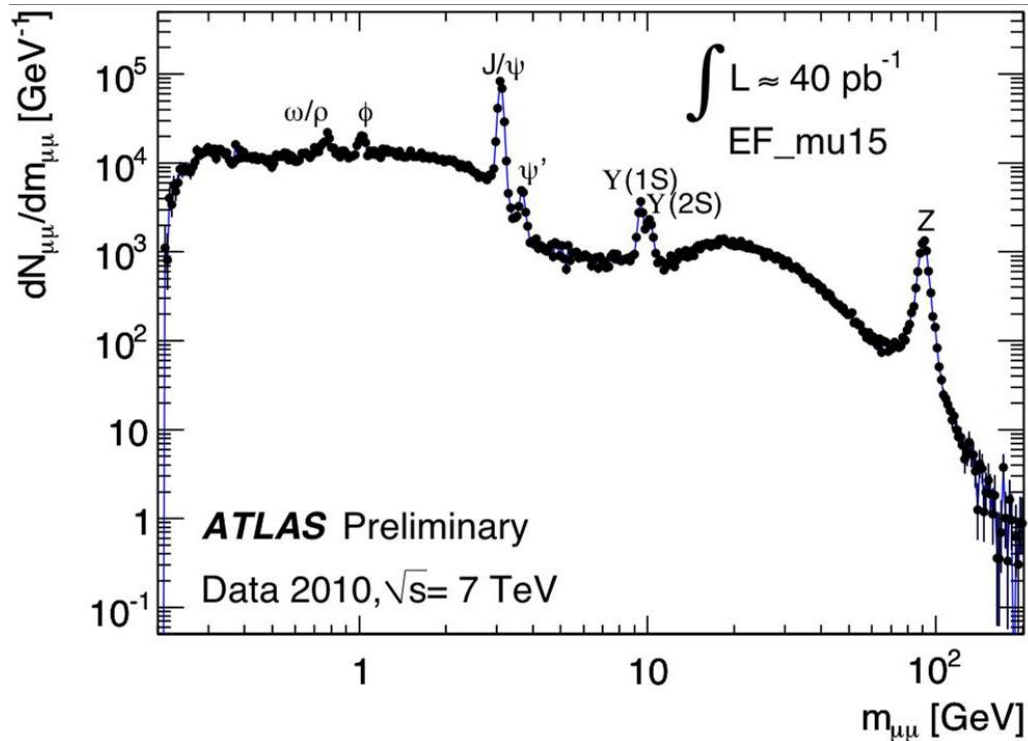


- Discuss importance of invariant mass concept
- Discuss meaning of finite width
- Discuss meaning of new mass peaks (Z' , not shown above)

ATLAS Z-Path

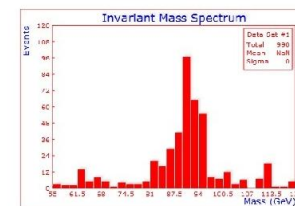
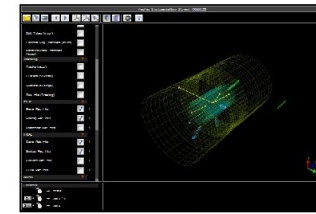
Plans for 2012:

- larger data sample
- Also J/Psi and Upsilon
- Identify search for dilepton events
- php tool for mass plots under development



CMS W/Z Investigation

- 1900 Events:
 - W and Z
 - Background
 - “Mystery” events 2-12 GeV
- Students sort events by:
 - Lepton flavor (e or μ).
 - Candidacy (W or Z).
 - Charge (W+ or W-).
- Find:
 - W+/W-.
 - e/ μ .
 - Z mass.
 - W/Z (challenge).



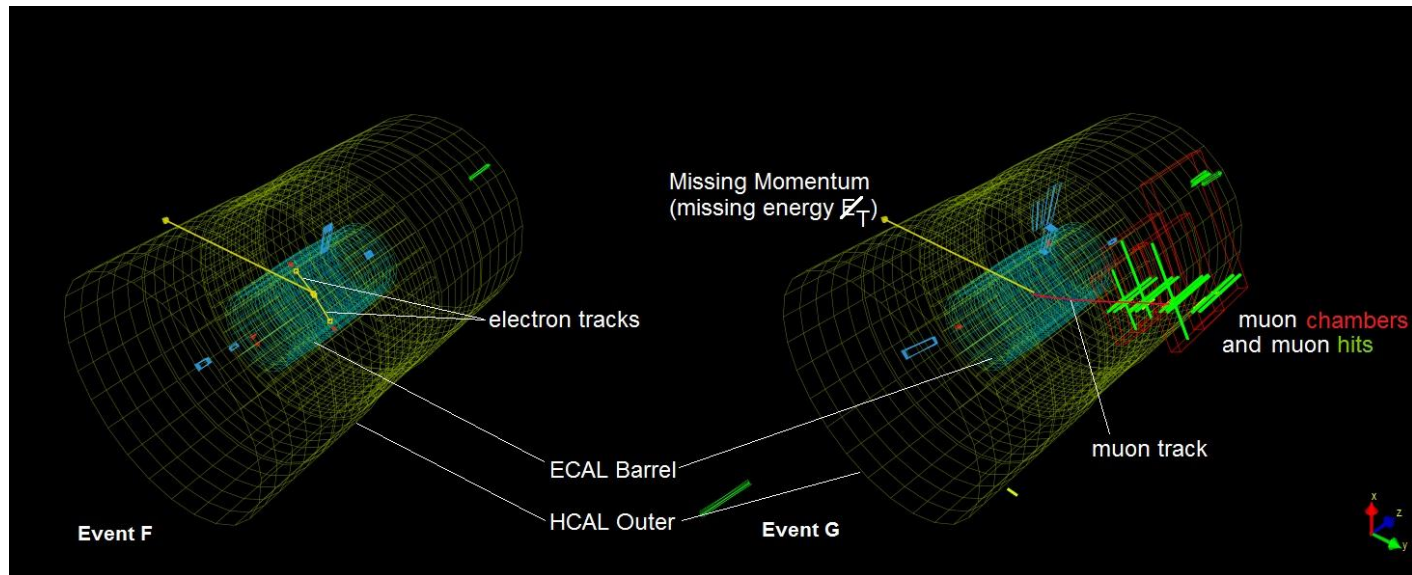
iSpy Online

New Features for W/Z:

- Missing Et vector
 - And slider
- Changes in controls
 - Numbers of objects – gone
 - Electron tracks moved

Explore:

- [Development version](#)



ALICE measurement



Looking for strange particles in ALICE

- physics motivation
- Strangeness enhancement : (first) signature for quark gluon plasma

The signature

- V0 (and cascade) decays of strange hadrons (K_0^0 s, Λ , Ξ^-)

The tools

- Simplified ALICE event display based on ROOT
- Combine visual analysis of small event sample with large statistics analysis

The data

- First LHC data (900 GeV proton proton) : develop / run masterclasses 2011
- 7 TeV proton proton data for 2012
- Pb-Pb collision data : in a next version

ALICE measurement



New in 2012: 2nd part of exercise (GSI version)

- Analyse big event sample (2000 events)
- Invariant mass histograms for Ks, Lambda, anti-Lambda
- Fit 2nd degree polynomial to background
- Fit gaussian to peak
- Get number of Ks, Lambda, anti-Lambda after background subtraction

