

Particle Physics Masterclasses

APS Division of Particles and Fields
2011 Meeting, Providence

Kenneth Cecire, University of Notre Dame
QuarkNet National Staff

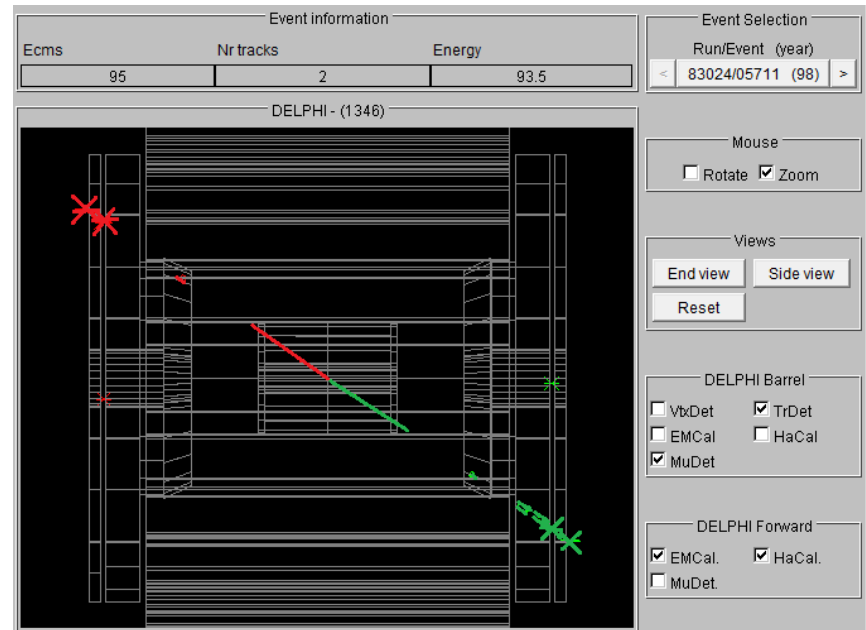


International Particle
Physics Outreach Group



Masterclasses in Particle Physics

- Students are “physicists-for-a-day” at university or lab.
- Analyze real CERN data.
- Like a masterclass in the arts
- Finish with video conference with other masterclass institutes.



Until 2011, the particle physics masterclasses had students investigate the branching ratios of the Z boson using event displays from real LEP data.

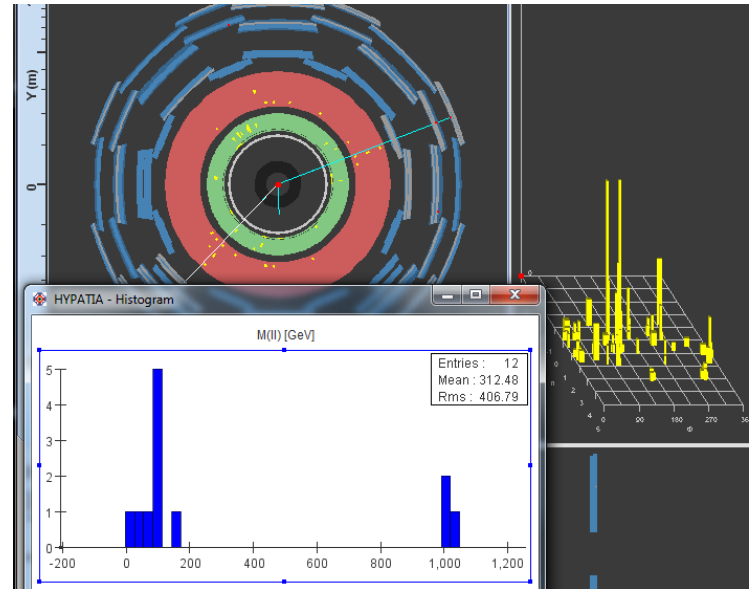
LHC Masterclasses

ATLAS Z Path

- Students search for Z candidates.
- Create mass plot.
- Look for peak, width, and unexpected bumps.

ATLAS W Path

- Students count W^+ vs, W^- .
- Find ratio.
- Probe structure of proton.



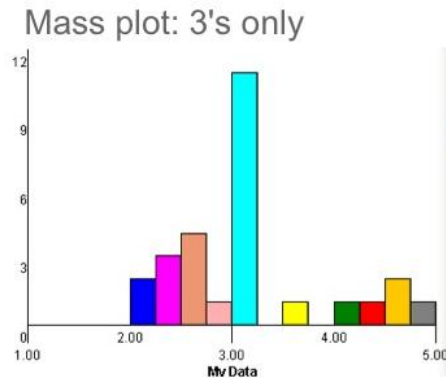
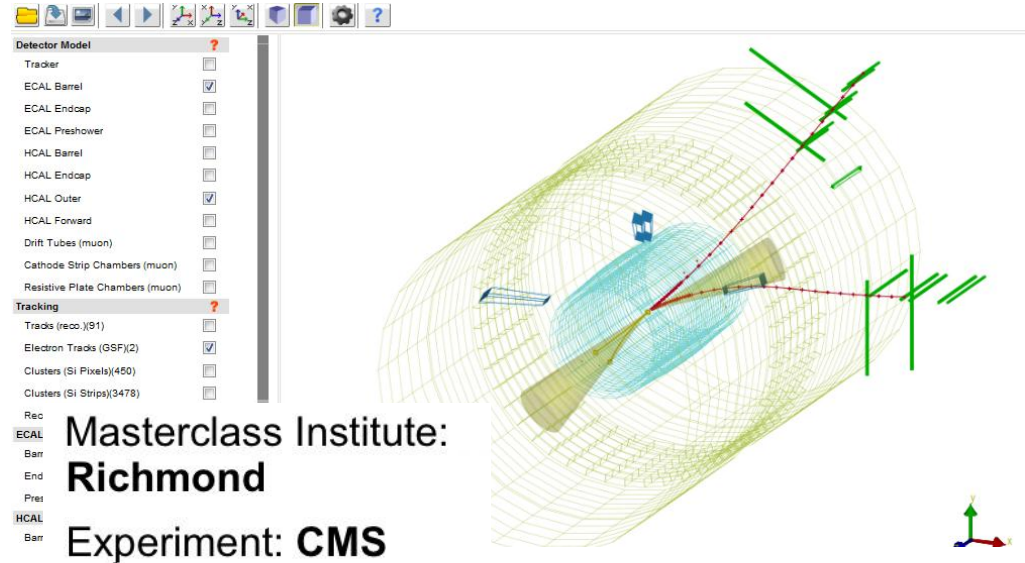
LHC Masterclasses

CMS J/ Ψ Path

- Students rate dimuon events, 2-5 GeV.
- Choose which to use in mass plot.
- Compare result.

ALICE

- Search for strange particles.
- Λ and K_0^S mass plots

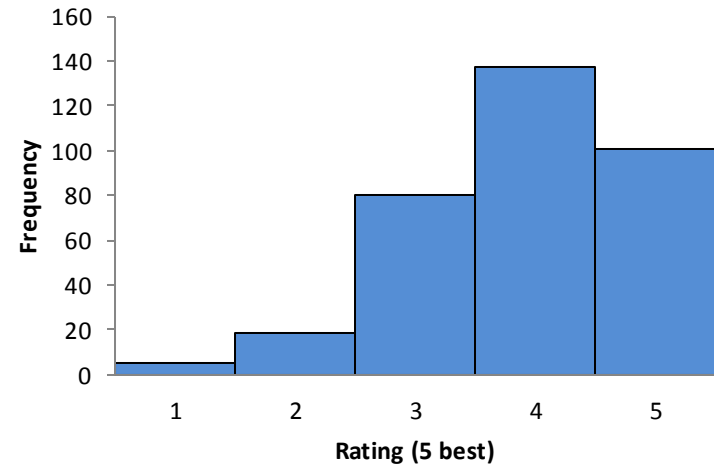


Results and Future

- 2011 Masterclasses:
 - General satisfaction with exercises and real LHC data
 - Worked out some issues with first run.
- Moving forward:
 - CMS: Develop W/Z exercise; more data available
 - ATLAS new approach to W exercise

Further evaluation data on Indico page.

Student Satisfaction, US, 2010



Student Satisfaction, US, 2011

