

**2013/03/30 – Nicolas ARNAUD**

### **Document based on reports from**

- \* CPPM (Marseille)
- \* IPNL (Lyon)
- \* Irfu (Saclay)
- \* IPHC (Strasbourg)
- \* LAL (Orsay)
- \* LLR (Palaiseau)
- \* LPC (Clermont Ferrand)
- \* LPNHE (Paris)
- \* LPSC (Grenoble)
- \* Subatech (Nantes)

### **In a nutshell**

- \* More sessions, more students – final numbers not available yet.
- \* A successful year, very positive feedbacks.
- \* All motivated to keep on next year.
- \* 1 teacher's Masterclass.
- \* In some cases (Lyon), a conference in the high school was organized prior to the Masterclass => lighten the agenda of the session.

### **Organization**

- \* Mixed feelings about the doodle procedure.
    - / more rational => helps simplifying the organization.
    - / but can also make the choice of the Masterclass dates hard.
    - / especially when there are very few slots allowed (ex: ALICE).
    - => In this case, could labs discuss together to agree on common dates?
    - / labs prefer repeating the same exercise rather than doing different ones.
    - / Labs do not always have their own computer rooms => this adds constraints on their availability for Masterclass sessions – e.g. computer rooms only free on Thursdays.
  - \* Suggestions & questions
    - / Make 3 (4) separate doodle polls: ALICE, ATLAS (W and Z together), CMS, (+ LHCb next year). All paths are independent aren't they!?
    - / Why the limit at 2 sessions / day?
    - / Do we always need to have moderators based at CERN?
    - / Why not shift the Masterclasses by a few weeks to avoid conflict with Moriond?
- How do you choose the Masterclass period?
- / The sooner the dates are known the better.
  - / Whatever the chosen procedure to book sessions in 2014, please let us know it ahead of time.

## Exercises

### ALICE

- \* New spreadsheet helpful at various levels: time saver to report results, statistics at work live.

### ATLAS W

- \* The exercise most used for the French sessions.
- \* Exercise done in one institute which only has CMS and ALICE groups (due to local constraints on the dates of the Masterclass sessions).
- \* Conceptually simpler, but results less straightforward than for instance the ATLAS Z invariant masses.
- \* Decision tree very helpful  
=> suggestion: to prepare something similar for ATLAS Z – see below.
- \* We want last year's online spreadsheet back!  
=> Simpler to use and more spectacular for the students.
- \* WW part hard to explain – but not clear path for improvement.
- \* Could one have a single webpage per institute (when students there analyze more than one data sample?) or have a way to combine the results if one keeps two separate webpages like this year?
- \* Put back some explanation about the true value of the  $W^+/W^-$  ratio.

### ATLAS Z

- \* Hypatia better than Minerva: physics objects, muon tracks.
- \* Too much software changes at the last minute!  
=> Technical issues when the computer room is not inside the host lab (but belongs to the University and is shared for instance).
- \* Converted photons make the exercise much harder for students who have ~1 hour of practice. More generally, the exercise is probably too ambitious => could it be simplified for the next year? For instance by only using non-converted photons.
- \* Dilepton histogram easy to explain; others are more complex.
- \* A procedure to be followed to study the events would be appreciated – the equivalent of the ATLAS W decision tree.
- \* A small fraction of events have incorrect/missing information `by (ATLAS) eyes': this may be confusing.

## **General comment about the ATLAS exercises**

\* It would be nice if at least a small fraction of the analyzed events could be available w/o password. Otherwise, what is the point of having a resourceful website which development required a lot of manpower?

## **CMS**

\* Software less user-friendly than ATLAS event displays: PID, curvature, pt.

\* 3D views helpful – w.r.t. ATLAS 2D cross-sections.

\* Semi-automated spreadsheet is a real plus w.r.t. the previous year – but the data processing could still be made more automatic.

\* The interface has been improved as well.

\* A suggestion: do not superimpose 2-1 and 4-1 invariant mass distributions on the same plot.

\* Provide more events so that the different institutes have independent datasets.

## **General comments about the exercises**

\* French high-school students don't know anymore all the basics which are assumed for the exercises: E field, B field, momentum, conservation laws, etc. What about the other countries? How do you (we) make sure that the exercises are at the right level for the target audience?

\* Can the exercises be kept quite stable for next year? If there are some changes, they should all occur well ahead of time.

## **Videoconference**

\* Better organized this year (moderators, discussion).

\* Moderator teams of unequal qualities.

\* Moderators should try to keep their replies short – especially when they don't really know what to say.

\* Moderators asking more questions to the students than in the past.

=> Good but keep in mind the uneven English knowledge among countries.

\* Enforce the limitation of one question per group to the moderators.

\* Perhaps still too long: long day, English is a real issue for the 'average' French high-school student, etc.

=> Cut the part where students can ask questions – they do that locally during the whole day!?  
[No consensus among us]

=> Reduce the time spent analyzing the results – already done locally – agreed by all this time. Moderators should focus on the combination of results

\* Quiz is universally appreciated by all audiences. But there was one case (videoconference with Fermilab) which didn't include the quiz: why?

\* Some technical difficulties with the connection procedure advertised this year – the one from 2012 was just fine.

=> Need for a support reachable by phone within +/- 15 minutes of the start of the videoconference.

\* Should students read something written in advance (and often by the tutors) or improvise their speech, using their own words and what they understood.

\* Schedule is tight. What about shifting the videoconference by 30 minutes (16:00 => 16:30) while keeping its duration fixed?

### **2014 (+ exercise LHCb)**

\* Interest for LHCb Masterclasses in institutes which have a local LHCb group.