

IPPOG International Masterclasses 2016
The Video Conference



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4th February 2016

- You are going to be the face of CERN to hundreds of students around the world!
- In pairs you will hold a video conference via Vidyo to a group of institutes who have all done the same masterclass exercise during their day.
- The video conference allows the students to come together to combine and discuss their results under your guidance in a light hearted and fun way.



- Aims of the Video Conference
 - Convey the internationality of the event
 - Demonstrate how physicists work together internationally
 - Encourage students to exchange experiences between masterclasses
 - Demonstrate improvement in accuracy by combination of different data sets
- **BE FUN for the students!**



- It's **NOT** supposed to:
 - Deepen the understanding of the physics
 - Teach English to the students
 - Contain a basic discussion of the measurement
 - Create a competition between the institutes



- Moderators Manual – has all the information you need for the VC!

https://twiki.cern.ch/twiki/pub/Main/InternationalMasterclassesModeratorManual/manual_moderators_2016_02_03.pdf

- TWiki has quick links and information (on the ‘favourites’ bar of Internet Explorer in the VC rooms).

<https://twiki.cern.ch/twiki/bin/view/Main/InternationalMasterclassesModeratorManual>

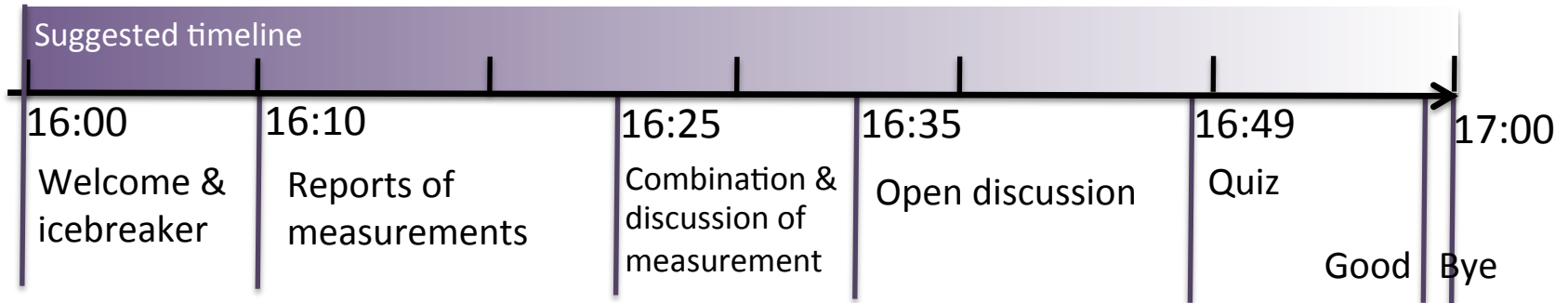
Preparation for the video conference

Arrive 30 minutes before the start of your video conference and prepare/upload all the material, including:

- masterclass [map](#)
- [table/website](#) for combination of results
- animated [quiz](#)
- **NEW** for ATLAS Zpath - a great animation for the evolution of the [Higgs->gammagamma signal](#) and for the [Higgs->ZZ](#). These demonstrations can help with explaining to students who claim they have discovered the Higgs, that they probably will need more statistics.

Make sure you have downloaded what you need onto the desktop (quiz and map), you are able to access the tables and results, you know how to share these on vidyo, especially the animated quiz!

- You will use Vidyo to setup the video conference.
 - Step by step instructions are in the Twiki.
 - Make sure you know how to use the shared desktop.
 - Mute any noisy participants if necessary!



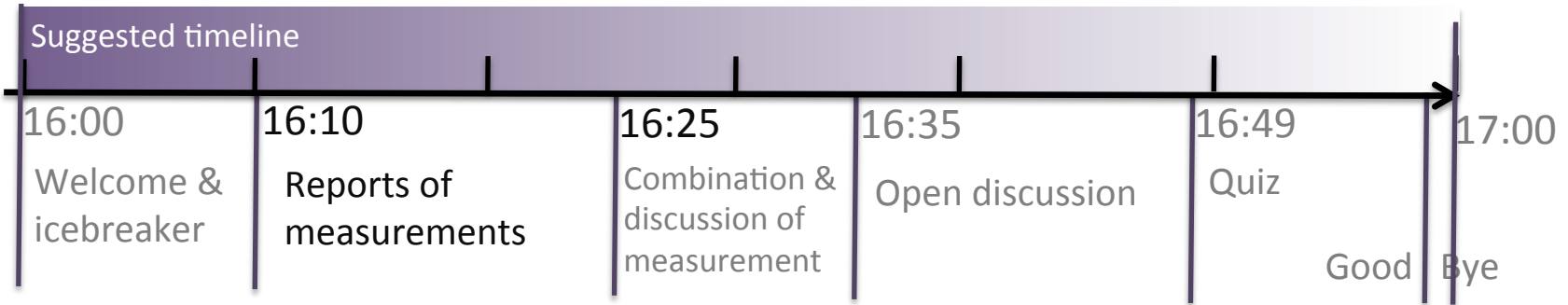
- One hour video conference (16 – 17 sharp) with 2-5 institutes.
- Arrive at the correct room at 15:30 to get everything setup and prepared.
- Three locations for the VC (check in advance which location you should be at!):
 - VC1:
 - 33-R-016
 - Key will be left in an envelope addressed to “Masterclass” in the mailbox opposite the door – please replace it afterwards!!
 - VC2:
 - **31-S-027** (for CMS masterclasses on **Feb 15, 22, March 14**).
 - **600-R-002** (for CMS, LHCb and ALICE masterclasses on **Feb 17, 18, 19, 23, March 1, 2, 4, 5, 9, 10, 11, 15, 16, 17, 18, 22, 23**).
 - Both rooms have an electronic lock, you need your CERN access card to open and close the lock.
- Details available on the TWiki and in the Manual

Suggested timeline					
16:00	16:10	16:25	16:35	16:49	17:00
Welcome & icebreaker	Reports of measurements	Combination & discussion of measurement	Open discussion	Quiz	Good Bye

The welcome has to be on schedule, common and interactive!!

- Students should immediately feel they should actively take part in the VC
- Introduce yourself and explain where you are.
 - A little about CERN and your research.
 - The status of the LHC.
- Explain what will be happening in the next hour.
 - Go through the agenda.
- Share a map showing all the connected sites.
 - Use to explain to the institutes in which order they will be addressed (e.g. North to South).
- Ask one short question to each institute.
 - Just a nice friendly question.





- Put up the results page onto the shared desktop and address each masterclass one by one.
- Students should report for up to two minutes on results, uncertainties, difficulties and express any questions they had.
- All reports should be given sequentially – NOT interrupted by questions or comments.
- Then at the end students have the chance to comment and ask questions.

EditGrid

Spreadsheet / masterclass / Analysis 2012

File Edit View Format Insert Data Share Publish Collaborate Macro Help

0.00 % Σ

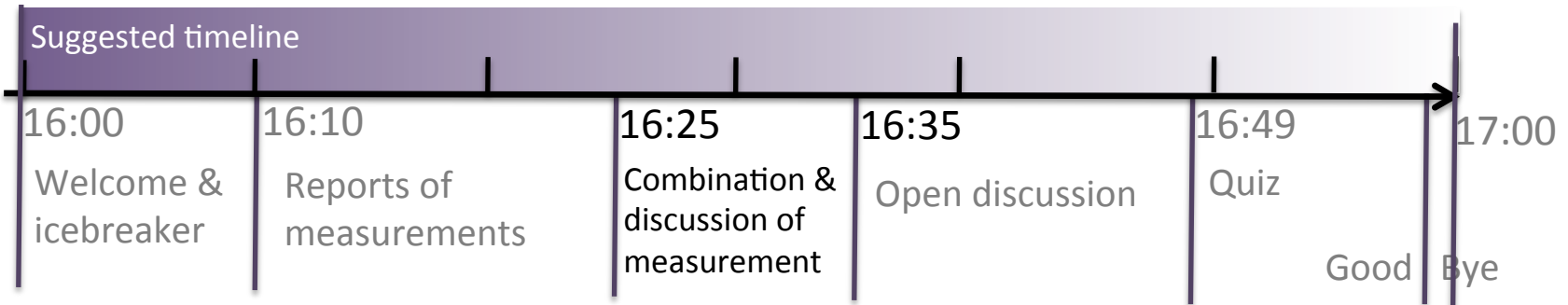
A1 f_{60} N =

	A	B	C	D	E	F
1	N =	W → ... + v				
2	210	positron	electron	antimuon	muon	Background
3						
4	Group A	5	0	1	0	1
5	Group B	5	2	9	3	
6	Group C	2	1	0	0	5
7	Group D	4	10	7	5	
8	Group E	5	6	2	3	
9	Group F					
10	Group G	3	1	5	3	37
11	Group H	7	3	2	1	
12	Group I	3	4	2	2	
13	Group J	5	4	1	3	
14	Group K					
15	Group L	3	2	7	5	

11.01.2012 CERN / Maynooth / Copenhagen / Ferrara / places / places /

Done Read Write login to join chat room.

Combination & discussion of measurement



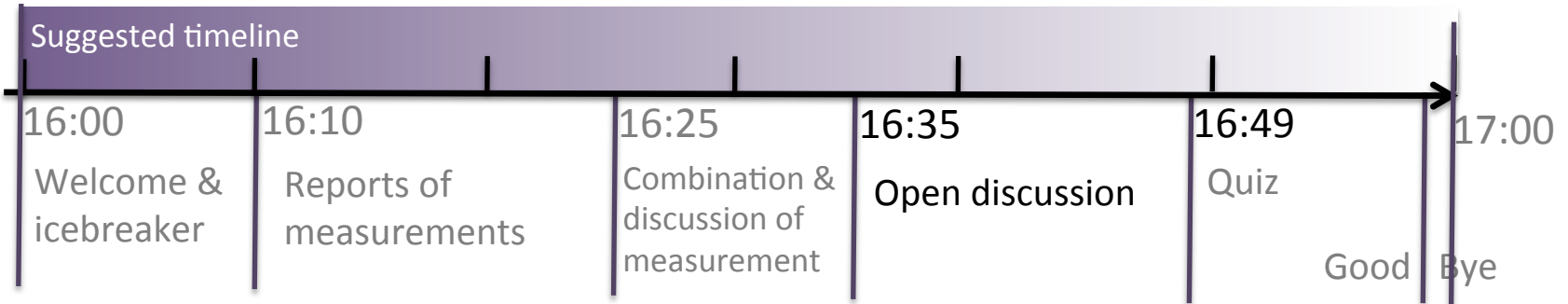
- All masterclasses will do the same measurement but using different data.
- Combine the results in the table.
- Summarize and comment.
- Compare to the theory/experimental results.
- Stress why using different data from different sources is beneficial (stats and reduces bias).
- Students here can ask questions.

Spreadsheet / masterclass / Analysis 2012

A	B	C	D	E	F	G
place 3	0	0	0	0	0	0
place 4	0	0	0	0	0	0
place 5	12	21	33	4	53	24
place 6	0	0	0	0	0	0
Sum	58.0	58.0	71.0	30.0	113.0	27.4
W+ & W-	number of W+	129.0	number of W-	88.0		
W+ / W-	1.47		±	0.20		

*) Authors: The ATLAS Collaboration (Submitted on 5 Dec 2011): <http://arxiv.org/abs/1109.5141.pdf>
 **) Authors: The ATLAS Collaboration (24 Aug 2011): ATLAS-CONF-2011-134

	W → ... + ν				Background	WW+0J cand.
	positron	electron	antimuon	muon		
Total	77885	52856	84514	55234.0	21930.0	469
Total W+/W-	number of W+	162399	number of W-	108090		
W+ / W-	1.50		±	0.01		



- Discussion can expand to more open and general questions
- They can be on anything from...
 - Life at CERN
 - LHC, size, magnets, cost, power consumption
 - Detectors & experiments
 - The Universe, the Big Bang, dark matter, black holes, time travel...
 - How to get into physics/working at CERN



Give short interesting answers

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“7 TeV Quiz” (Same format as “*Who wants to be a millionaire?*”)

- Moderators show English version on shared desktop.
- Seven questions – each multiple choice
- Each student plays alone
- Correct answer revealed after each question
- Scoring is done by each student
- No comparisons, no prizes

Don't phone in it's just for fun!

Quiz Answer Sheet



Your Answers
tick off your answer A, B, C or D

1	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
2	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
3	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
4	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
5	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
6	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D
7	<input type="radio"/> A <input type="radio"/> B	<input type="radio"/> C <input type="radio"/> D

Your Score
tick off one energy step for each correctly answered question, starting at the bottom

7000000000000 eV
full beam energy of the LHC

172900000000 eV
mass of the top quark

91187600000 eV
mass of the Z-Boson

938272013 eV
mass of the proton

105658367 eV
mass of the myon

2500000 eV
mass of the up quark

510999 eV
mass of the electron

0 eV

4th February 2016

IPPOG Masterclasses 2016

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Welcome to the MASTERCLASSES QUIZ!

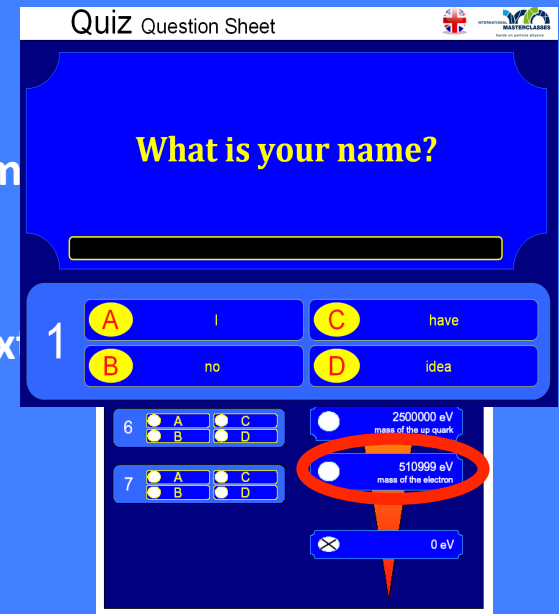
Rules of the Game

- 7 questions, 4 answers to choose (A,B,C,D)
- **mark your answer on your answer sheet before the time ends!**
- moderators will then reveal the correct answer
- if you have answered correctly, you may **tick off the next energy level**

Let's check which energy level you can reach!

Please note:

- *this quiz is for fun, not for competition!*
- *we won't compare results*





Welcome to the **MASTERCLASSES QUIZ!**

Ready?
Research?

Quiz Question Sheet





Which particle is the mediator of the Strong Force?



1

A

Neutralino

C

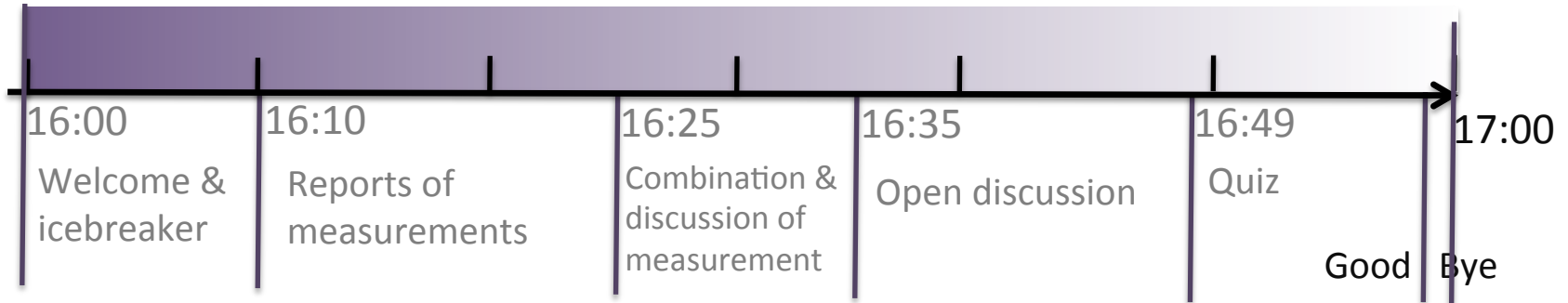
Gluon

B

Snail

D

Pigsino



There has to be a clear common end of the VC after 60 minutes!

- Say goodbye to everyone and thank them for taking part!
- Do not keep discussion going even if the students are asking questions
- If they and you want some discussion can continue after the goodbye on a voluntary basis





Overview

- Arrive 30 minutes before the start of the VC.
- Set up the Vidyo conference following the step by step instructions on the TWiki (instructions also in the manual).
- The quiz should already be downloaded on the desktop of the PC (if not it can be downloaded from the TWiki).
 - Check that you can open the quiz as a slide show and share it.
- Download the map - this must be done each time.
- Have open the link to the tables for the combination.

Twitter handle is
#LHCIMC16

Post on the
facebook page!

- Interesting questions you were asked.
- Anything unusual or interesting with the combination.
- Any interesting questions you were asked.
- Links you wish to share



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9 September 2014 · Edited ·

Seen International Masterclasses in CERN Courier? Look here:
<http://cerncourier.com/cws/article/cern/57305>

<https://www.facebook.com/pages/International-Particle-Physics-Masterclasses/114950505201581>

Watch this recording of a previous VC...

(watch again later [here](#))

*Smile, initiate dialogue and
make it fun! The success of the
conference relies on you!
(no pressure)*