

EPPOG International Masterclasses 2013  
From students' reports to the quiz:  
The video conference

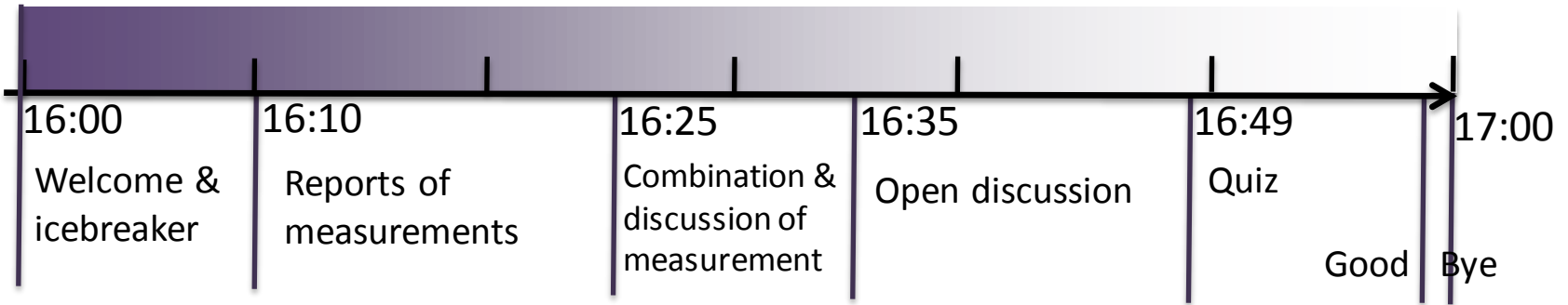
**Kate Shaw**  
**Udine/ICTP**



- ⦿ You are going to be the face of CERN to hundreds of students around the world!
- ⦿ Connect via Vidyo to group of institutes who have all done the same masterclass exercise during their day
- ⦿ Video conference allows the students to come together to combine and discuss their results under your guidance in a light hearted fun way 😊



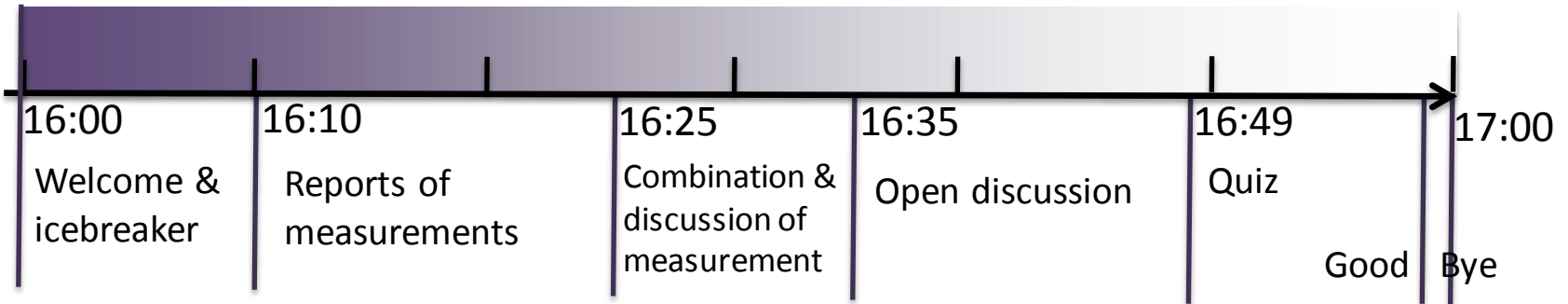
# The Video Conference



## The VC should:

- ✓ 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
- ✓ most importantly: **BE FUN FOR THE STUDENTS!**

# The Video Conference



One hour video conference with 3-6 institutes

## The VC should NOT:

- ✗ deepen the understanding of the physics
- ✗ teach English vocabulary of particle physicists
- ✗ contain a basic discussion of the measurement
- ✗ create a competition regarding the measurements

# Welcome & icebreaker

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

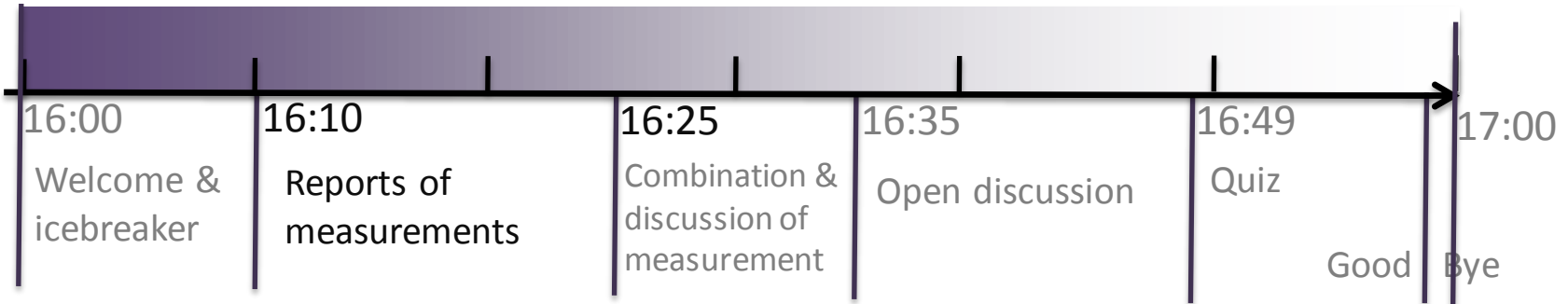
**The welcome has to be on schedule, common and interactive!!**

★ Students should immediately feel they should actively take part in the VC

- ⦿ Introduce yourself and explain where you are
- ⦿ Explain what will be happening in the next hour
- ⦿ Display a map showing all the connected sites
- ⦿ Ask one short question to each masterclass
  - ★ Answers by one student ~ 2 minutes



# Reports of measurements



- 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 must be given in a row – NOT interrupted by questions or comments
- Then at the end students have the chance to comment and ask questions

Screenshot of EditGrid spreadsheet showing a table with columns for particle types and rows for different groups.

	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	

# Combination & discussion of measurement

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

- ⊙ All masterclasses will do the same measurement but 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. Encourage discussion between the masterclasses

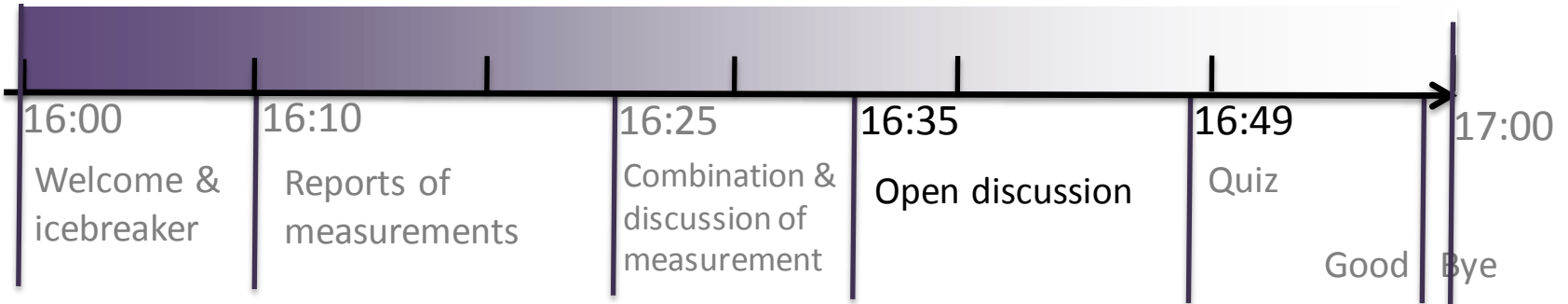
Spreadsheet / masterclass / Analysis 2012

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		

# Open discussion



- ⦿ 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 – *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"/> C
	<input type="radio"/> B	<input type="radio"/> D
2	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D
3	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D
4	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D
5	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D
6	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D
7	<input type="radio"/> A	<input type="radio"/> C
	<input type="radio"/> B	<input type="radio"/> D

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

<input type="checkbox"/>	<b>7000000000000 eV</b> <small>full beam energy of the LHC</small>
<input type="checkbox"/>	172900000000 eV <small>mass of the top quark</small>
<input type="checkbox"/>	91187600000 eV <small>mass of the Z-Boson</small>
<input type="checkbox"/>	938272013 eV <small>mass of the proton</small>
<input type="checkbox"/>	105658367 eV <small>mass of the myon</small>
<input type="checkbox"/>	2500000 eV <small>mass of the up quark</small>
<input type="checkbox"/>	510999 eV <small>mass of the electron</small>
<input type="checkbox"/>	0 eV

## Welcome to the MASTERCLASSES QUIZ!

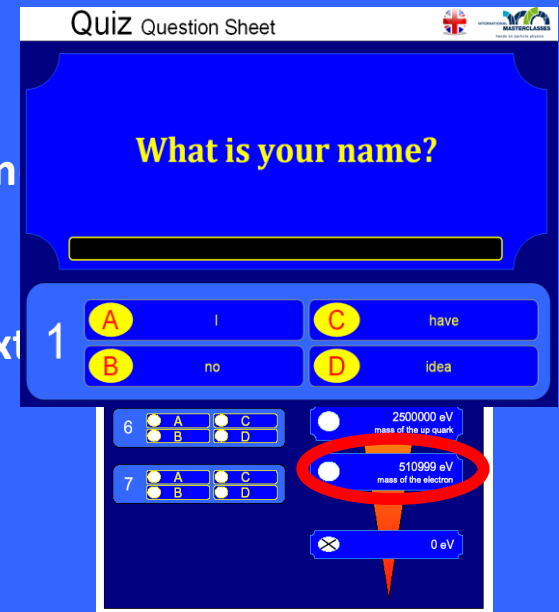
### Rules of the Game

- 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*



Quiz Question Sheet

What is your name?

1  A I  C have  
 B no  D idea

6  A  C  
 B  D

7  A  C  
 B  D

2500000 eV  
mass of the up quark

510999 eV  
mass of the electron

0 eV



## Welcome to the MASTERCLASSES QUIZ!

Ready?





## Which particle is the mediator of the Strong Force?



1

A

Neutralino

C

Gluon

B

Snail

D

Pigsino



**How much of our universe  
is made of matter or energy,  
about which we know  
almost nothing about?**



2

**A**

13%

**C**

100%

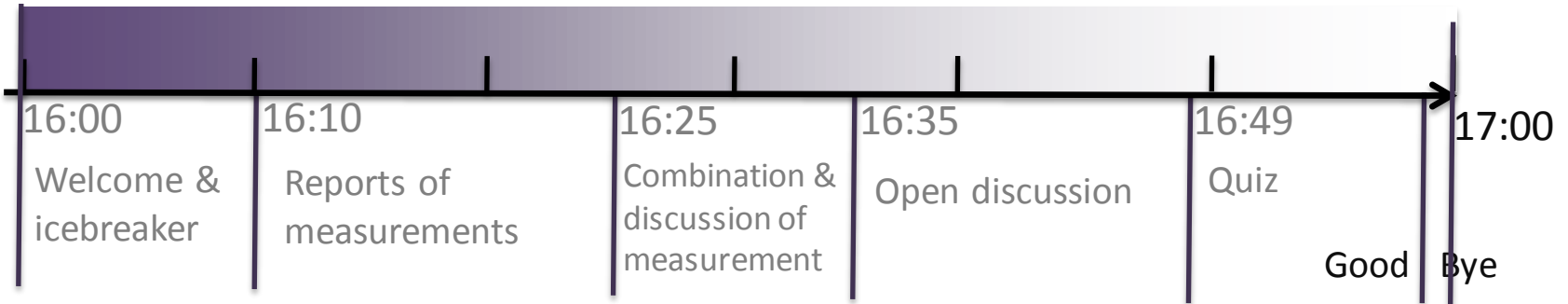
**B**

96%

**D**

32.8%

# Goodbye

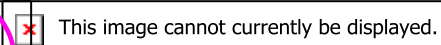
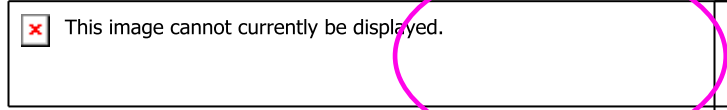


★ There has to be a clear common end of the VC after 60 minutes!

- ⦿ 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

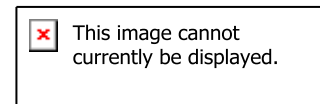


⦿ Mute noisy institutes!

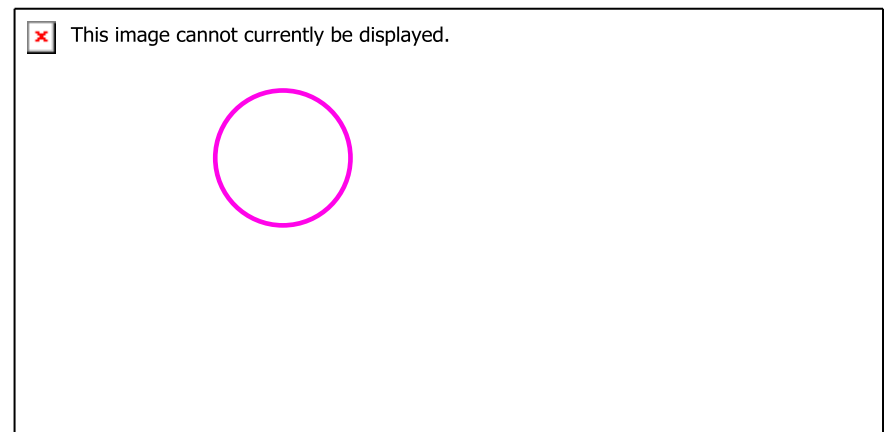


- ★ Select a participant
- ★ Buttons for mute audio, video and kick off will show

- ⦿ Audio is done via the H323 terminal installed in the BC room.
- ⦿ Thus you must immediately mute the desktop client, both speaker and mic icons



⦿ To application you wish to share the Desktop from the VC PC click the third button on the Vidyo interface and choose which



***Complete instructions are in the manual. Login in and have a go!***



- ★ Moderators Manual – has all the information you need for the VC!
- ★ Twiki <https://twiki.cern.ch/twiki/bin/view/Main/InternationalMasterclassesModeratorManual>
- ★ Two Locations for the VC
  - ★ Teachers Lab (building 3-R-002) – obtain keys from office 3-R-006
  - ★ CMS center (building 354-1-002, first floor, main room)
- ★ Details for contact people for both rooms are available on the twiki and in the Manual
- ★ VC meeting rooms – video link up via Vidyo
  - ★ Common login and passwords. – Available from the manual and twiki
- ★ Post on our facebook page! Any interesting questions asked, anything unusual or interesting with the combination, or links you wish to share, post it all on the masterclass facebook page:  
<https://www.facebook.com/pages/International-Particle-Physics-Masterclasses/114950505201581>

Please arrive 30 minutes before the start of the VC to setup, prepare and download material including: (all can be downloaded/accessed from links in manual and twiki)

- ⦿ Masterclass map of countries taking part
- ⦿ Table/website for combination of results
- ⦿ Animated Quiz

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