

INTERNATIONAL MASTERCLASSES HANDS ON PARTICLE PHYSICS

Moderators' orientation

Uta Bilow, TU Dresden

CERN, 22.02.2017

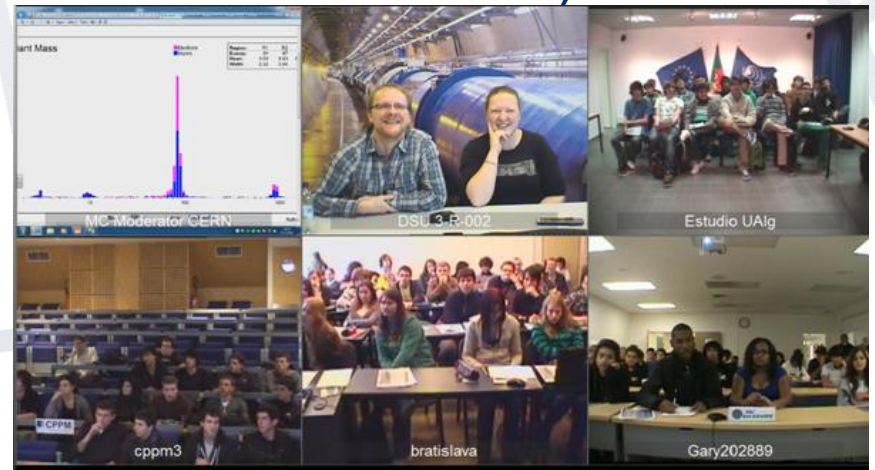
Modified - K. Cecire, Notre Dame

FNAL, 05.03.2018



Concept of Masterclasses / IMC

- High school students (15 – 19) are invited to a university or research lab as *particle physicists for a day*
- Prep activities at school before students come
- Introductory talk (standard model, detectors, accelerators)
- Hands-on: measurement with LHC data (ATLAS, CMS)
- Videoconference (1 – 5 groups + CERN/ Fermilab)
 - Combination of results
 - Discussion
 - Q&A
- Organized by IPPOG



You will be sitting here!



Typical situation:

- 1-2 moderators
- 1-5 groups of students (16-19 y)
- QuarkNet staff or fellow



Students are

- exhausted
- excited

They expect

- physics results are discussed
- questions can be asked
- meet groups from other countries

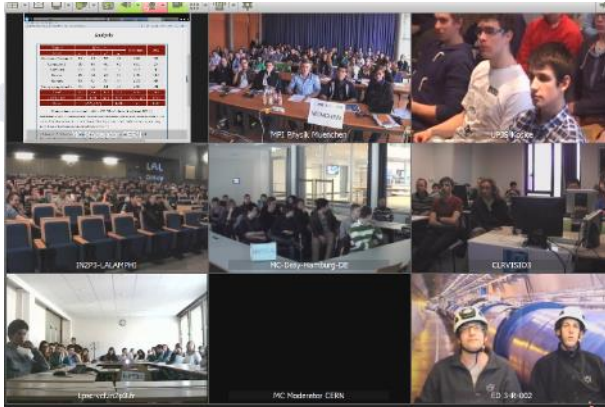
Challenges

- English is sometimes not their mother tongue
- sometimes shy to speak
- groups should predefine speakers, but...
- sometimes poor sound quality
- not used to Vidyo sound

To meet the challenge:

- this orientation
- moderators, staff work in pairs
- stay on agenda
- rooms prepared
- support from FNAL
- *keep it succinct*
- *use the questions...*

Sample Agenda



LOCAL TIME:

8:30 - 9:00

9:00 - 10:00

10:30 - 11:30

12:00 - 13:00

13:00 - 15:00

15:00 - 16:00

16:00 - 17:00

ACTIVITY:

registration & welcome

introduction to Particle Physics

second talk or tour

lunch with a physicist

data analysis

local combination + discussion

videoconference with CERN
or Fermilab



IMC18

- Worldwide effort, coordinated by Uta Bilow, TU Dresden and Ken Cecire, QuarkNet/U.Notre Dame
- 2018: 15.2. – 18.5.2018 (!)
- 62 VCs at CERN, 19 at Fermilab, 1 at TRIUMF



Schedule

Date/time CT	Measurement	Institutes	Moderator(s)	Support	Location	Indico page
Fri 09 Mar/14:00	CMS	Rio de Janeiro, Quincy	Adelman	Glover	WH7XO	FNAL-CMS-VC01
Sat 10 Mar/14:00	CMS	Baltimore, South Bend A, New Brunswick	Malik*	Glover	WH1E	FNAL-CMS-VC02
Sat 10 Mar/15:00	ATLAS	Seattle	Malik*	Glover	WH1E	FNAL-ATLAS-VC1
Mon 12 Mar/10:00	CMS	Manila, New Jersey schools	Suarez	Cecire	WH6NW	FNAL-CMS-VC03
Thu 15 Mar/14:00	ATLAS	DeKalb, Stillwater A	Norberg	Wood	WH2NW	FNAL-ATLAS-VC2
Fri 16 Mar/20:00	CMS	Auckland, Winamac, Mexico City A	Karmgard*	Wood	WH1E	FNAL-CMS-VC04
Sat 17 Mar/14:00	ATLAS	Santa Cruz, Mayaguez	Martinez	Wood	WH1E	FNAL-ATLAS-VC3
Sat 17 Mar/15:00	CMS	Quito, Williamsburg, Boston, Northbrook, Mexico City B	Malik*	Wood	WH1E	FNAL-CMS-VC05
Sat 17 Mar/19:00	CMS	Honolulu, Shanghai	Malik*	Wood	WH1E	FNAL-CMS-VC-06
Wed 21 Mar/20:00	CMS	Fukuoka, South Bend B, Qingdao	Karmgard*	Glover	WH1E	FNAL-CMS-VC07
Sat 24 Mar/14:00	CMS/ATLAS	Fairfax, Minneapolis, Houston, Medellin	Albrow	Wegner	WH2NE	FNAL-CMS-VC08/ATLAS-VC4
Mon 26 Mar/12:00	CMS	Rochester	Albrow	Cecire	WH1E	FNAL-CMS-VC09
Fri 06 Apr/09:00	CMS	Santiago de Compostela, Rossville	Suarez	Cecire	WH7XO	FNAL-CMS-VC10
Fri 06 Apr/14:00	CMS	Manhattan KS, Lead SD	Chakraborty, Hall	Cecire	WH7XO	FNAL-CMS-VC11
Sat 07 Apr/14:00	CMS	Hammond, Mexico City C	Maeshima	Cecire	WH8XO	FNAL-CMS-VC12
Sat 07 Apr/15:00	ATLAS	Stillwater B	Maeshima	Cecire	WH8XO	FNAL-ATLAS-VC5
Sat 21 Apr/15:00	CMS	Knoxville, Buffalo, Colima	Parashar	Wood*	WH7XO	FNAL-CMS-VC13
Fri 27 Apr/14:00 (español)	ATLAS	Bucaramanga UIS, Santiago de Chile, La Plata, Bogotá	Suarez*, Martinez	Cecire	WH7XO	FNAL-ATLAS-VC6
Fri 18 May/14:00 (español)	ATLAS	Bucaramanga UAN, Buenos Aires, Valparaiso, Lima, Cuzco	Gerber, Elvira	Cecire	WH7XO	FNAL-ATLAS-VC7

Still in development...find the schedule and more at
<https://quarknet.org/content/fermilab-moderators-2018>

Thanks for your pictures!

You can see them at <https://quarknet.org/content/videoconferences-2018#mods>



Typical videocon

19:45	→ 20:00	login and handshake	🕒 15m
20:00	→ 20:05	Intro and warm-up map	🕒 5m
20:05	→ 20:10	Mexico City results questions and comments	🕒 5m
20:10	→ 20:15	Auckland results Questions and comments	
20:15	→ 20:20	Winamec results Questions and comments	🕒 5m
20:20	→ 20:30	Combined results and moderator response Moderator presentation, questions, comments CMS result	🕒 10m
20:30	→ 20:40	Discussion/Q&A	🕒 10m

Questions for students:

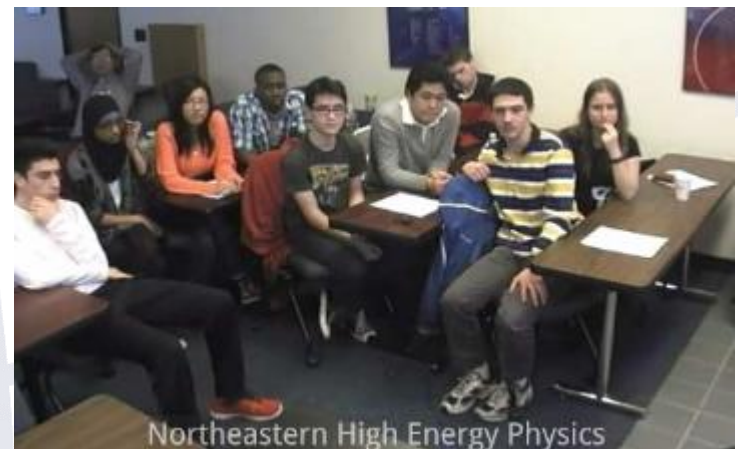
- Where are the peaks in the Mass Histogram? What do they represent?
- Where is Z boson in the plot? What are the other peaks, then?
- Do you have possible Higgs events in your plot? Where? Can we claim discovery?

More questions in the CMS and ATLAS slides!

Free advice...

Suggestions on how to be an effective Masterclass moderator:

- Speak clearly and succinctly
- Show your sense of humor
- When you explain, keep it short and simple
- Encourage students to speak up, give their views, disagree
- Mind the schedule
- Be friendly
- Show your enthusiasm



Enjoy your sessions!



Thank you for being part of IMC18!

