

INTERNATIONAL MASTERCLASSES HANDS ON PARTICLE PHYSICS

Moderators' orientation

Uta Bilow, TU Dresden
CERN, 05.03.2019



Concept of Masterclass

- High school students (16-19y) are invited to a university or research lab as „scientists for one day“
- Introductory talks (standard model, detectors, accelerators)
- Hands-on: measurement with LHC data (ALICE, ATLAS, CMS, LHCb)
- International video conference (max. 5 groups + CERN/
Fermilab)
 - Combination of results
 - Discussion
 - Q&A
 - Quiz



Sample Agenda

8:30 - 9:00 *registration & welcome*

9:00 - 10:00 introduction to Particle Physics

10:30 - 11:30 second talk or tour

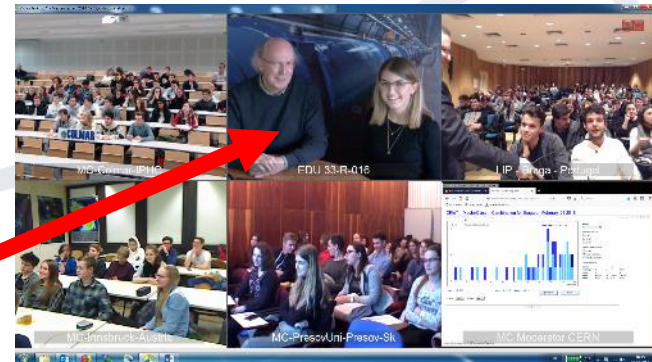
12:00 - 13:00 *lunch*

13:00 - 15:00 data analysis

15:00 - 16:00 local combination + discussion

16:00 - 17:00 videoconference with CERN
or Fermilab

You will be sitting here!



Typical situation:

- 2 moderators
- 5 groups of students (16-19 y)



Students are

- exhausted
- excited

They expect

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

Challenges

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

To meet the challenge:

- this training
- strict agenda
- rich documentation
- rooms prepared
- support by Vidyo team
- moderators work in pairs

International Masterclasses

- Worldwide effort, key activity of IPPOG (International Particle Physics Outreach Group)
- coordinated by TU Dresden and Ken Cecire, QuarkNet/U.Notre Dame
- 2019: 7.3. – 16.4.2019
- 57 VCs at CERN, ~ 20 at Fermilab



Schedule

11.03. - 16.03.2019

	Mon, Mar 11	Tue, Mar 12	Wed, Mar 13	Thu, Mar 14	Fri, Mar 15	Sat 13:00 CET
topic	VC 1: ATLAS Z	VC 1: ATLAS Z	VC 1: ATLAS Z	VC 1: ATLAS Z	VC 1: ATLAS W	VC 1: CMS
moderators	Marcus	Steffen	Karolos	Katharine	Muhammad	Mariarosaria
moderators	Steffen	Jonathan	Sebastian	Jelena	Denis	Alejandro
	Rabat 	Marseille 	Geneva CERN 	Bragança 	São Paulo 	Tomsk
	Naples 	Krakow 	Košice 	Genova 	Heidelberg 	Cyprus
	Uppsala 	Amsterdam 	Vila Real 	Nijmegen 	Krakow AGH 	Qatar
	Barcelona IFAE 	São Paulo 	Freiburg 	Tbilisi TSU 	Mainz 	Imotski
	Colmar IPHC 		Zaragoza 	Oslo 		Chania
topic	VC 2: CMS	VC 2: ALICE S.P.	VC 2: CMS	VC 2: LHCb	VC 2: CMS	
moderators	Sonia	Despina	Maria G.	Tara	Maria G.	
moderators	Nikkie	Florian	David	Jacopo	Alejandro	
	Aachen 	Trieste 	Perugia 	Frascati 	Torino 	
	Tbilisi GTU 	Vienna SMI 	Mostar 	Geneva CERN 	São Paulo SPRACE 	
	Rome Sapienza 	Nantes 	Madrid CIEMAT 	Milan 	Geneva CERN 	
	Zagreb 	Strasbourg 	Pavia 	Rio de Janeiro UFRJ 	Santander 	
	Kozloduy 	Pavia 	Cyprus 	Ferrara 	Vilnius 	

Moderators 2019:

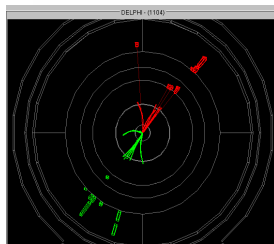
	Muhammad Alhroob (ATLAS)		Fanouria Antoniou (Accelerator and Beam Physics)		Francesca Bellini (ALICE)		Kfir Blum (Theory)
	Dana Bobulska (LHCb)		Jonathan Bossio (ATLAS)		Ina Carli (ATLAS)		Alberto Correa dos Reis (LHCb)
	Silvia Costantini (CMS)		Maria D'Alfonso (CMS)		André David (ATLAS)		Nikkie Deelen (CMS)
	Adelina D'Onofrio (ATLAS)		Etienne Dreyer (ATLAS)		Filippo Errico (CMS)		Sebastian Fabianski (ATLAS)
	Aishik Ghosh (ATLAS)		Alejandro Gomez Espinosa (CMS)		Lucia Grillo (LHCb)		Maria Teresa Grippo (CMS)
	Despina Hatzifotiadou (ALICE)		Michael Hauschild (ATLAS)		Florian Jonas (ALICE)		Jelena Jovicevic (ATLAS)
	Katharine Leney		Carla Marin (LHCb)		James Mead		Pedja Milenovic

and more! Not enough space to show ...

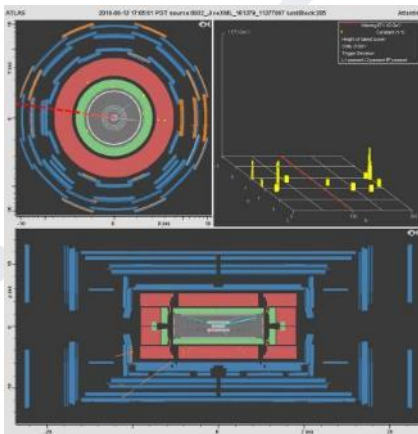
www.physicsmasterclasses.org/index.php?cat=schedule#moderators

e-group ippog-masterclass-moderators@cern.ch

Brief History of IMC



- Idea from UK, 1996 (R. Barlow et al.)
- 1997: 1. Masterclass in UK with 7 institutes
- 1998 nationwide uptake
- 2005: Adopted by EPPOG/IPPOG for all Europe
- Use of LEP data
 - OPAL Identifying Particles
 - DELPHI Hands on CERN
- 2006: U.S. joined program (QuarkNet)
- 2011: LHC-based Masterclasses only
- 2014: all 4 LHC experiments



<http://cerncourier.com/cws/article/cern/55890> (How it all begun)
<http://cerncourier.com/cws/article/cern/57305> (MC in the LHC era)

Statistics International Masterclasses

2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

18

countries

52

58

institutes

225

72

masterclasses

307

3k

students

14k

12

video conferences

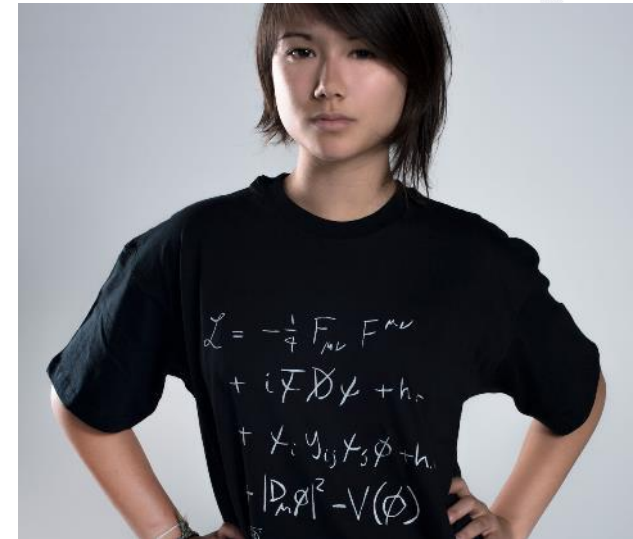
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Thank you for being part of IMC19!

As a small reward you get a free T-Shirt from CERN shop

→ Go to Maureen's office to pick the T-Shirt

→ Maureen Prola-Tessaur, 33-R-028, Mon-Wed



Enjoy your sessions!