

INTERNATIONAL MASTERCLASSES HANDS ON PARTICLE PHYSICS

Video Conference

Moderators' orientation

Uta Bilow, TU Dresden
CERN, 17.02.2015



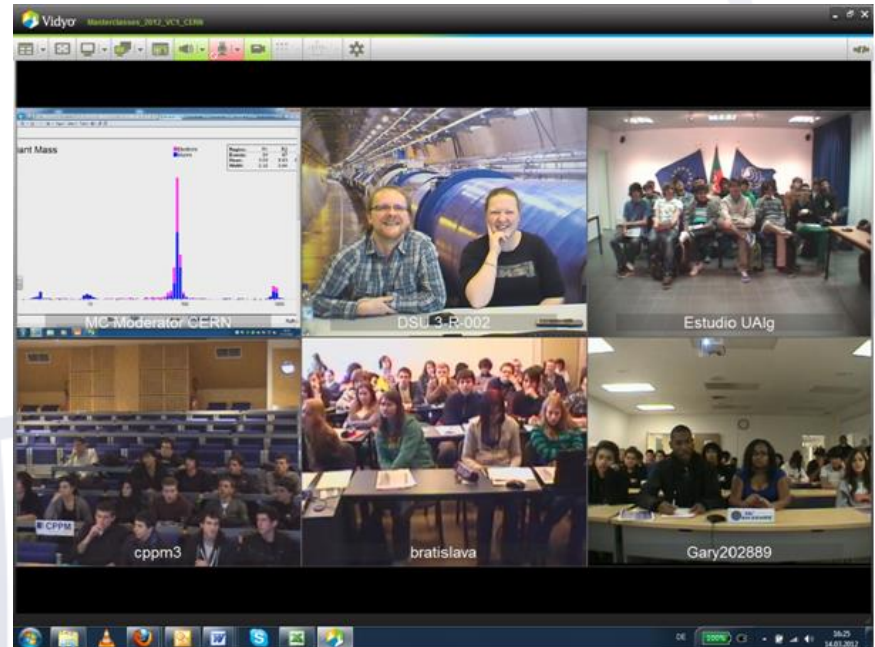
What is a Particle Physics Masterclass?

- As in a masterclass in the arts, students work with an expert
- Expert = particle physicist
- Instead of, say, a violin, the subject is particle physics data analysis

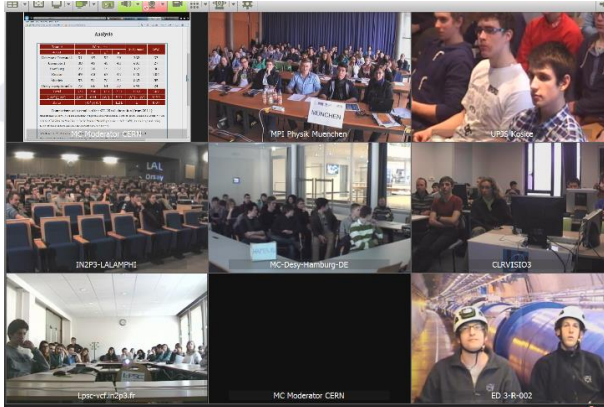


Concept of IMC

- High school students (15 – 19) are „scientists for one day“
- Get invited to a research institute or university
- Introductory talks (standard model, detectors, accelerators)
- 2 h measurement with LHC data
- International video conference (2 – 5 inst. + CERN/Fermilab)



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

data analysis

local combination + discussion

video conference with CERN
or Fermilab

Video Conference




























	Mon, March 4	Tue, March 5	Wed, March 6	Thu, March 7	Fri, March 8	Sat, March 9
topic		VC 1: ATLAS Z	VC 1: ATLAS W	VC 1: ATLAS Z	VC 1: ATLAS W	VC 1: ATLAS Z
moderators		Andrée, Juan	Eva, Kilian	Predrag, Juan	Katharine, Duc Bao	Guilherme, N.N.
		Lecce	Valencia	Alexandria	Bucharest	Lisboa IST
		Birzeit	Tarnow	Barcelona	Katowice	Krakow
		Rehovot	Maynooth	Stockholm	Brookhaven	Quinhá
		Graz	Madrid IFT	Banska Bystrica	Marseille	
		Granada	London Queen Mary	Bergen	Curitiba	
topic	VC 2: CMS	VC 2: ATLAS W	VC 2: CMS		VC 2: CMS	
moderators	Sarah, Predrag	Katharine, Ricardo	Sarah, Chris	Sarah, Chris		
	Rio de Janeiro	Orsay	Nicosia	Athens, Demokritos		
	Santander	Lund	Zilina	Debrecen		
	Trieste	Marseille	Ponte Delgada	Vienna HEPHY		
	Helsinki	Durban	Perugia	Split		
				Cincinnati		





- VC 1 / VC 2 (same date, but different locations, physical and Vidyo!)
- Moderators work in pairs
- max. 5 institutes

<http://physicsmasterclasses.org/index.php?cat=schedule>



Moderators Schedule

 Roberto Franceschini (Theory)	 Florian Goertz (Theory)	 Ricardo Goncalo (ATLAS)	 Rebeca Gonzalez Suarez (CMS)
 Vava Gligorov (LHCb)	 Stefanie Hanisch (ATLAS)	 Despina Hatzifotiadou (ALICE)	 Michael Hauschild (ATLAS)
 Roland Jansky (ATLAS)	 Konrad Jende (ATLAS)	 Jason Kamin (ALICE)	 Fabian Kuger (ATLAS)
 Valère Lambert (CMS)	 Katharine Leney (ATLAS)	 Marcus Morgenstern (ATLAS)	 David Morse (CMS)
 Chris Neu (CMS)	 Michaela Oettle (Education Group)	 Michael Planer (CMS)	 Roberto Preghenella (ALICE)
 Silvia Schuh-Erhard (Learning & Development)	 Kate Shaw (ATLAS)	 Suyog Shrestha (ATLAS)	 Eva Sicking (CLIC detector & physics)
 Daniel Stolarski (Theory)	 Gerfried Wiener (Education Group)	 Claudia Wulz (CMS)	

	Mon, March 09	Tue, March 10	Wed, March 11	Thu, March 12	Fri, March 13	Sat, March 14
topic	VC 1: ATLAS Z	VC 1: ATLAS W	VC 1: ATLAS W	VC 1: ATLAS Z	VC 1: ATLAS Z	VC 1: ATLAS Z
moderators	Silvia, Daniel	Katharine, Muhammad	Kate, David	Kate, Suyog	Noemi, Roland	Claire, Ricardo
	Barcelona 	Colmar 	London QMU 	Pisa 	Pisa 	Porto 
	Dublin UC 	Valencia 	Colmar 	Orsay LAL 	Braga 	Lodz 
	Genova 	Perugia 	Lund 	Milano 	Rome Tor Vergata 	Crete 
	Poznan 	Hamburg DESY 	Bern 	Udine 	Yale 	Lisboa IST 
		Rehovot Weizmann 	Copenhagen 		Granada 	Nowy Sacz IFJ PAN 
topic	VC 2: CMS	VC 2: LHCb	VC 2: CMS	VC 2: LHCb	VC 2: ALICE R _{AA}	
moderators	Chris, Otman		Chris, Rebeca		Friederike, Jason	
	Lyon 	Orsay LAL 	Budapest Wigner 	Padova 	Frankfurt 	
	Debrecen 	Krakow IFJ PAN 	Lyon 	Ferrara 	Münster 	
	Pavia 	Marseille CPPM 	São Paulo 	Milano Bicocca 	Prague CTU 	
	Belgrade 	Syracuse 	Brussel Vrije Univ. 	Marseille CPPM 	Darmstadt GSI 	
		MIT 	Riverside, U. California 	Syracuse 		

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



INTERNATIONAL
MASTERCLASSES
 hands on particle physics

Support /Material for moderators

- Twiki:
<https://twiki.cern.ch/twiki/bin/view/Main/InternationalMasterclassesModeratorManual>
- Manual:
https://twiki.cern.ch/twiki/pub/Main/InternationalMasterclassesModeratorManual/Manual_Videconference_Moderators_v12.pdf



International Masterclasses 2015

- Organized by IPPOG (*International Particle Physics Outreach Group: independent group of outreach representatives from countries at CERN*)
- 25.2. - 2.4.2015
- 42 countries involved



Coord.: QuarkNet / TU Dresden



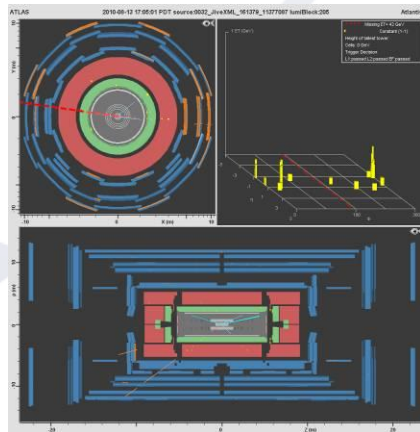
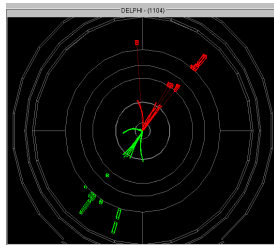
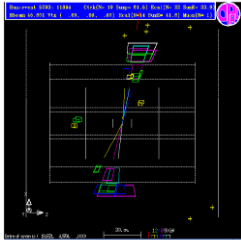
- 39 institutes
- 42 Masterclasses
 - 28 CMS
 - 14 ATLAS
- 17 video conf. with Fermilab



- 170 institutes
- 225 Masterclasses
 - 129 ATLAS
 - 48 CMS
 - 28 LHCb
 - 20 ALICE
- 51 video conf. with CERN

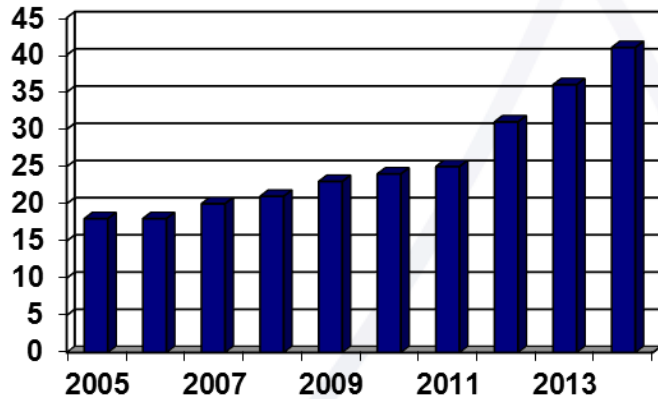
Brief History of Masterclasses

- 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

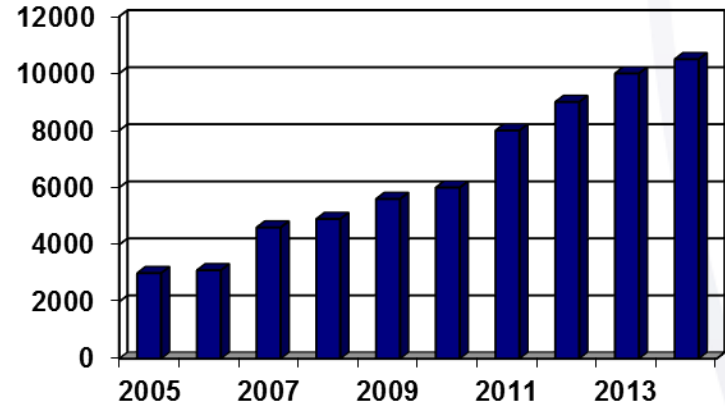


<http://cerncourier.com/cws/article/cern/55890> (How it all begun)
<http://cerncourier.com/cws/article/cern/57305> (MC in the LHC era)

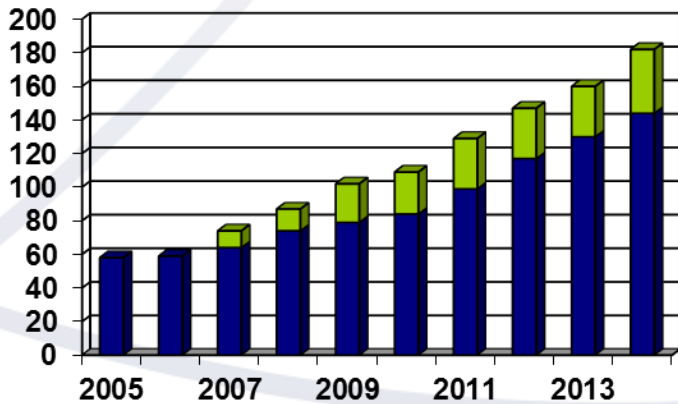
Participation Statistics



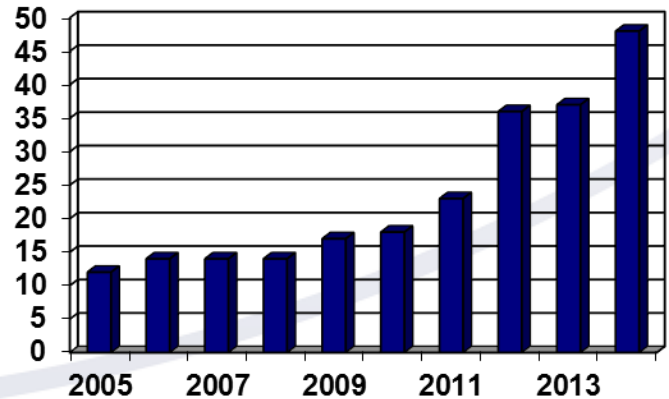
■ Countries



■ Participants (students)



■ Institutes ■ US program



■ CERN VCs

Enjoy your sessions!



Thank you for being part of International Masterclasses 2015!