

INTERNATIONAL MASTERCLASSES

Introduction to International Masterclasses for Physicists

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Heavy Ion Therapy MasterClass School
20 May 2021



Overview

What is a Masterclass?

- Students invited to be “particle physicists for a day” at university or laboratory
- Now can be done remotely online
- Combine and share results

International Masterclasses

- In and around March each year, worldwide
- Videoconferences at CERN, Fermilab, KEK, GSI, TRIUMF
- Organized by IPPOG, <http://ippog.org/>

Satellite Masterclass events

- International Day of Women and Girls in Science special Masterclasses (Feb)
- Big Analysis of Muons (May)
- World Wide Data Day (Nov)

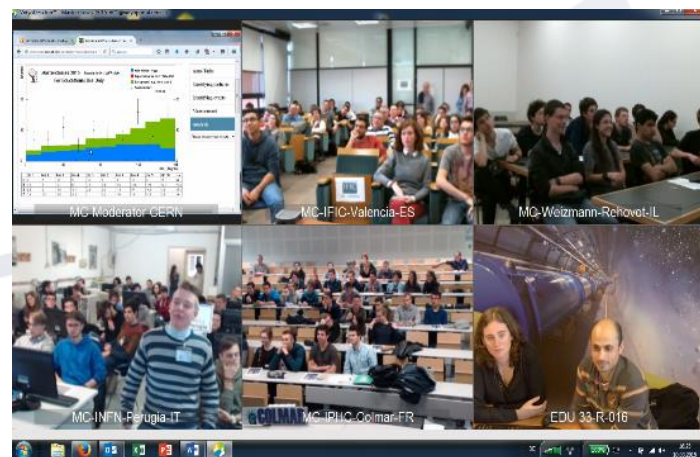


The Masterclass Day

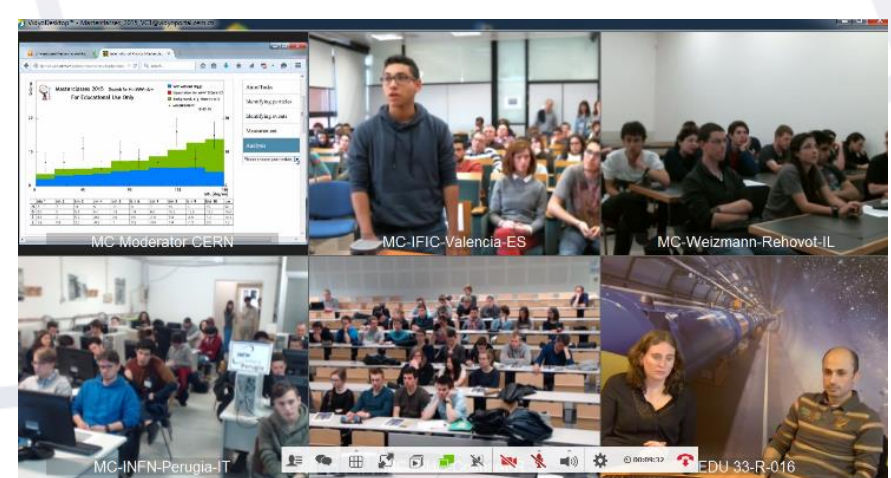
- Introduction to particle physics
- Tour if available
- Analyze authentic data from
 - Particle Therapy
 - LHC (ATLAS, CMS, ALICE, LHCb)
 - Neutrino experiment (MINERvA)
 - Belle II
 - Darkside
- International video conference (3-5 groups + CERN / Fermilab / KEK / **GSJ**)
 - Presentation of results
 - Combination and discussion
 - Q&A
 - Quiz (CERN-VC)
- Can be organized online but in-person is best!



09.03. - 14.03.						
topic	Mon, March 09	Tue, March 10	Wed, March 11	Thu, March 12	Fri, March 13	Sat, March 14
	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	Daniel, Muhammad	Katharine, Muhammad	Kate, David	Kate, Suyog	Noemi, Roland	Suyog, Ricardo
	Barcelona 	Colmar 	London QMU 	Pisa 	Pisa 	Porto
	Dublin UC 	Valencia 	Colmar 	Orsay LAL 	Braga 	Łódź
	Genova 	Perugia 	Lund 	Milano 	Rome Tor Vergata 	Crete
	Poznan 	Rehovot Weizmann 	Bonn 	Lidine 	Yale 	Lisboa IST
			Copenhagen 	Granada 		Nowy Sacz IFJ PAN



Central elements: Data analysis + video conference



Worldwide program

- Organized by [IPPOG](#) (*International Particle Physics Outreach Group*)
- [60 countries](#) and > 220 institutes scheduled in 2020 before the pandemic – most canceled
- The comeback started in 2021



Participate in IMC!

At your institute

- Does your institute participate? Search www.physicsmasterclasses.org/index.php?cat=country
- Organize an event / help as a tutor at your research lab
 - How to get started: www.physicsmasterclasses.org/index.php?cat=local_organisation&page=orga_intro

At Fermilab, CERN, KEK, GSI, TRIUMF

- Moderate video conferences with high school students
 - Training provided
 - Moderate in pairs, newcomers are paired with „veterans“
 - 1-4 „shifts“ per moderator

Next International Masterclasses: Feb/March/Apr 2022

Interested? Contact: uta.bilow@tu-dresden.de or kcecire@nd.edu

More info on www.physicsmasterclasses.org

But wait, there's more!

International Day of Women and Girls in Science (IDWGS)

- Special particle physics masterclasses with theme of women in science
- Woman physicist role models and discussion of women's careers
- Contact Uta

Big Analysis of Muons (BAM)

- Developed in response to pandemic, all online
- Teachers play a role with guidance from staff
- Contact Ken

World Wide Data Day (W2D2)

- One day event, simple analysis
- Teachers play a role with guidance from staff
- Contact Ken

