

INTERNATIONAL MASTERCLASSES

Introduction to International Masterclasses for Physicists

U. Bilow, Technische Universität Dresden
K. Cecire, University of Notre Dame

HCPSS2021



Overview

What is a Masterclass?

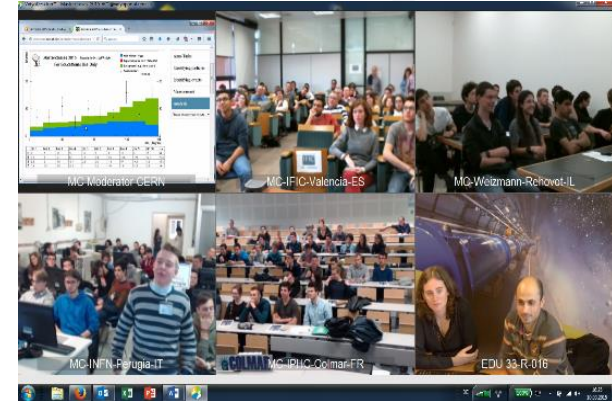
- Students invited to be “particle physicists for a day” at university or laboratory
- Now can be done remotely online
- Combine and share results
- Inspire the next generation

International Masterclasses

- In and around March each year, worldwide
- Videocons 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 11)
- Big Analysis of Muons (~May)
- World Wide Data Day (~Nov)



The Masterclass Day

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

Bilow + Cecire, IMC@HCPSS2021



09.03. - 14.03.

	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	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	Lodz
	Genova	Perugia	Lund	Milano	Rome Tor Vergata	Crete
	Poznan	Rehovot Weizmann	Bern	Udine	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, ...

- 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

