

QuarkNet

International Masterclasses: Particle Physics for High School Students and Teachers

APS April 2019 Meeting

K. Cecire, University of Notre Dame

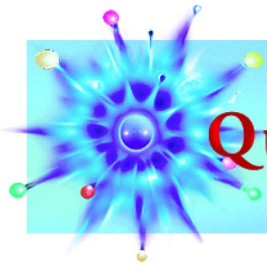
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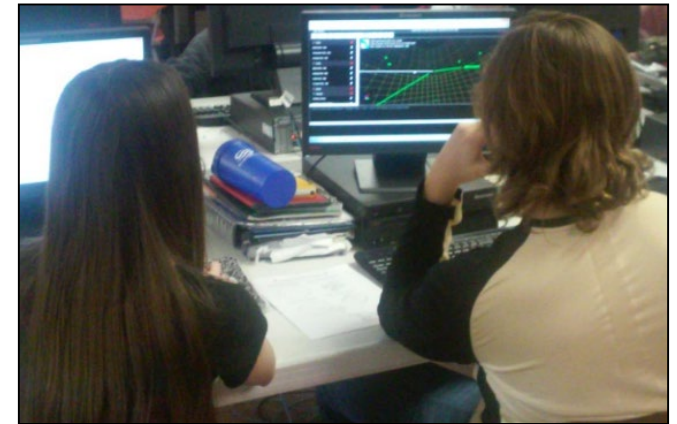




What is a masterclass?

“Particle physicist for a day”

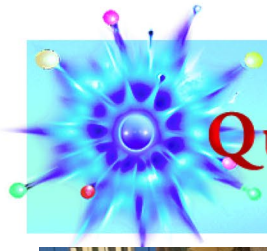
- Intro
- Tour
- Analyze authentic HEP data.
- Videoconference



International Masterclasses 2019 and beyond

- > 50 Countries
- > 10⁴ Students
- 4 LHC experiments
- 1 new Neutrino experiment
- More on the way



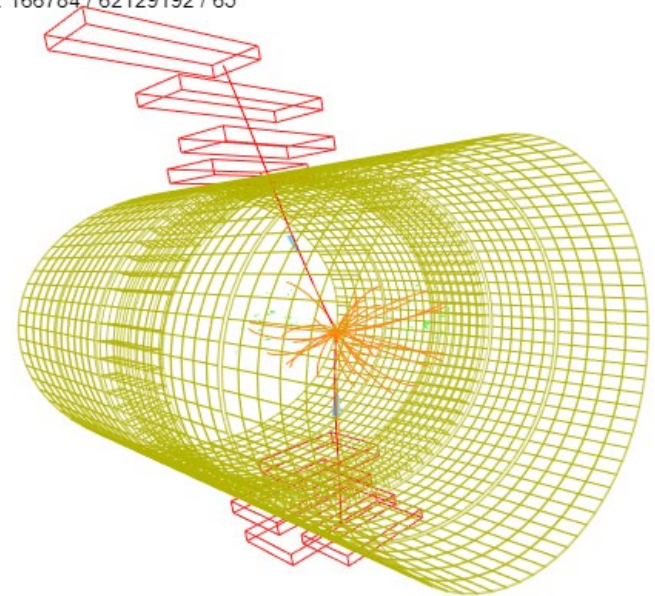


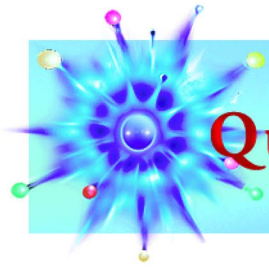
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What happens



CMS Experiment at the LHC, CERN
Data recorded: 2011-Jun-09 18:10:44.401883 GMT
Run / Event / LS: 166784 / 62129192 / 65





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What we talk about

Masterclass: CERN-09Apr2019

Location: Smolyan2019

Total:

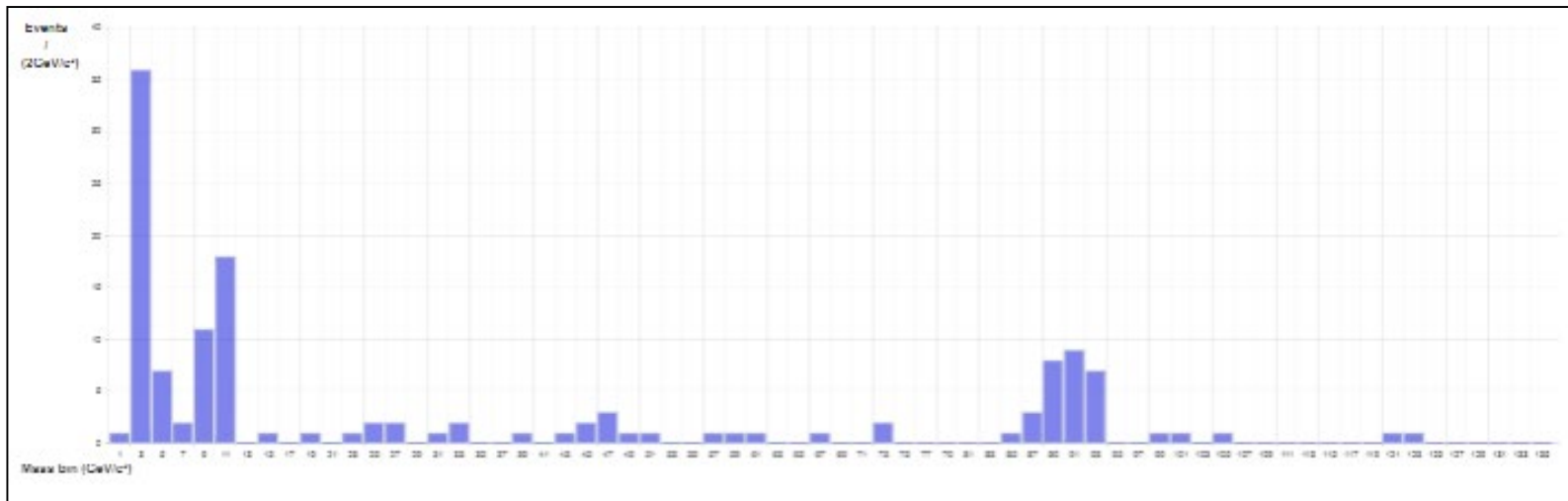
Muon	Electron	W	W-	W+	NP	Higgs	Zoo	Sum
746	757	312	366	441	375	30	79	1603

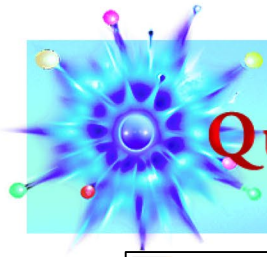
e/mu

W+/W-

1.01

1.2

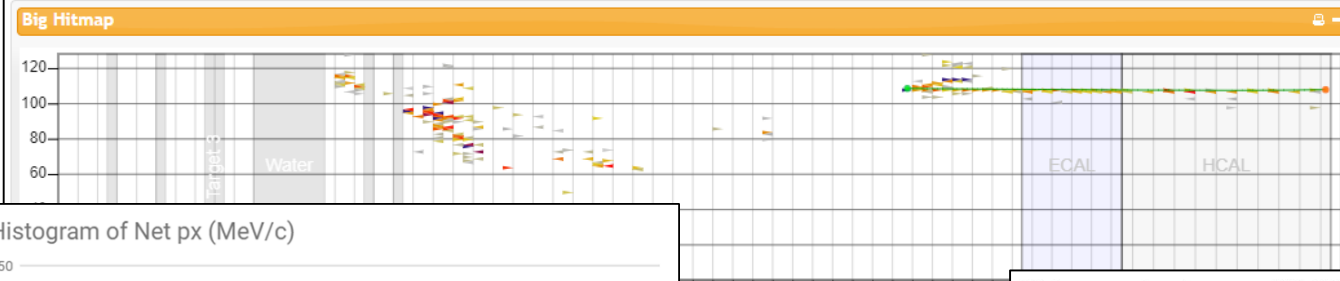
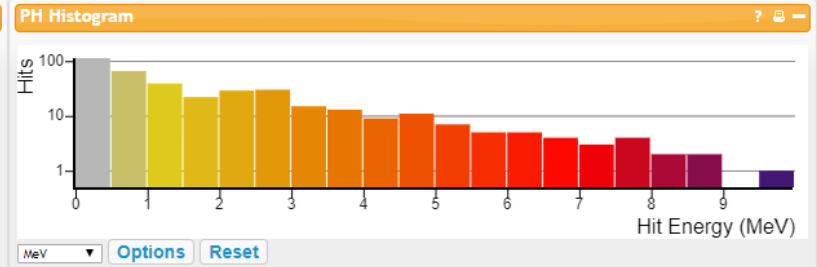
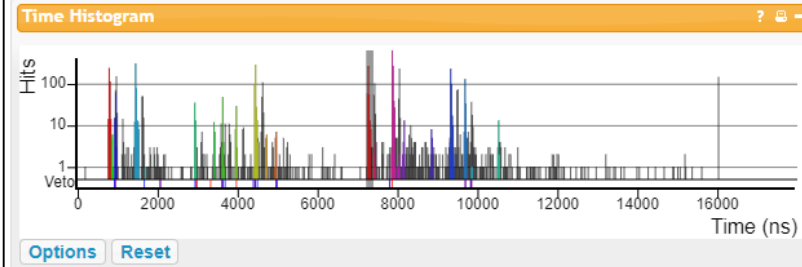




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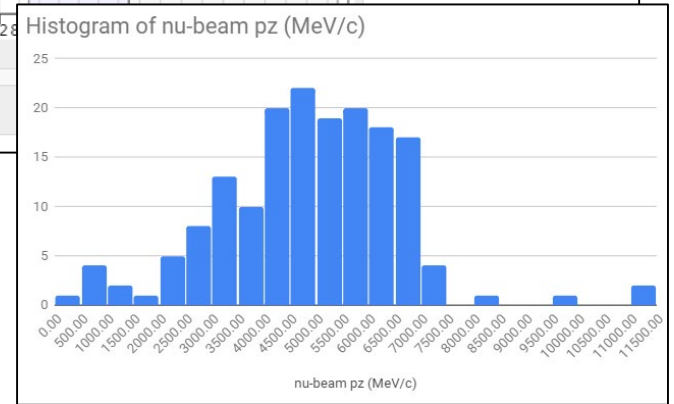
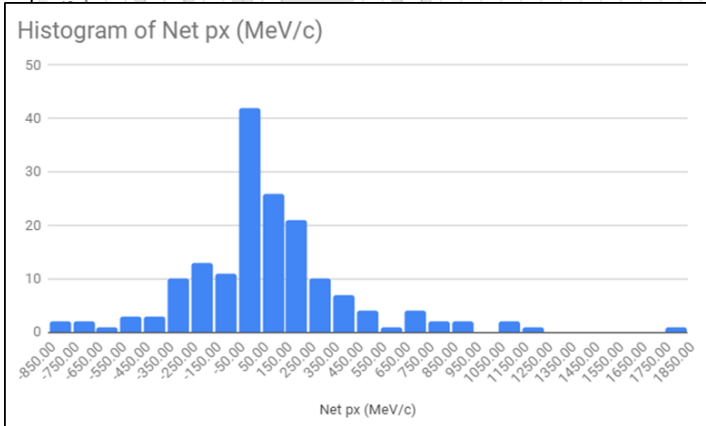
New- neutrinos

Arachne



Slice Info

Slice	13 of 22
Event ID	MV 6170 9 61
Time	(5.4 years ago)
Hits	399
Mean time	7272 ns
Total PE	4345 pe
Visible Energy	1064.1 MeV





What it takes

Hands on Particle Physics Masterclasses ORGANISATION

Welcome to the organisation section of International Masterclasses!

Here, we hope to provide you with all that you'll need in order to organise an event that students, teachers and staff will never forget.

Therefore, you can find:

- **introduction** to the overall organising scheme including a **step-by-step list** for preparation
- **Vidyo links** for the video conference
- **manual** for the video conference, including information on the **quiz**
- **information on the measurements**
- **corporate material** (logos, poster, invitation letters, participation certificates)
- **DVD images** for using the data offline
- **press release** for IMC19

We also provide information

- how we would like to present your information
- or how you can contribute in translation

Circulars send to the e-mail list with information

- Circular 1 (14.09.2018) - Announcement
- Circular 2 (12.10.2018) - World Wide
- Circular 3a (22.10.2018) - IMC19: D
- Circular 3b (22.10.2018) - IMC19: D
- Circular 4 (02.11.2018) - IMC19: R
- Circular 5 (09.11.2018) - IMC19: R
- Circular 6 (23.11.2018) - IMC19: N
- Circular 7 (30.11.2018) - IMC19: I
- Circular 8 (14.12.2018) - IMC19: F
- Circular 9 (11.01.2019) - IMC19: P



In summary, for a Masterclass the following is needed:

- a group of students (aged 15 - 19)
- an inviting institute, providing the infrastructure
- at least 1 scientist, holding the lecture
- some tutors for students during the measurement (1 tutor per 10 students)
- a lecture hall
- PC-pool (students work in groups of 2)
- facility for video conferencing, if possible