Third HEP Graduate Workshop

University of Batna 1 – Algeria

24-26 May 2022

About the HGW workshop

- Annual event organised by various Algerian universities
- Previous versions held @ M'sila University 2020 , 2021

Aims and Topics

- **Aims**
  - Introduce students to HEP topics
  - Train students in HEP tools
  - Promote HEP in Algeria
  - Towards Algeria joining ATLAS collaboration in near future (hopefully)
- **Target audience:** High-Energy-Physics Master/PhD students
- **Topics:** Collider Physics, Machine Learning, top physics, QCD, DM, BSM searches, etc ...

HEP @ Batna

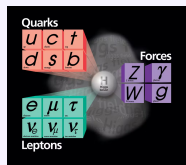Program in theoretical physics (Licence-Master-Doctorate)

Program includes training in HEP

RQM, QFT, Particle Physics, Standard Model, and even Particle Collider Physics (LHC physics, detector physics etc ...)
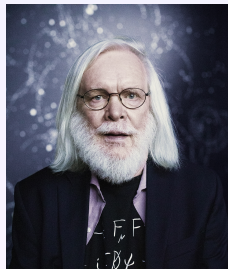
PhD program: currently we have 4 registered Doctorate students working on **QCD phenomenology** topics

- On QCD resummation in jet observables
- Students employing HEP tools

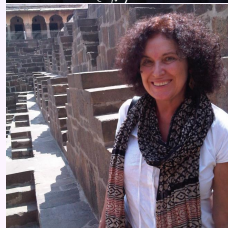# Invited Speakers and Topics

Prof. John Ellis
King's College London, UK
Particle Physics
1 lecture: today 09:00 - 10:00

Prof. Daniela Bortoletto
Oxford University, UK
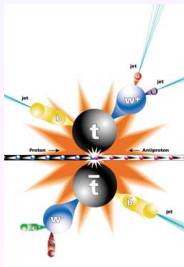**Detectors and Instrumentation at Colliders**
lecture 1: today 10:00 - 10:55
lecture 2: tomorrow 09:00 - 09:45
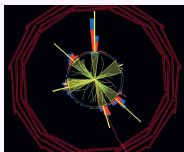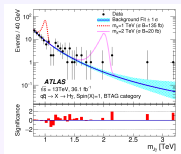
Invited Speakers and Topics

Prof. Tobias Golling
Geneva University, Switzerland
Machine Learning at Colliders
lecture 1: today 11:00 - 11:45
lecture 2: tomorrow 09:45 - 10:30

Dr. Michele Pinamonti
INFN, Udine, Italy
Top Quark Physics
lecture 1: today 11:45 - 12:30
lecture 2: Thursday 09:00 - 09:45

Invited Speakers and Topics

Dr. Katharine Leney
SMU, Dallas, USA
BSM searches at colliders
lecture 1: today 14:30 - 15:15
lecture 2: tomorrow 14:30 - 15:15

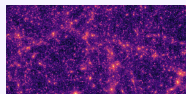**Dr. Benjamin Nachman**
LBNL, USA
QCD, jets and jet substructure
lecture 1: today 15:15 - 16:00
lecture 2: tomorrow 15:15 - 16:00
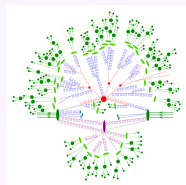
Invited Speakers and Topics

Dr. Caterina Doglioni
Lund University, Sweden
Dark Matter searches at colliders
lecture 1: tomorrow 10:45 - 11:30
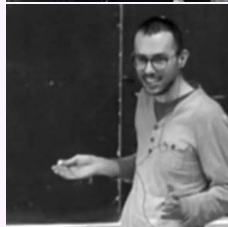lecture 2: thursday 09:45 - 10:30

Dr. Giancarlo Panizzo
Udine university, Italy
Physics Modelling
lecture 1: tomorrow 11:30 - 12:15
Tutorial: Thursday 10:45 - 11:30

TUESDAY, 24 MAY

08:45 → 09:00   **Workshop Opening**
Conveners: Rachik SOUALAH (University of Sharjah (AE)), Yazid DELENDA (University of Batna 1)

09:00 → 10:00   **Particle Physics**
Convener: John ELLIS (KING'S COLLEGE LONDON, UK) (King's college London)

10:00 → 10:55   **Detectors and Instrumentation at Colliders**
Convener: Daniela BORTOLETTO (UNIVERSITY OF OXFORD, UK) (University of Oxford, UK)

10:55 → 11:00   **Break**   5m

11:00 → 11:45   **Machine Learning at Colliders**
Convener: Tobias GOLLING (UNIVERSITÉ DE GENÈVE , CH) (Université de Genève (CH))

11:45 → 12:30   **Top quark Physics**
Convener: Michele PINAMONTI (Universita degli Studi di Udine (IT))

12:30 → 14:30   **Lunch Break**   2h

14:30 → 15:15   **BSM searches at colliders**
Convener: Katharine LENEY (SMU, DALLAS, USA) (Southern Methodist University (US))

15:15 → 16:00   **QCD, jets and jet substructure**
Convener: Benjamin NACHMAN (LBNL, USA) (LBNL, US)

Tutorial & quiz

Tutorial session

Please follow instructions on how to install `Pythia8` and `root` on indico page (Hands-On Session)
Best to practice while following the tutorial
Ask questions in case of problems

Quiz

Questions will be from the lectures
Questions will be launched during the break on Thursday.
Answers by end of break

Thanks

Enormous Thanks to speakers and participants

Wish you a pleasant experience during this workshop

Please **ask questions**
[either in chat box or by mic at end of talk]