

# **Workshop on Machine Learning and High-Energy Physics**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Welcome and Organisational Remarks

*Wednesday 13 December 2023 09:00 (5 minutes)*

**Presenter:** Dr KRAUSE, Claudius (HEPHY Vienna (ÖAW))

**Session Classification:** Welcome

Contribution ID: 2

Type: **not specified**

## Welcome to HEPHY

*Wednesday 13 December 2023 09:05 (10 minutes)*

**Presenters:** SCHWANDA, Christoph; SCHWANDA, Christoph (Austrian Academy of Sciences (AT))

**Session Classification:** Welcome

Contribution ID: 3

Type: **not specified**

## **Artificial Proto-Modelling: Building Precursors of a Next Standard Model from Simplified Model Results**

*Wednesday 13 December 2023 09:15 (45 minutes)*

**Presenter:** WALTENBERGER, Wolfgang (Austrian Academy of Sciences (AT))

**Session Classification:** Morning Session

Contribution ID: 4

Type: **not specified**

## **Optimal operation of cryogenic calorimeters through deep reinforcement learning**

*Wednesday 13 December 2023 10:30 (45 minutes)*

**Presenters:** WAGNER, Felix (HEPHY Vienna); WAGNER, Felix (Vienna University of Technology)

**Session Classification:** Morning Session

Contribution ID: 5

Type: **not specified**

## **Machine learning for modern radio surveys**

*Wednesday 13 December 2023 11:15 (45 minutes)*

**Presenter:** ALEGRE, Lara (Heidelberg University)

**Session Classification:** Morning Session

Contribution ID: 6

Type: **not specified**

## **A Survey of Machine Learning Methods for Anomaly Detection**

*Wednesday 13 December 2023 14:00 (45 minutes)*

**Presenters:** MASTANDREA, Radha (University of California, Berkeley); MASTANDREA, Radha (LBNL)

**Session Classification:** Afternoon Session

Contribution ID: 7

Type: **not specified**

## **Back To The Roots: Tree-Based Algorithms for Weakly Supervised Anomaly Detection**

*Wednesday 13 December 2023 14:45 (45 minutes)*

**Presenter:** KRAMER, Michael (Rheinisch Westfaelische Tech. Hoch. (DE))

**Session Classification:** Afternoon Session



Contribution ID: 8

Type: **not specified**

## **Semi-visible jets, energy-based models, and self-supervision**

*Wednesday 13 December 2023 16:00 (45 minutes)*

**Presenter:** FAVARO, Luigi

**Session Classification:** Afternoon Session

Contribution ID: 9

Type: **not specified**

## **Hunting for di-Higgs in hadronic final states: showcasing Machine Learning for modelling of hadronic backgrounds and elucidating rare signals**

*Wednesday 13 December 2023 16:45 (45 minutes)*

**Presenter:** HARTMAN, Nicole Michelle (TUM (DE))

**Session Classification:** Afternoon Session

Contribution ID: **10**

Type: **not specified**

## **Tree boosting for learning EFT parameters**

*Thursday 14 December 2023 09:15 (45 minutes)*

**Presenter:** SCHWARZ, Dennis (Austrian Academy of Sciences (AT))

**Session Classification:** Morning Session

Contribution ID: 11

Type: **not specified**

# Generative Modelling of Calorimeter Showers and Particle Jets

*Thursday 14 December 2023 10:30 (45 minutes)*

**Presenter:** BUSS, Thorsten Lars Henrik (Universität Hamburg)

**Session Classification:** Morning Session

Contribution ID: 12

Type: **not specified**

## **ML applications in searches for long-lived particles at CMS**

*Thursday 14 December 2023 11:15 (45 minutes)*

**Presenter:** BENATO, Lisa (Hamburg University (DE))

**Session Classification:** Morning Session

Contribution ID: 13

Type: **not specified**

## **The MadNIS Reloaded**

*Thursday 14 December 2023 14:00 (45 minutes)*

**Presenters:** HEIMEL, Theo (Universität Heidelberg); HEIMEL, Theo (Heidelberg University)

**Session Classification:** Afternoon Session

Contribution ID: 14

Type: **not specified**

## **Machine learning methods & Ultra-High Energy Cosmic Rays**

*Thursday 14 December 2023 14:45 (45 minutes)*

**Presenter:** BORTOLATO, Blaz (Institute Josef Stefan)

**Session Classification:** Afternoon Session

Contribution ID: 15

Type: **not specified**

## **(Direct) Diffusion for LHC Event Generation**

*Friday 15 December 2023 10:30 (45 minutes)*

**Presenter:** PALACIOS SCHWEITZER, Sofia (ITP, University Heidelberg)

**Session Classification:** Morning Session



Contribution ID: 16

Type: **not specified**

## **Precision-Machine Learning for the Matrix Element Method**

*Friday 15 December 2023 11:15 (45 minutes)*

**Presenter:** HUETSCH, Nathan (Heidelberg University, ITP Heidelberg)

**Session Classification:** Morning Session

Contribution ID: 17

Type: **not specified**

## **High Multiplicity with JetGPT - LHC Event Generation with Autoregressive Transformers**

*Friday 15 December 2023 09:00 (45 minutes)*

**Presenter:** SPINNER, Jonas Simon

**Session Classification:** Morning Session

Contribution ID: 18

Type: **not specified**

## Foundation Models for HEP

**Presenter:** GOLLING, Tobias (Universite de Geneve (CH))

**Session Classification:** Afternoon Session

Contribution ID: 19

Type: **not specified**

## **Flow Unfolding for CP-Observable Reconstruction**

*Thursday 14 December 2023 16:00 (45 minutes)*

**Presenter:** ACKERSCHOTT, Jona (Universite de Geneve (CH))

**Session Classification:** Afternoon Session