Session Program

12–14 Jul 2021

2021 Meeting of the Division of Particles and Fields of the American Physical Society (DPF21)

Computation, Machine Learning, and AI

Zoom

Monday 12 July

14:30

Computation, Machine Learning, and AI: COMP 1E

Session | **Location:** Zoom, Track E | **Conveners:** Aishik Ghosh, Horst Wahl, Gordon Watts

14:30–14:45 **Deep-Learned Event Variables for Collider Phenomenology**

Speaker
Prasanth Shyamsundar

14:45–15:00 **Unfolding ATLAS Collider Data with the Novel OmniFold Procedure**

Speaker
Adi Suresh

15:00–15:15
Neural Empirical Bayes: Source Distribution Estimation and its Applications to Simulation-Based Inference

Speaker
Maxime Noel Pierre Vandegar

15:15–15:30
Progress towards a more sensitive CWoLa hunt with the ATLAS detector

Speaker
Kees Christian Benkendorfer

15:30–15:45
Active Learning for Exclusion level set estimation with the ATLAS experiment

Speaker
Irina Espejo Morales

15:45–16:00 **Recent Progress in ML for Tracker DQM**

Speaker
Guillermo Antonio Fidalgo Rodriguez

16:00

16:15

Computation, Machine Learning, and AI: COMP 2E

Session | **Location:** Zoom, Track E | **Conveners:** Gordon Watts, Oleksandr Viazlo

16:15–16:30
Framework for Hyperparameter Optimization in Machine Learning using the ATLAS Grid Computing Resource

Speaker
Alkaid Cheng

16:30–16:45
An intelligent Data Delivery Service (iDDS) for and beyond the ATLAS experiment

Speaker
Wen Guan

16:45–17:00

Implementation of Jupyter Notebooks into The Reproducible Open Benchmarks for Data Analysis Platform (ROB)

Speakers
Aaron Wang, Heiko Mueller

17:00–17:15 **Break**

17:15–17:30

CaloFlow: Fast and Accurate Generation of Calorimeter Showers with Normalizing Flows

Speaker
Dr Claudius Krause

17:30–17:45

Towards Designing and Exploiting Generative Networks for Neutrino Physics Experiments using Liquid Argon Time Projection Chambers

Speaker
Ms Nikita Saxena

17:45

Tuesday 13 July

14:30

Computation, Machine Learning, and AI: COMP 3E

Session | **Location:** Zoom, Track E | **Convener:** Ben Nachman

14:30–14:45 **The ATLAS Multi-threaded Trigger Selection Framework**

Speaker
Werner Wiedenmann

14:45–15:00 **Nanosecond machine learning with BDT for high energy physics**

Speaker
Ben Carlson

15:00–15:15 **Fast RNN Inference on an FPGA**

Speaker
Aaron Wang

15:15–15:30 **FPGA filter for fast tracking in the ATLAS HL-LHC trigger**

Speaker
William Kalderon

15:30–15:45 **ATLAS pixel cluster splitting using Mixture Density Network**

Speakers
Boping Chen, Elham E Khoda

15:45–16:00 **RNN-based track finding in the Fermilab Muon g-2 experiment**

Speaker
Emmanouil Kargiantoulakis

16:00

16:15

Computation, Machine Learning, and AI: COMP 4E

Session | **Location:** Zoom, Track E | **Conveners:** Ben Nachman, Ghosh Aishik

16:15–16:30
Reconstructing Electrons and Photons in the CMS ECAL using Graph Neural Networks.

Speaker
Simon Rothman

16:30–16:45
Neural Network-based Resolutions for Pion Energy Calibration with the ATLAS Detector

Speaker
Adithya Suresh

16:45–17:00 **Linearized Optimal Transport for Jet Physics**

Speaker
Ms Tianji Cai

17:00–17:15

Using Dropout to Capture Uncertainty: A Novel Application to B-tagging

Speaker
Binbin Dong

17:15–17:30

Explainable AI for ML jet taggers using expert variables and layerwise relevance propagation

Speaker
Garvita Agarwal

17:30–17:45

Unfolding at the LHC: A review of unfolding at the LHC, including recent and future developments with RooUnfold.

Speaker
Vincent Alexander Croft

17:45

Wednesday 14 July

14:30

Computation, Machine Learning, and AI: COMP 5E

Session | **Location:** Zoom, Track E | **Conveners:** Muge Karagoz, Ghosh Aishik

14:30–14:45 **Improvements to Cosmic Muon Identification Using Machine Learning**

Speaker
Mohit Srivastav

14:45–15:00

Direction Reconstruction using a CNN for GeV-Scale Neutrinos in IceCube

Speaker
Shiqi Yu

15:00–15:15

Convolutional Neural Network Reconstruction of Neutrino Event Interaction Vertex in IceCube

Speaker
Julia Willison

15:15–15:30 **IceCube-Upgrade Reconstructions using Recurrent Neural Networks**

Speaker
Brandon Pries

15:30–15:45

Particle Instance Identification Using a Sparse 3D Convolutional Neural Network

Speaker
Mr Felix Yu

15:45–16:00

Implementation of Machine Learning Algorithms to Form Di-Muons from Off-Shell Parent Particles

Speaker
Mehdi Rahmani

16:00