Session Program

23–28 Oct 2022

ACAT 2022

Poster session with coffee break

Villa Romanazzi Carducci, Bari, Italy
Via Giuseppe Capruzzi, 326, 70124 Bari BA

Monday 24 October

11:00

Poster session with coffee break

Session | **Location:** Villa Romanazzi, Area Poster (Floor -1)

11:00–11:30

Evolution of the CMS Submission Infrastructure to support heterogeneous resources in the LHC Run 3

Speaker
Antonio Perez-Calero Yzquierdo

11:00–11:30

Faster simulated track reconstruction in the ATLAS Fast Chain

Speaker
William Axel Leight

11:00–11:30

The adaptation of a deep learning model to locating primary vertices in the ATLAS experiment

Speaker
Elliott Kauffman

11:00–11:30

A Deep Learning based algorithm for PID study with cluster counting

Speaker
Dr Guang Zhao

11:00–11:30

Secrets Management for CMSWEB

Speaker
Muhammad Imran

11:00–11:30

A distributed infrastructure for interactive analysis: the experience at INFN

Speaker
Diego Ciangottini

11:00–11:30

Custom event sample augmentations for ATLAS analysis data

Speaker
Lukas Alexander Heinrich

11:00–11:30

Progress towards an improved particle flow algorithm at CMS with machine learning

Speaker
Farouk Mokhtar

11:00–11:30

Transparent extension of INFN-T1 with heterogeneous computing architectures

Speaker
Stefano Dal Pra

11:00–11:30
Enabling continuous speedup of CMS Event Reconstruction through continuous benchmarking

Speaker
Claudio Caputo

11:00–11:30
CMS tracking performance in Run 2 and early Run 3 data using the tag-and-probe technique

Speakers
Brunella D'Anzi, CMS Collaboration

11:00–11:30
HDTFS : Cost-effective Hadoop Distributed & Tiered File System for High Energy Physics

Speaker
Xiaoyu Liu

11:00–11:30 **Stability of the CMS Submission Infrastructure for the LHC Run 3**

Speaker
Antonio Perez-Calero Yzquierdo

11:00–11:30
CMS Tracker Alignment: Legacy results from LHC Run 2 and first results from Run 3

Speaker
Antonio Vagnerini

11:00–11:30 **AI Data Quality Monitoring with Hydra**

Speaker
Thomas Britton

11:00–11:30 **Applications of supercomputer Tianhe-II in BESIII**

Speaker
Biying Hu

11:00–11:30
Improved Selective Background Monte Carlo Simulation at Belle II with Graph Attention Networks and Weighted Events

Speaker
Boyang Yu

11:00–11:30
A comparison of HEPSPEC benchmark performance on ATLAS Grid-Sites versus ideal conditions

Speaker
Michael Boehler

11:00–11:30
Fast track seed selection for track following in the Inner Detector Trigger track reconstruction

Speaker
Andrius Vaitkus

11:00–11:30 **Data Calibration and Processing at Belle II**

Speaker
Stefano Lacaprara

11:00–11:30 **AtlFast3: Fast Simulation in ATLAS for Run 3 and beyond**

Speaker
Rui Zhang

11:00–11:30
Design and implementation of computational storage system based on EOS for HEP data processing

Speakers
Xiaoyu Liu, Xiaoyu Liu

11:00–11:30 **Transparent expansion of a WLCG compute site using HPC resources**

Speaker
Ralf Florian Von Cube

11:00–11:30
A FPGA Implementation of the Hough Transform tracking algorithm for the Phase-II upgrade of ATLAS

Speaker
Fabrizio Alfonsi

11:00–11:30
Parametrized simulation of the micro-RWELL response with PARSIFAL software

Speaker
Lia Lavezzi

11:00–11:30
Machine Learning Techniques for selecting Forward Electrons $(2.5<\eta<3.2)$ with the ATLAS High Level Trigger

Speaker
Meinrad Moritz Schefer

11:00–11:30
Monitoring CMS experiment data and infrastructure for next generation of LHC run

Speaker
Ceyhun Uzunoglu

11:00–11:30 **Commissioning CMS online reconstruction with GPUs**

Speakers
CMS collaboration, Marc Huwiler

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Machine Learning for Real-Time Processing of ATLAS Liquid Argon Calorimeter Signals with FPGAs

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Tuesday 25 October

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11:00–11:30

The Level-1 Global Trigger for Phase-2: Algorithms, configuration and integration in the CMS offline framework

Speaker
Elias Leutgeb

11:00–11:30

Updates on the Low-Level Abstraction of Memory Access

Speaker
Bernhard Manfred Gruber

11:00–11:30

CERNLIB status

Speaker
Andrii Verbytskyi

11:00–11:30

Variational AutoEncoders for Anomaly Detection in VBS events within an EFT framework

Speaker
Giulia Lavizzari

11:00–11:30

Application of Unity for detector modeling in BESIII

Speaker
Zhijun Li

11:00–11:30

Improving robustness of jet tagging algorithms with adversarial training

Speakers
Annika Stein, Spandan Mondal

11:00–11:30

Preliminary Results of Vectorization of Density Functional Theory calculations in Geant4/V for amino acids

Speaker
Oscar Roberto Chaparro Amaro

11:00–11:30

Data Quality Monitoring for the JUNO Experiment

Speaker
Kaixuan Huang

11:00–11:30

Data Management interfaces for CMS experiment: building an improved user experience

Speaker
Rahul Chauhan

11:00–11:30
Exploring the use of accelerators for lossless data compression in CMS

Speaker
Stefan Rua

11:00–11:30 **Continuous Integration for the FairRoot Software Stack**

Speakers
Dennis Klein, Dr Christian Tacke

11:00–11:30 **General shower simulation MetaHEP in key4hep framework**

Speaker
Dalila Salamani

11:00–11:30
Supporting multiple hardware architectures at CMS: the integration and validation of Power9

Speaker
Daniele Spiga

11:00–11:30 **Implementation of generic SoA data structure in the CMS software**

Speaker
Eric Cano

11:00–11:30
JETFLOW: Generating jets with Normalizing Flows using the jet mass as condition and constraint

Speaker
Benno Kach

11:00–11:30
Experience in SYCL/oneAPI for event reconstruction at the CMS experiment

Speaker
Aurora Perego

11:00–11:30 **Awkward Arrays to RDataFrame and back**

Speaker
Ianna Osborne

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Comparing and improving hybrid deep learning algorithms for identifying and locating primary vertices

Speaker
Simon Akar

11:00–11:30 **Particle Flow Reconstruction on Heterogeneous Architecture for CMS**

Speaker
Felice Pantaleo

11:00–11:30
Machine learning techniques for data quality monitoring at the CMS detector

Speaker
Rosamaria Venditti

11:00–11:30 **Event Display Development for Mu2e using Eve-7**

Speaker
Namitha Chithirasreemadam

11:00–11:30 **Trigger Rate Monitoring Tools at CMS**

Speaker
John Lawrence

11:00–11:30
Machine learning-based vertex reconstruction for reactor neutrinos in JUNO

Speaker
Wuming Luo

11:00–11:30 **The CMS Roadmap towards HL-LHC Software and Computing**

Speaker
Danilo Piparo

11:00–11:30 **Distributed data processing pipelines in ALFA**

Speaker
Alexey Rybalchenko

11:00–11:30 **A graph neural network for B decays reconstruction at Belle II**

Speaker
Jacopo Cerasoli

11:00–11:30
Evaluating Generative Adversarial Networks for particle hit generation in a cylindrical drift chamber using Fréchet Inception Distance

Speakers
Irene Andreou, Noam Mouelle

11:00–11:30 **XRootD caching for Belle II**

Speaker
Moritz David Bauer

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Wednesday 26 October

11:00

Poster session with coffee break

Session | **Location:** Villa Romanazzi, Area Poster (Floor -1)

11:00–11:30

Primary Vertex Reconstruction for Heterogeneous Architecture at CMS

Speakers
Adriano Di Florio, Giorgio Pizzati

11:00–11:30

Pyrate: a novel system for data transformations, reconstruction and analysis for the SABRE experiment

Speaker
Federico Scutti

11:00–11:30

A web based graphical user interface for X-ray computed tomography imaging

Speaker
Yu Hu

11:00–11:30 **Mock Data Challenge for the JUNO experiment**

Speaker
Alessandra Carlotta Re

11:00–11:30 **CaloPointFlow - Generating Calorimeter Showers as Point Clouds**

Speaker
Simon Schnake

11:00–11:30 **BESIII track reconstruction algorithm based on machine learning**

Speaker
Ms Xiaoqian Jia

11:00–11:30

Optimizing electron and photon reconstruction using deep learning: application to the CMS electromagnetic calorimeter

Speaker
Davide Valsecchi

11:00–11:30 **Accelerating ROOT compression with Intel ISA-L library**

Speaker
Yu Gao

11:00–11:30

Hyperparameter optimization, multi-node distributed training and benchmarking of AI-based HEP workloads using HPC

Speaker
Eric Wulff

11:00–11:30
Deploying a cache content delivery network for CMS experiment in Spain

Speaker
Carlos Perez Dengra

11:00–11:30
Speeding up the CMS track reconstruction with a parallelized and vectorized Kalman-filter-based algorithm during the LHC Run 3

Speaker
Manos Vourliotis

11:00–11:30 **Of Frames and schema evolution - The newest features of podio**

Speaker
Thomas Madlener

11:00–11:30 **Real-time alignment procedure at the LHCb experiment for Run3**

Speaker
Florian Reiss

11:00–11:30
Differentiating through Awkward Arrays using JAX and a new CUDA backend for Awkward Arrays

Speaker
Anish Biswas

11:00–11:30 **Track reconstruction using quantum algorithms at LUXE**

Speaker
Annabel Kropf

11:00–11:30 **The Key4hep Turnkey Software Stack: Beyond Future Higgs Factories**

Speaker
Valentin Volkl

11:00–11:30
Integration of machine learning-trained models into JUNO's offline software

Speaker
Tao Lin

11:00–11:30
AI/ML for PID in the Charged Pion Polarizability Experiment at Jefferson Lab}

Speaker
Andrew Schick

11:00–11:30 **Auto-tuning capabilities of the ACTS track reconstruction suite**

Speakers
Corentin Allaire, Rocky Bala Garg

11:00–11:30 **k4Clue: Having CLUE at future colliders experiments**

Speaker
Erica Brondolin

11:00–11:30 **Bayesian method for waveform analysis with GPU acceleration**

Speaker
Yuyi Wang

11:00–11:30
Reconstructing Particle Decay Trees with Quantum Graph Neural Networks for High Energy Physics

Speaker
Melvin Strobl

11:00–11:30 **Optimized GPU usage in High Energy Physics applications**

Speaker
Tim Voigtlaender

11:00–11:30 **Advancing Opportunistic Resource Management via Simulation**

Speaker
Max Fischer

11:00–11:30 **Equivariant Graph Neural Networks for Charged Particle Tracking**

Speaker
Ameya Thete

11:00–11:30
Evaluating Portable Parallelization Strategies for Heterogeneous Architectures

Speaker
Charles Leggett

11:00–11:30
Lamarr: LHCb ultra-fast simulation based on machine learning models

Speaker
Matteo Barbetti

11:00–11:30
Development of a lightweight database interface for accessing JUNO conditions and parameters data

Speaker
Tao Lin

11:00–11:30 **Hyperparameter Optimization as a Service on INFN Cloud**

Speaker
Matteo Barbetti

11:30

Thursday 27 October

11:00

Poster session with coffee break

Session | **Location:** Villa Romanazzi, Area Poster (Floor -1)

11:00–11:30 **Scaling MadMiner with a deployment on REANA**

Speaker
Irina Espejo Morales

11:00–11:30
The TICL reconstruction at the CMS Phase-2 High Granularity Calorimeter Endcap

Speakers
Felice Pantaleo, Wahid Redjeb

11:00–11:30 **Quality assurance of the LHCb simulation**

Speaker
Dmitry Popov

11:00–11:30 **SCD: an open, realistic calorimeter for ML studies in HEP**

Speakers
Nathalie Soybelman, Mr Nilotpal Kakati

11:00–11:30 **Data transfer to remote GPUs over high performance networks**

Speakers
Ali Marafi, Andrea Bocci

11:00–11:30
Binning high-dimensional classifier output for HEP analyses through a clustering algorithm

Speaker
Svenja Diekmann

11:00–11:30 **Equivariant Neural Networks for Particle Physics: PELICAN**

Speaker
Alexander Bogatskiy

11:00–11:30
High performance analysis with RDataFrame and the python ecosystem: Scaling and Interoperability

Speakers
Josh Bendavid, Kenneth Long

11:00–11:30 **A calibrated particle identification for Belle II**

Speaker
Marcel Hohmann

11:00–11:30 **Compiling Awkward Lorentz Vectors with Numba**

Speaker
Saransh Chopra

11:00–11:30
Ultra-low latency recurrent neural network inference on FPGAs for physics applications with hls4ml

Speaker
Elham E Khoda

11:00–11:30 **Fast analysis facility for HEP experiments**

Speaker
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11:00–11:30
Noise removal of the events at main drift chamber of BESIII with deep learning techniques

Speaker
Hosein Karimi Khozani

11:00–11:30
Binned histogram fitting for Bayesian inference via Automatic Differentiation in JuliaLang

Speaker
Jerry Ling

11:00–11:30
Uncertainty estimation in deep learning based-classifiers of High Energy Physics events using Monte Carlo Dropout

Speaker
Raquel Pezoa Rivera

11:00–11:30 **Performance portability with alpaka**

Speaker
Mr Jan Stephan

11:00–11:30
Accelerating the DBSCAN clustering algorithm for low-latency primary vertex reconstruction

Speaker
Marco Barbone

11:00–11:30
Enhanced Data Analytics capabilities in the ELK Stack - a review of the premium features and their benefit to a Scientific Compute Facility

Speaker
Michael Poat

11:00–11:30 **RNTuple: Towards First-Class Support for HPC data centers**

Speaker
Giovanna Lazzari Miotto

11:00–11:30
Deep learning based event reconstruction for the HEPD-02 detector on board the China Seismo-Electromagnetic Satellite

Speaker
Andrea Di Luca

11:00–11:30
A Checker-Board Sky: Automating Telescope Scheduling with Reinforcement Learning

Speakers
Maggie Voetberg, Sophia Zhou

11:00–11:30
Implementation of the Cluster Counting and Timing realtime algorithm on FPGA to improve the impact parameter estimates of the Drift Chamber and particle identification.

Speaker
Nicola De Fillipis

11:00–11:30
Cluster counting algorithms for particle identification at future colliders

Speaker
Brunella D'Anzi

11:00–11:30 **Performances studies for a real time HEP data analysis**

Speaker
Umit Sozbilir

11:00–11:30
High Performance Computing Workflow for Liquid Argon Time Projection Chamber Neutrino Experiments

Speaker
Sophie Berkman

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Federated Learning Strategies of Generative Adversarial Networks for High Energy Physics Calorimeter Simulation

Speaker
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11:00–11:30 **Ceph S3 Object Storage for CMS data**

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11:00–11:30 **ROOT Machine Learning Ecosystem for Data Analysis**

Speaker
Lorenzo Moneta

11:00–11:30 **New RooFit Developments on Performance Optimization**

Speaker
Zef Wolffs

11:00–11:30
Quantum anomaly detection in the latent spaces of high energy physics events

Speaker
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Mohamed Hemdan

16:10–16:40 **Law: End-to-End Analysis Automation over Distributed Resources**

Speaker
Marcel Rieger

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Noise removal of the events at main drift chamber of BESIII with deep learning techniques

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Hosein Karimi Khozani

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