

Session Program

Oct 23 - 28, 2022



ACAT 2022

Track 1: Computing Technology for Physics Research

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

Mon, October 24

2:30 PM

Track 1: Computing Technology for Physics Research
Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Baidyanath Kundu, Diego Ciangottini

14:30 - 14:50 **Optimizing the ATLAS Geant4 detector simulation software**
Speaker
 Evangelos Kourlitis

14:50 - 15:10
The Software Quality Assurance programme of the ASTRI Mini-Array project
Speaker
 Vito Conforti

15:10 - 15:30 **Next generation task scheduler for ATLAS software framework**
Speaker
 Beojan Stanislaus

15:30 - 15:50
GPU acceleration of Monte Carlo simulations: particle physics methods applied to medicine
Speaker
 Marco Barbone

15:50 - 16:10
The LHCb simulation software: Gauss and its Gaussino core framework
Speaker
 Gloria Corti

4:10 PM

4:40 PM

Track 1: Computing Technology for Physics Research: 1
Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Marica Antonacci, Daniele Cesini

16:40 - 17:00
The journey towards HEPscore, the HEP-specific CPU benchmark for WLCG
Speaker
 Domenico Giordano

17:00 - 17:20
CPU-level resources allocation for optimal execution of multi-process physics code
Speaker
 Marta Bertran Ferrer

17:20 - 17:40 **ML-based tool for RPC currents quality monitoring**
Speaker
 Elton Shumka

17:40 - 18:00 **EJFAT: Towards Intelligent Compute Destination Load Balancing**
Speaker
 michael goodrich

6:00 PM

Tue, October 25

2:30 PM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Michael Poat, Marica Antonacci

14:30 - 14:50

Challenges and opportunities in migrating the CNAF datacenter to the Bologna Tecnopolo

Speakers

Daniele Cesini, Luca dell'Agnello, Dr Tommaso Boccali

14:50 - 15:10

A cloud-based computing infrastructure for the HERD cosmic-ray experiment

Speaker

Nicola Mori

15:10 - 15:30

The new GPU-based HPC cluster at ReCaS-Bari

Speaker

Gioacchino Vano

15:30 - 15:50

Power Efficiency in HEP (x86 vs. arm)

Speaker

Emanuele Simili

4:10 PM

4:40 PM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Dr Stefano Bagnasco, Gioacchino Vano

16:40 - 17:00

Design and implementation of zstd compression algorithm for high energy physics experiment data processing based on FPGA

Speaker

Mr Xuyang Zhou

17:00 - 17:20

Precision Cascade: A novel algorithm for multi-precision extreme compression

Speaker

Yueyang Ying

17:20 - 17:40

Portable Programming Model Exploration for LArTPC Simulation in a Heterogeneous Computing Environment: OpenMP vs. SYCL

Speaker

Dr Meifeng Lin

17:40 - 18:00

Efficient and Accurate Automatic Python Bindings with Cppyy and Cling

Speaker

Baidyanath Kundu

6:00 PM

Wed, October 26

11:30 AM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Dr Maria Girone, Taylor Childers

11:30 - 11:50

The Virtual Research Environment: towards a complexive analysis platform

Speaker

Elena Gazzarrini

11:50 - 12:10

Computing for Gravitational-wave Research towards O4

Speaker

Stefano Bagnasco

12:10 - 12:30

CernVM 5: a versatile container-based platform to run HEP applications

Speaker

Jakob Karl Eberhardt

1:00 PM

2:15 PM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Raquel Pezoa Rivera, Gioacchino Vino

14:15 - 14:35

covfie: a compositional library for heterogeneous vector fields

Speaker

Stephen Nicholas Swatman

14:35 - 14:55

Speeding up CMS simulations, reconstruction and HLT code using advanced compiler options

Speaker

Danilo Piparo

14:55 - 15:15

Using a DSL to read ROOT TTrees faster in Uproot

Speaker

Aryan Roy

15:15 - 15:35

Implementing Machine Learning inference on FPGAs: from software to hardware using hls4ml

Speaker

Marco Lorusso

15:35 - 15:55

Extending ADL/CutLang with a new dynamic multipurpose protocol

Speaker

Gokhan Unel

3:55 PM

Thu, October 27

2:30 PM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Dr Nicola Mori, Elena Gazzarrini

14:30 - 14:50

PHASM: A toolkit for creating AI surrogate models within legacy codebases

Speaker

Nathan Brei

14:50 - 15:10

The Level 1 Scouting system of the CMS experiment

Speaker

Thomas Owen James

15:10 - 15:30

Development of the Topological Trigger for LHCb Run 3

Speaker

Nicole Schulte

15:30 - 15:50

Real-time tracking on FPGAs at LHCb

Speaker

Giulia Tuci

15:50 - 16:10

APEIRON: composing smart TDAQ systems for high energy physics experiments

Speaker

Alessandro Lonardo

4:10 PM

4:40 PM

Track 1: Computing Technology for Physics Research

Session | **Location:** Villa Romanazzi, Sala Federico II | **Conveners:** Prof. Nicola De Filippis, Oksana Shadura

16:40 - 17:00

The Awkward World of Python and C++

Speaker

Manasvi Goyal

17:00 - 17:20

Challenges and opportunities integrating LLAMA into AdePT

Speakers

Bernhard Manfred Gruber, Guilherme Amadio, Stephan Hageboeck

17:20 - 17:40

Adoption of the alpaka performance portability library in the CMS software

Speaker

Andrea Bocci

17:40 - 18:00

Application of Portable Parallelization Strategies for GPUs on track reconstruction kernels

Speaker

Ka Hei Martin Kwok

6:00 PM