

Session Program

Oct 23 - 28, 2022



ACAT 2022

Track 3: Computations in Theoretical Physics: Techniques and Methods

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

Mon, October 24

2:30 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Dr Barry Dillon, Domenico Pomarico

14:30 - 14:50

Speeding up Madgraph5_aMC@NLO through CPU vectorization and GPU offloading: towards a first alpha release

Speaker

Andrea Valassi

14:50 - 15:10

Developments in Performance and Portability of BlockGen

Speakers

Rui Wang, Taylor Childers

15:10 - 15:30

Performance of modern color decompositions for standard candle LHC tree amplitudes

Speaker

Max Knobbe

15:30 - 15:50

Accelerating LHC event generation with simplified pilot runs and fast PDFs

Speaker

Christian Gutschow

4:10 PM

4:40 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Marcello Maggi, Daniel Maitre

16:40 - 17:00

Studying Hadronization by Machine Learning Techniques

Speaker

Gabor Biro

17:00 - 17:20

Invertible Networks for the Matrix Element Method

Speaker

Theo Heimel

17:20 - 17:40

Quantum-Inspired Machine Learning

Speaker

Domenico Pomarico

6:00 PM

Tue, October 25

2:30 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Ryan Moodie, Leonardo Cosmai

14:30 - 14:50

Loop integral computation in the Euclidean or physical kinematical region using numerical integration and extrapolation

Speaker

Dr Elise de Doncker

14:50 - 15:10

Loop Amplitudes from Precision Networks

Speaker

Anja Butter

15:10 - 15:30

Emulation of high multiplicity NLO k-factors

Speaker

HENRY TRUONG

15:30 - 15:50

Anomaly searches for new physics at the LHC

Speaker

Barry Dillon

15:50 - 16:10

First results of Local Unitarity at N3LO

Speaker

Mr Zeno Capatti

4:10 PM

4:40 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Anke Biekoetter, Domenico Elia

16:40 - 17:00

Bridge between Classical & Quantum Machine Learning

Speaker

Jack Y. Araz

17:00 - 17:20

Conditional Born machine for Monte Carlo events generation

Speaker

Michele Grossi

17:20 - 17:40

Quantum neural networks force fields generation

Speaker

Oriel Orphee Moira Kiss

6:00 PM

Wed, October 26

11:30 AM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Joshua Davies, Domenico Pomarico

11:30 - 11:50 **lips: complex phase space goes singular and p-adic**

Speaker

Giuseppe De Laurentis

11:50 - 12:10 **Two-loop five-point amplitudes in massless QCD with finite fields**

Speaker

Ryan Moodie

12:50 PM

2:15 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Andrea Valassi, Domenico Colella

14:15 - 14:35

DMG4: a fully GEANT4-compatible package for the simulation of Dark Matter

Speaker

Henri Hugo Sieber

14:35 - 14:55 **Run Dependent Monte Carlo at Belle II**

Speaker

Alberto Martini

14:55 - 15:15

Unweighted event generation for multi-jet production processes based on matrix element emulation

Speaker

Timo Janssen

15:15 - 15:35

Conditional Normalizing Flow for Markov Chain Monte Carlo Sampling in the Critical Region of Lattice Field Theory

Speaker

ankur singha

3:55 PM

Thu, October 27

2:30 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Andrea Wulzer, Dr Giuseppe DeLaurentis

14:30 - 14:50 **Optimally combining BSM searches using graph theory**

Speaker

James David Yellen

14:50 - 15:10 **Product Jacobi-Theta Boltzmann machines with score matching**

Speaker

Andrea Pasquale

15:10 - 15:30 **Theory prediction in PDF fitting**

Speaker

Felix Hekhorn

15:30 - 15:50 **Integrations with a neural network**

Speaker

Dr Daniel Maitre

4:10 PM

4:40 PM

Track 3: Computations in Theoretical Physics: Techniques and Methods

Session | **Location:** Villa Romanazzi, Sala A+A1 | **Conveners:** Adriano Di Florio, Juan Carlos Criado Álamo

16:40 - 17:00 **Quantum annealing applications in high-energy phenomenology**

Speaker

Juan Carlos Criado

17:00 - 17:20 **Towards an automatized framework to perform quantum calibration**

Speaker

Andrea Pasquale

17:20 - 17:40

Quantum computing of the 6Li nucleus via ordered unitary coupled cluster

Speaker

Oriel Orphee Moira Kiss

17:40 - 18:00

Preliminary Lattice Boltzmann Method Simulation using Intel® Quantum SDK

Speaker

Mr Tejas Shinde

6:00 PM