

Digital Twins for Nuclear and Particle physics - NPTwins 2025

Report of Contributions

Contribution ID: 1

Type: **not specified**

Parton Distributions from the NTK: Analytical Results

Tuesday 7 October 2025 14:30 (30 minutes)

Presenters: CHIEFA, Amedeo; CHIEFA, Amedeo

Session Classification: Talks

Contribution ID: 2

Type: **not specified**

Machine Learning for Optimal Inference

Tuesday 7 October 2025 09:00 (30 minutes)

Presenters: WULZER, Andrea (PD); WULZER, Andrea (ICREA & IFAE)

Session Classification: Talks

Contribution ID: 3

Type: **not specified**

AI for real time data processing

Monday 6 October 2025 14:10 (30 minutes)

Presenter: ROSSI, Fabio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Talks

Contribution ID: 4

Type: **not specified**

AI tools in HEP

Wednesday 8 October 2025 11:00 (30 minutes)

Presenter: LEGGER, Federica (Istituto Nazionale di Fisica Nucleare)

Session Classification: Talks

Contribution ID: 5

Type: **not specified**

AI strategies in EU

Wednesday 8 October 2025 14:00 (30 minutes)

Presenter: GIANNOTTI, Fosca

Session Classification: Talks

Contribution ID: 6

Type: **not specified**

AI for the ATLAS experiment

Tuesday 7 October 2025 09:30 (30 minutes)

Presenters: DI BELLO, Francesco Armando (University of Geneva); DI BELLO, Francesco Armando (Istituto Nazionale di Fisica Nucleare); DI BELLO, Francesco (Sapienza)

Session Classification: Talks

Contribution ID: 7

Type: **not specified**

Diffusion models for physics extraction

Tuesday 7 October 2025 12:00 (30 minutes)

Presenter: FOTI, Giorgio (Università di Messina & INFN Catania)

Session Classification: Talks

Contribution ID: 8

Type: **not specified**

From cross sections to scattering amplitudes using ML with built-in physics

Wednesday 8 October 2025 09:30 (30 minutes)

Presenters: MONTANA, Gloria (University of Barcelona, Institute of Cosmos Sciences (ICCUB)); MONTANA, Gloria (Jefferson Lab)

Session Classification: Talks

Contribution ID: 9

Type: **not specified**

Reconstruction algorithms for the LHC

Monday 6 October 2025 14:40 (30 minutes)

Presenter: STARK, Jan (L2I Toulouse, CNRS/IN2P3, Université de Toulouse)

Session Classification: Talks

Contribution ID: **10**

Type: **not specified**

ML for cosmology

Wednesday 8 October 2025 12:00 (30 minutes)

Presenter: RAVERI, Marco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Talks

Contribution ID: **11**

Type: **not specified**

Modern Machine Learning for Monte Carlo Event Generators

Wednesday 8 October 2025 11:30 (30 minutes)

Presenter: WINTERHALDER, Ramon

Session Classification: Talks

Contribution ID: 12

Type: **not specified**

Blending Neural Networks with Kernel Methods for Efficient Learning

Wednesday 8 October 2025 14:30 (30 minutes)

Presenter: HUANG, Shuo

Session Classification: Talks

Contribution ID: 13

Type: **not specified**

PIKS: universal physics-informed learning with kernels

Wednesday 8 October 2025 15:00 (30 minutes)

Presenter: BONA-PELLISSIER, Joachim

Session Classification: Talks

Contribution ID: 14

Type: **not specified**

AI applications to pion scattering

Wednesday 8 October 2025 10:00 (30 minutes)

Presenters: SMITH, Wyatt (Indiana University); SMITH, Wyatt (Messina U. and UC Berkeley and LBL)

Session Classification: Talks

Contribution ID: 15

Type: **not specified**

Generative AI for Inverse Problems in Nuclear and Particle Physics

Wednesday 8 October 2025 09:00 (30 minutes)

Presenter: LI, Yaohang

Session Classification: Talks

Contribution ID: **16**

Type: **not specified**

ALICE PID 1

Monday 6 October 2025 16:40 (15 minutes)

Presenters: GRACZYKOWSKI, Lukasz; Prof. GRACZYKOWSKI, Lukasz (Warsaw University of Technology (PL))

Session Classification: Talks

Contribution ID: 17

Type: **not specified**

ALICE PID 2

Monday 6 October 2025 16:55 (15 minutes)

Presenter: MAREK, Mytkowski

Session Classification: Talks

Contribution ID: **18**

Type: **not specified**

AI for real-time data reduction in ePIC

Monday 6 October 2025 15:10 (30 minutes)

Presenter: LONARDO, Alessandro (Istituto Nazionale di Fisica Nucleare)

Session Classification: Talks

Contribution ID: **19**

Type: **not specified**

AI for data analysis

Tuesday 7 October 2025 10:00 (30 minutes)

Presenters: GLAZIER, Derek (University of Edinburgh); GLAZIER, Derek Ian

Session Classification: Talks

Contribution ID: 20

Type: **not specified**

Extraction of information from deeply virtual exclusive experiments

Tuesday 7 October 2025 15:00 (30 minutes)

Presenter: LIUTI, Simonetta (University of Virginia)

Session Classification: Talks

Contribution ID: **21**

Type: **not specified**

A(I)DAPT

Tuesday 7 October 2025 11:30 (30 minutes)

Presenter: VITTORINI, Tommaso (Istituto Nazionale di Fisica Nucleare)

Session Classification: Talks

Contribution ID: 22

Type: **not specified**

Generative models and fast simulations

Tuesday 7 October 2025 14:00 (30 minutes)

Presenter: KRAUSE, Claudius

Session Classification: Talks

Contribution ID: 23

Type: **not specified**

Generative Models for Fast Simulation of Cherenkov Detectors at the Electron-Ion Collider

Tuesday 7 October 2025 16:30 (30 minutes)

Presenter: GIROUX, James (William & Mary)

Session Classification: Talks

Contribution ID: 24

Type: **not specified**

Physics with Large Language and Reasoning models: an overview

Wednesday 8 October 2025 16:00 (30 minutes)

Presenter: CHAMACHANDRA, Nesar

Session Classification: Talks

Contribution ID: 25

Type: **not specified**

AI tools for QCD

Tuesday 7 October 2025 16:00 (30 minutes)

Presenter: SATO, Nobuo (Jefferson Lab)

Session Classification: Talks

Contribution ID: 27

Type: **not specified**

Variable Rate Neural Compression for Sparse Detector Data

Monday 6 October 2025 16:10 (30 minutes)

Presenter: HUANG, Yi

Session Classification: Talks

Contribution ID: 29

Type: **not specified**

Physics and Data Analysis: a Renormalization Group Approach to Signal and Anomaly Detection

Tuesday 7 October 2025 11:00 (30 minutes)

Presenters: Dr FINOTELLO, Riccardo (CEA Paris-Saclay); FINOTELLO, Riccardo (Università degli Studi di Torino)

Session Classification: Talks

Contribution ID: **30**

Type: **not specified**

Welcome and introduction

Monday 6 October 2025 14:00 (10 minutes)

Contribution ID: 31

Type: **not specified**

AI for Data Center Cooling and Resource Allocation in LHCb

Wednesday 8 October 2025 16:30 (30 minutes)

Presenter: CIFRA, Pierfrancesco (CERN)

Session Classification: Talks