

## Session Program

10-14 Nov 2025



## Connecting The Dots 2025

### *Session*

The University of Tokyo, FUKUTAKE Learning Theater

# Monday 10 November

09:10

## Session

Session | Convener: Koji Terashi

09:10–09:50

### The CERN Quantum Technology Initiative: initial results and research perspective on Quantum Computing for HEP

**Speaker**

Dr Sofia Vallecorsa

09:50–10:15

### Scalable Track Reconstruction at the LHC with QAOA

**Speaker**

Miriam Lucio Martinez

**Location**

Remote

10:15–10:40

### Quantum-Enhanced Graph Neural Networks for Particle Tracking in High Energy Physics

**Speaker**

Santosh Parajuli

10:40

11:10

## Session

Session | Convener: Ryu Sawada

11:10–11:50

### Utilizing quantum computers for HEP simulations and event generation

**Speaker**

Yutaro Iiyama

11:50–12:15

### Track reconstruction at collider experiments using quantum-inspired simulated annealing

**Speaker**

Daiya Akiyama

12:15–12:40

### Quantum Chebyshev Probabilistic Models for Fragmentation Functions

**Speaker**

Dr Sofia Vallecorsa

12:40

14:00

## Session

Session | Convener: David Lange

14:00–14:40

### Cutting-Edge AI/ML for HEP

**Speaker**

Masahiro Morinaga

14:40-15:05

**Token-Based Transformer Models for Pattern Recognition on Point Clouds****Speaker**

Xiangyang Ju

15:05-15:30

**Semi-Supervised Transfer Learning with Convolutional Autoencoders for Hybrid Pixel Detectors****Speaker**

Mr Tomáš Čelko

15:30-15:55

**ML-Assisted Tracking in the ATLAS Muon Spectrometer****Speaker**

Jonathan Renusch

15:55

16:30

**Session****Session** | **Convener:** Peter Elmer

16:30-16:55

**Beyond-CMOS Systems for Fast Machine Learning in Physics****Speaker**

Dr Valerio Ippolito

16:55-17:20

**GPT-like transformer model for silicon tracking detector simulation****Speaker**

Tadej Novak

17:20-17:45

**DNN-based particle flow and jet flavor tagging for Higgs factories****Speaker**

Taikan Suehara

17:45-18:10

**Rapid ML inference using logic gate neural nets****Speaker**

Liv Helen Vage

18:10

# Tuesday 11 November

09:20

## Session

**Session** | **Convener:** Alexis Vallier

09:20–09:50 **A Fully GPU-Based Track Reconstruction Pipeline for HEP Experiments**

**Speaker**

Neza Ribaric

09:50–10:20

**Track fitting at the full LHC collision frequency: Design and performance of the GPU-based Kalman Filter at the LHCb experiment**

**Speaker**

Lennart Uecker

10:20–10:50

**Improvements of the ALICE GPU TPC tracking and GPU framework for online and offline processing of Run 3 Pb–Pb data**

**Speaker**

David Rohr

10:50

11:20

## Session

**Session** | **Convener:** Noemi Calace

11:20–11:50

**FPGA-accelerated track reconstruction and clustering using classical and machine-learning approaches for the ATLAS Event Filter**

**Speaker**

Julian Wollrath

11:50–12:20

**The Tiny Triplet Finder - a low silicon resource track finding scheme and its test implementation in FPGA**

**Speaker**

Dr Jinyuan Wu

**Location**

Remote

12:20–12:40

**An ultrafast FPGA fitter for the LHCb Downstream Tracker**

**Speaker**

Federico Lazzari

12:40–13:00

**A Geometry Agnostic Heterogenous Framework for Track Reconstruction for HEP Experiments**

**Speaker**

Adriano Di Florio

13:00

14:30

**Session**

**Session** | **Convener:** Markus Elsing

14:30–15:00

**Optimization and Outer Tracker Extension of the Cellular Automaton Algorithm for CMS Phase-2 Tracking**

**Speaker**

Jan Schulz

15:00–15:30

**TICL: A Reconstruction Framework for the CMS Phase-2 High-Granularity Calorimeter Endcap**

**Speaker**

Felice Pantaleo

15:30–15:50

**Muon Tracking at the CMS High-Level Trigger for the HL-LHC Upgrade**

**Speaker**

Luca Ferragina

15:50

16:20

**Session**

**Session** | **Convener:** David Lange

16:20–16:50

**Track Reconstruction with the ATLAS Inner Tracker and ACTS at the High-Luminosity LHC**

**Speaker**

Noemi Calace

16:50

# Wednesday 12 November

09:00

## Session

**Session** | **Convener:** Yu Nakahama Higuchi

09:00–09:30

### Graph-Based Multi-Modal Track Reconstruction in the Belle II Drift Chamber and Vertex Detectors

**Speaker**

Lea Reuter

09:30–10:00

### Exploring the potential of cooperative track building

**Speaker**

Liv Helen Vage

10:00–10:30

### Expected physics and computing performance of the ATLAS ITk GNN-based Track Reconstruction Chain

**Speaker**

Benjamin Huth

10:30

11:00

## Session

**Session** | **Convener:** Salvador Marti I Garcia

11:00–11:30

### Uncertainty Quantification in an ML Pattern Recognition Pipeline

**Speaker**

Lukas Peron

11:30–12:00

### Efficient Point Transformer for Charge Particles Track Reconstruction

**Speaker**

Yuan-Tang Chou

12:00–12:30

### Transformer for seed reconstruction in ACTS

**Speaker**

Corentin Allaire

12:30–12:50

### Tracking in Dense Environments with Transformers

**Speaker**

Max Hart

12:50

14:30

## Session

**Session** | **Convener:** Xiaocong Ai

14:30–15:00

### Fast Track Fitting and Anomaly Detection with Machine Learning

**Speaker**

Makayla Vessella

15:00-15:30

**Charged Particle Tracking with Reinforcement Learning for Drift Chambers**

**Speaker**  
Yao Zhang

15:30-15:50

**GNN Track Reconstruction of Generalized Non-Helical Signatures**

**Speaker**  
Levi Condren

15:50

16:20

**Session**

**Session** | **Convener:** Alberto Annovi

16:20-16:40

**New Approaches of End-to-end GNN Track Reconstruction Based on Spacepoint Doublet Embedding and Double Metric Learning for Building Directed Graphs with Chain Connections for the ATLAS ITk Detector**

**Speaker**  
Jay Chan

16:40-17:10

**LHCb Tracking Reconstruction and Ghost Rejection at 30 MHz**

**Speaker**  
Da Yu Tou

17:10-17:40

**Application of ACTS to the CEPC Reference Detector**

**Speaker**  
Yizhou Zhang

17:40

# Thursday 13 November

09:00

## Session

Session | Convener: Kunihiro Nagano

09:00–09:30

### Antihydrogen annihilation reconstruction in the ALPHA apparatus at CERN

**Speaker**

Andrea Capra

09:30–10:00

### Tracking Cosmic-Ray Nuclei with the RadMap Telescope

**Speaker**

Luise Meyer-Hetling

10:00–10:20

### Ultra-displaced dimuon vertexing for LLP signatures in ATLAS

**Speaker**

Makayla Vessella

10:20–10:40

### Direct reconstruction of LLPs and charged heavy flavour at LHCb

**Speaker**

Maarten Van Veghel

10:40

11:10

## Session

Session | Convener: Tsunayuki Matsubara

11:10–11:40

### CNN-based event separation using 2D and 3D images for the charged-current electron neutrino cross-section measurement with the SuperFGD of the T2K near detector

**Speaker**

Tomochika Arai

11:40–12:00

### Improving positron tracking using machine learning in the MEG II experiment

**Speaker**

Atsushi Oya

12:00–12:20

### Track direction identification via track-fitting quality for cosmic-ray background suppression in the COMET experiment

**Speaker**

Manabu Moritsu

12:20

# Friday 14 November

09:00

## Session

**Session** | **Convener:** Shima Shimizu

09:00–09:20 **Real time learning on heterogeneous devices for detector calibration**

**Speaker**

Akshay Malige

**Location**

Remote

09:20–09:50 **The OpenDataDetector High-Luminosity Physics Benchmark Dataset**

**Speaker**

Paul Gessinger

09:50–10:10 **Sustainability studies of big data processing in real time for HEP**

**Speaker**

Arantza De Oyanguren Campos

10:10

10:40

## Session

**Session** | **Convener:** Andreas Salzburger

10:40–11:10 **Performance of 4D tracking and vertexing with ACTS**

**Speaker**

Pierfrancesco Butti

11:10–11:40

**Hypergraph Neural Network 4D track reconstruction pipeline for HL-LHC experiments**

**Speaker**

Rodrigo Estevam De Paula

11:40–12:00 **ACTS-based 4D tracking studies**

**Speaker**

Yanqi Wang

12:00