

EuCAIFCon 2024



EUROPEAN AI FOR
FUNDAMENTAL PHYSICS
CONFERENCE
EuCAIFCon 2024

Tuesday, 30 April 2024 - Friday, 3 May 2024

Amsterdam, Hotel CASA

Scientific Topics

Our goal is to provide a platform for establishing new connections between AI activities across various branches of fundamental physics, by bringing together researchers that face similar challenges and/or use similar AI solutions. The conference will be organized “horizontally”: sessions are centered on specific AI methods and themes, while being cross-disciplinary regarding the scientific questions.

Scientific domains

Accelerator physics

Astroparticle physics

Cosmology

Experimental particle physics

Gravitational wave physics

Nuclear Physics

Theoretical high-energy physics

AI techniques and methods

Generative models

Pattern recognition

Variational inference

Optimisation techniques

Sampling techniques

Surrogate models

Image analysis

Time-series analysis

Point-cloud analysis

Symmetries and machine learning

Physics-informed AI

Diffusion models and related techniques

Transformers and related techniques

Foundation models

Simulation-based/likelihood-free inference

Likelihood-based and/or variational inference

Integration of physics and ML

Scientific machine learning

Differentiable models and simulation codes

Quantum ML

Frugal AI

Large Language Models

AI for measurement/unfolding

Other AI techniques

AI usage

AI for handling nuisance parameters

Uncertainty quantification

Explainable AI

Trustworthy AI

Frequentist vs Bayesian inference in AI

AI for discovery

AI for experiment/accelerator control and operation

AI for experimental design

AI for simulation of physical systems

AI for event reconstruction

Other AI usage

AI community

Open software & Open data

Benchmarks, datasets and models libraries

ML training and platforms

AI Ethics

AI tools

EuCAIF & Community building

Community consensus finding

AI Hardware and Acceleration

Sustainability of ML

Hardware acceleration

Sharing resources

Neuromorphic computing

FPGAs

AI in grid/cloud/distributed computing

Poster

Session A

Session B