

ACAT 2025



Monday 8 September 2025 - Friday 12 September 2025

Hamburg, Germany

Scientific Programme

Track 1: Computing Technology for Physics Research

This track includes topics that impact how we do physics analysis and research that are related to the enabling technology. Here are some examples:

Software: language interoperability; software development and quality; analysis libraries and tools

Computing: distributed and parallel computing, including programming models; architectures, from accelerators (GPU, ASIC, FPGA) to HPC; floating-point models; hardware abstractions; online computing, including data transfer, High Level Triggering (HLT); advanced computing models such as Quantum Computing

Data: data transfer, networking; data formats and compression

Simulation and Visualization: detector and accelerator simulations, full and fast; visualization techniques and event displays

Track 2: Data Analysis - Algorithms and Tools

There are as many different algorithms and methods as there are physicists. New and novel categories of algorithms are part of what this conference is looking for. Here are some examples:

Machine Learning: neural network architectures and their applicability; hyperparameter tuning; optimization and deployment

Differentiable Programming

Statistical Methods and Tools

Novel Reconstruction Algorithms (e.g. for track finding)

Track 3: Computations in Theoretical Physics: Techniques and Methods

Computing techniques and algorithms used in the theoretical side of physics research. Here are some examples:

Automatic Systems: automatic computation systems: from amplitudes to event generators; multi-dimensional Integration -- methods and tools; intensive high-precision numerical computations -- algorithms and systems

Higher Orders: matching fixed-order calculations to parton showers; multi-loop calculations and higher-order corrections

Computer Algebra Techniques and Applications

Computational Physics: Theoretical and Simulation Aspects