

Session Program

9-12 Sept 2024



PHYSTAT - Statistics meets ML

Talks

Imperial College London, Lecture Theatre 2, Blackett Laboratory

Tuesday 10 September

09:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Wouter Verkerke

09:00–09:15 **Welcome**

09:15–10:00 **ML in Particle Physics**

Speaker
Gregor Kasieczka

10:00–10:30

Lorentz-Equivariant Geometric Algebra Transformers for High-Energy Physics

Speaker
Jonas Spinner

10:30

11:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Alan Heavens

11:00–11:45 **Cosmology and machine learning**

Speaker
Ben Wandelt

11:45–12:30 **Simulation-based machine learning for gravitational-wave analysis**

Speaker
Maximilian Dax

12:30

14:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Sergei Gleyzer

14:00–14:45 **Interpretable Machine Learning for Particle Physics**

Speaker
Jesse Thaler

14:45–15:30

Understanding and mitigating failures in anomaly detection: a probabilistic perspective

Speaker
Lily Zhang

15:30

16:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Robert Cousins Jr

16:00–16:45 **Statistical tests for anomaly detection at the LHC**

Speaker
Gaia Grosso

16:45-17:10

Detecting New Physics as data anomalies at the LHC: Transitioning from small-scale toy datasets to millions of complex proton collisions

Speaker

Thea Arrestad

17:10-17:35

Anomaly aware machine learning for dark matter direct detection at the DARWIN experiment

Speaker

Andre Joshua Scaffidi

17:35-18:00

Feldman-Cousins' ML Cousin

Speaker

Joshua Villarreal

18:00

Wednesday 11 September

09:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Daniel Mortlock

09:00–09:45

Theoretical and Societal Topics in AI and Deep Learning for Physicists

Speaker

Pierre Baldi

09:45–10:10

AI Benchmarks and Science

Speaker

Jeyan Thiyagalingam

10:10–10:35

Improved Weak Lensing Photometric Redshift Calibration via StratLearn and Hierarchical Modeling

Speaker

Maximilian Autenrieth

10:35

11:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Olaf Behnke

11:00–11:45

Simulation-based Inference (SBI)

Speaker

Aishik Ghosh

11:45–12:30

Extending Unfolding Methods With Machine Learning

Speaker

Vinicius Mikuni

12:30

14:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Ryan James Nichol

14:00–14:25

Generative Unfolding

Speaker

Tilman Plehn

14:25–14:50

Isbi: linear simulation based inference

Speaker

Dr William Handley

14:50–15:15

Robust signal detection with classifiers decorrelated via optimal transport

Speaker

Dr Purvasha Chakravarti

15:15–16:00

The statistics of deep generative models for the LHC

16:00

Speaker
Ramon Winterhalder

16:30

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Glen Cowan

16:30-16:55 **Fairness Methods in Particle Physics Event Classification**

Speaker
Oliver Rieger

16:55-17:40 **Systematics: Misery or Muse?**

Speaker
Kyle Stuart Cranmer

17:40-18:05

Development of systematic-aware neural network trainings for binned-likelihood-analyses at the LHC

Speaker
Artur Monsch

18:05

Thursday 12 September

09:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** David A. van Dyk

09:00–09:45

Model misspecification meets ML: a HEP perspective

Speaker

Alexander Held

09:45–10:15

Learned harmonic mean estimation of the Bayesian evidence with normalizing flows

Speaker

Alicja Polanska

10:15

10:45

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Jason McEwen

10:45–11:15

Interpretability in Semi-Supervised Classifier Tests for Model-Independent Searches of New Physics

Speaker

Mikael Kuusela

11:15–11:45

pop-cosmos: investigating the explainability of a high-dimensional, data-driven generative model in cosmology

Speaker

Hiranya Peiris

11:45–12:10

Identifying Tau Neutrinos in IceCube

Speaker

Philipp Eller

12:10–12:35

Conditional generation

Speaker

Tobias Golling

12:35

14:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Kaisey Mandel

14:00–14:45

Highlights, ML

Speakers

Gilles Louppe, Gilles Louppe

14:45–15:30

Highlights, Statistics

Speaker

Mikael Kuusela

15:30

16:00

Talks

Session | **Location:** Imperial College London, Lecture Theatre 2, Blackett Laboratory | **Convener:** Lydia Brenner

16:00–16:45 **Highlights, Astro/Cosmo**

Speaker

Luisa Lucie-Smith

16:45–17:30 **Highlights, Particle Physics**

Speaker

Lukas Alexander Heinrich

17:30–17:45 **Closing discussion**

17:45