

Session Program

6-11 Dec 2026

Quantum Techniques in Machine Learning

Contributed talks

Stellenbosch University, Jan Mouton Learning Centre

Monday 7 December

11:00

Contributed talks: Monday 1

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

11:00–11:20

Quantum machine learning advantages beyond hardness of evaluation

Speaker

Riccardo Molteni

11:20–11:40

Efficient Learning of Structured Quantum Circuits via Pauli Dimensionality and Sparsity

Speaker

Sabee Grewal

11:40–12:00

Towards robust quantum advantage in sequence learning with a single reliable gate

Speaker

Jonathan Lu

12:00–12:20

Distributed Quantum Property Testing with Communication Constraints

Speaker

Mr Chirag Wadhwa

12:20–12:40

Provable and scalable quantum Gaussian processes for quantum learning

Speaker

Jonas Jäger

12:40

14:30

Contributed talks: Monday 2

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

14:30–14:50

Covert Quantum Learning: Privately and Verifiably Learning from Quantum Data

Speakers

Abhishek Anand, Ari Karchmer, Matthias C Caro, Saachi Mutreja

14:50–15:10

Cloning is as Hard as Learning for Stabilizer States

Speakers

Nikhil Bansal, Dr Matthias C. Caro, Dr Gaurav Mahajan

15:10

15:40

Contributed talks: Monday 3

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

15:40–16:10

Learning Arbitrary Lindbladians with Quantum Error Correction

Speaker

Mr Petr Ivashkov

16:10–16:30

Learning scalable entanglement distribution policies

Speaker

Christos Chalkias

16:30

Tuesday 8 December

09:40

Contributed talks: Tuesday 1

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

09:40–10:10

Decoded Quantum Interferometry is Obstructed by Topological Structure

Speakers

Eric Anschuetz, Jonathan Lu

10:30

10:10–10:30

Canonical quantization of neurons

Speaker

Mark Wilde

11:00

Contributed talks: Tuesday 2

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

11:00–11:20

Complexity of Normalized Persistence Problems for Topological Data Analysis and Local Hamiltonians

Speakers

Dominic Lowe, Ryu Hayakawa

11:20–11:40

Quantum principal component analysis without eigenvector recovery

Speaker

Yewei Yuan

11:40–12:00

On the Query Complexity of Quantum Mean Estimation for Multivariate Heavy-Tailed Distributions

Speaker

Bin Luo

12:00–12:20

An unbounded quantum memory advantage for reinforcement learning world models

Speakers

Dr Hailan Ma, Dr Josep Lumberras

12:20–12:40

Representation theory for passive linear optics: anti-concentration, barren plateaus and classical simulability

Speaker

Hela Mhiri

12:40

14:50

15:10

Contributed talks: Tuesday 3

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

14:50–15:10

Private training in quantum machine learning

Speaker

Tigran Sedrakyan

Wednesday 9 December

09:40

Contributed talks: Wednesday 1

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

09:40–10:00

Quantum Convolutional Neural Network for Phase Recognition in Two Dimensions

Speaker

Leon C. Sander

10:00–10:20

Automated near-term quantum algorithm discovery for molecular ground states

Speaker

Konstantinos Meichanetzidis

10:20–10:40

Hybrid quantum-classical neural network for sample-efficient recognition of topological phases

Speaker

Markus K. Hoffmann

10:40

11:10

Contributed talks: Wednesday 2

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

11:10–11:30

Learning to Reconstruct Wigner Functions in Phase Space

Speakers

Ms Xinyu Tang, Yi-hsin Lin

11:30–11:50

Harnessing imperfect quantum data through domain adaptation

Speaker

Kosuke Ito

11:50–12:10

One More Time: Revisiting Neural Quantum States from a Reinforcement Learning Perspective

Speaker

Mr Sergio García Heredia

12:10–12:30

Improved Quantum Algorithms for Reinforcement Learning Under a Generative Model

Speaker

Joao F. Doriguello

12:30

14:30

Contributed talks: Wednesday 3

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

14:30–14:50

Machine-learned syndrome post-selection for reliable quantum error correction

Speaker

Askery Canabarro

14:50–15:10

Multi-Agent Reinforcement Learning for Context-Aware Real-Time Error Suppression

Speakers

Arthur Strauss, Mr Lukas Voss

15:10

15:40

Contributed talks: Wednesday 4

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

15:40–16:00

Feed-Forward-Free Logical Two-Qubit Randomized Benchmarking with Steane QEC and Residual Machine-Learning Decoders

Speaker

Jan Balewski

16:00–16:20

AQR: A Scalable and Efficient Data Loader for Digital Quantum Computers

Speaker

Kaining Zhang

16:20–16:40

Breaking concentration barriers for quantum extreme learning on digital quantum processors

Speakers

Timothée Dao, Francesco Tacchino

16:40–17:00

Quantum Maximum Likelihood Prediction via Hilbert Space Embeddings

Speakers

Prof. Nir Weinberger, Sreejith Sreekumar

17:00

Thursday 10 December

09:40

Contributed talks: Thursday 1

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

09:40–10:10

Fragmentation is Efficiently Learnable by Quantum Neural Networks

Speaker

Mikhail Mints

10:10–10:30

Training Variational Quantum Algorithms Is NP-hard, Even Locally

Speaker

Triscia Mundo

10:30

11:00

Contributed talks: Thursday 2

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

11:00–11:20

Warm Starts, Cold States: Exploiting Adiabaticity for Variational Ground-States

Speaker

Ricard Puig

11:20–11:40

Challenges in Barren Plateau Mitigation with Dynamic Parameterized Quantum Circuits

Speaker

Sumeet Shingure

11:40–12:00

Lower bounding the MaxCut of high girth 3-regular graphs using the QAOA

Speaker

Benjamin Villalonga

12:00–12:20

Reconciling Theory and Practice: Quadratic Acceleration of Variational Quantum Algorithms with Rotosolve

Speaker

Sayantan Pramanik

12:20–12:40

QAOA-MaxCut has barren plateaus for almost all graphs

Speakers

Dr Rui Mao, Dr Pei Yuan

12:40

14:30

Contributed talks: Thursday 3

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

14:30–14:50

IQP Born Machines under Data-dependent and Agnostic Initializations

Speaker

Supanut Thanasilp

14:50–15:10

Classically trainable quantum generative modeling with Boson and Fermion Sampling**Speakers**

Zoltán Kolarovszki, Zoltán Zimborás

15:10

15:40

Contributed talks: Thursday 4**Session** | **Location:** Stellenbosch University, Jan Mouton Learning Centre

15:40–16:00

Instantaneous Quantum Polynomial Circuit Born Machines: Trainability, Non-Simulability, Expressivity and Applications**Speaker**

Kevin Shen

16:00–16:20

Classically trained, quantum-deployed generative models: universality and kernel-adaptive training**Speaker**

Andrii Kurkin

16:20–16:40

Spectral Born machines: Classically trainable quantum generative models for discrete data**Speaker**

Joseph Bowles

16:40–17:00

Quantum thermodynamics and semidefinite optimization: Boltzmann, Fermi-Dirac, and Bose-Einstein frameworks**Speaker**

Michele Minervini

17:00

Friday 11 December

09:00

Contributed talks: Friday 1

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

09:00–09:30

Hamiltonian learning via quantum Zeno effect

Speaker

Egle Pagliaro

09:30–09:50

Reversing Unknown Hamiltonian Evolutions through Algebraic Structure

Speakers

Jizhe Lai, Mingrui Jing, Erdong Huang

09:50–10:10

Imposing Constraints on Driver Hamiltonians and Mixing Operators: From Theory to Practical Implementation

Speaker

Hannes Leipold

10:10–10:30

Learning k-body Hamiltonians via sublinear-time sparse recovery

Speaker

Franz J. Schreiber

10:30

11:00

Contributed talks: Friday 2

Session | **Location:** Stellenbosch University, Jan Mouton Learning Centre

11:00–11:20

Nearly Time-Optimal Pure State Tomography with Pauli Measurements

Speaker

Sabee Grewal

11:20–11:40

A hidden bottleneck in classical and quantum linear reservoir computing

Speaker

Francesco Arzani

11:40–12:00

Efficient Characterization of Coherent and Correlated Low-Degree Noise in Layers of Gates

Speaker

Marianna Crupi

12:00–12:20

Measurements as a design principle for quantum reservoirs: enhancing and enabling online temporal learning

Speaker

Giacomo Franceschetto

12:20-12:40

Kicked-Ising Online Quantum Reservoirs: Operating Regimes and Hardware Tests**Speaker**

Ahmet Ege Yilmaz

12:40-13:00

Optimal randomized measurements for a family of non-linear quantum properties**Speaker**

Yifan Tang

13:00

14:10

Contributed talks: Friday 3**Session** | **Location:** Stellenbosch University, Jan Mouton Learning Centre

14:10-14:30

Temporal information processing on a 4,500-qubit quantum annealer**Speaker**

Mr Antonio Sannia

14:30-14:50

Sampling from Thermal Quantum States via Pauli Propagation**Speaker**

Michele Minervini

14:50-15:10

Quantum simulation in the Heisenberg picture: Algorithms and Learning Separations**Speaker**

Shao Hen Chiew

15:10-15:30

Stochastic Pauli-Path Simulator for Large-Scale Quantum Optimization**Speaker**

Dr Kaining Zhang

15:30