# New Frontiers in Quantum Algorithms for Open Quantum Systems

## Monday January 12, 2026

8:00–8:55 *Check-In/Breakfast (Hosted by IPAM)*

8:55–9:00 *Welcome and Opening Remarks*

9:00 *SESSION CHAIR: Monday AM Jianfeng Lu*

9:00–9:50 **Andras Gilyen** (Renyi Institute of Mathematics)
*Quantum generalizations of Glauber and Metropolis dynamics*

10:00–10:15 *Break*

10:15–11:05 **Lin Lin** (University of California, Berkeley (UC Berkeley))
*End-to-End Efficiency in Dissipative Preparation of Thermal and Ground States*

11:15–11:30 *Break*

11:30–12:20 **Zhiyan Ding** (University of Michigan)
*New insights into system–bath interaction models for quantum ground- and thermal-state preparation*

12:30–2:30 *Lunch (on your own)*

2:30 *SESSION CHAIR: Monday PM Lin Lin*

2:30–3:20 **Anthony (Chi-Fang) Chen** (Simons Institute for the Theory of Computing)
*Fast Mixing of 1D Quantum Gibbs Samplers at All Temperatures*

3:30–4:00 *Break*

4:00–4:50 **Yu Tong** (Duke University)
*Quantum and classical algorithms for weakly interaction fermions at finite temperature*

5:00–5:30 *Lightning Poster Round*

5:30–7:00 *Poster Session & Reception (Hosted by IPAM)*

## Tuesday January 13, 2026

8:00–8:55 *Check-In/Breakfast (Hosted by IPAM)*

9:00 *SESSION CHAIR: Tuesday AM Andras Gilyen*

9:00–9:50 **Eric Carlen** (Rutgers University New Brunswick/Piscataway)
*Boundary-driven quantum systems near the Zeno limit: steady states and long-time behavior*

10:00–10:15 *Break*

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10:15–11:05 **Ewin Tang** (University of California, Berkeley (UC Berkeley))
*A Dobrushin condition for quantum Markov chains*

11:15–11:30 *Break*

11:30–12:20 **Jiaqing Jiang** (University of California, Berkeley (UC Berkeley))
*Predicting properties of quantum thermal states from a single trajectory*

12:30–2:00 *Lunch (on your own)*

2:00 *SESSION CHAIR: Tuesday PM Eric Carlen*

2:00–2:50 **Ankur Moitra** (Massachusetts Institute of Technology)
*Transitions in Quantum Spin Systems*

3:00–3:15 *Break*

3:15–4:05 **Yunchao Liu** (Harvard University)
*Beyond worst-case mixing-time analysis in quantum Gibbs sampling*

4:15–4:30 *Break*

4:30–5:20 **Alexander Zlokapa** (Massachusetts Institute of Technology)
*Average-case quantum complexity from glassiness*

## Wednesday January 14, 2026

8:00–8:55 *Check-In/Breakfast (Hosted by IPAM)*

9:00 *SESSION CHAIR: Wednesday AM Anthony Chen*

9:00–9:50 **Cambyse Rouze** (INRIA)
*Virtual Talk: Heisenberg-limited Hamiltonian learning continuous variable systems via engineered dissipation*

10:00–10:15 *Break*

10:15–11:05 **Jianfeng Lu** (Duke University)
*“Lifting of Quantum Markov Processes”*

11:15–11:30 *Break*

11:30–12:20 **Daniel Stilck Franca** (University of Copenhagen)
*Learning and certification of local time-dependent quantum dynamics and noise*

12:30–12:40 *Group Photo*

12:40–2:30 *Lunch (on your own)*

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2:30 *SESSION CHAIR: Wednesday PM Zhiyan Ding*

2:30–3:20 **Pawel Wocjan** (IBM Research)
*Quantized Markov chain couplings that prepare Qsamples*

3:30–4:00 *Break*

4:00–4:50 **M. Isabel Franco Garrido** (California Institute of Technology)
*Optimization algorithms using Gibbs state preparation and beyond*

## Thursday January 15, 2026

8:00–8:55 *Check-In/Breakfast (Hosted by IPAM)*

9:00 *SESSION CHAIR: Thursday AM Kristan Temme*

9:00–9:50 **Thiago Bergamaschi** (University of California, Berkeley (UC Berkeley))
*A Structural Theory of Quantum Metastability: Markov Properties and Area Laws*

10:00–10:15 *Break*

10:15–11:05 **Xiantao Li** (Penn State University)
*A general dilation framework for non-Hermitian dynamics simulations*

11:15–11:30 *Break*

11:30–12:20 **Di Fang** (Duke University)
*Mathematical Analysis of Many-Body Quantum Simulation with Coulomb Potentials*

12:30–2:30 *Lunch (on your own)*

2:30 *SESSION CHAIR: Thursday PM Di Fang*

2:30–3:20 **Yihui Quek** (Massachusetts Institute of Technology)
*Hamiltonian Decoded Quantum Interferometry*

3:30–4:00 *Break*

4:00–4:50 **Chunhao Wang** (Penn State University)
*Quantum Regression Theory and Efficient Computation of Response Functions for Non-Markovian Open Systems*

## Friday January 16, 2026

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| 8:00–8:55 | *Check-In/Breakfast (Hosted by IPAM)* |
| 9:00 | *SESSION CHAIR: Friday AM TBD* |
| 9:00–9:50 | **Kristan Temme** (IBM Thomas J. Watson Research Center)<br>*Szegedy Walk Unitaries for Quantum Maps* |
| 10:00–10:15 | *Break* |
| 10:15–11:05 | **Ángela Capel** (University of Cambridge)<br>*Efficient preparation of the Gibbs state of the 2D toric code* |
| 11:15–11:30 | *Break* |
| 11:30–12:20 | **Li Gao** (Wuhan University)<br>*Quantum Entropy contraction via Coarse Ricci Curvature* |

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