

## Workshop II: Dynamics of Density Operators

**Monday April 28, 2025**

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00 *Session Chair: Tryphon Georgiou (University of California Irvine)*
- 9:00–9:50 **Eric Carlen** (Rutgers University)  
*On the rate of approach to steady state for some Lindblad evolutions equations arising in statistical mechanics.*
- 10:00–10:15 *Break*
- 10:15–11:05 **Dániel Virosztek** (Alfréd Rényi Institute)  
*Optimal transport by quantum channels: non-quadratic problems, metric properties, and isometries*
- 11:15–11:30 *Break*
- 11:30–12:20 **Dima Shlyakhtenko** (University of California, Los Angeles (UCLA))  
*Transport in free probability theory*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Oliver Tse (Eindhoven University of Technology)*
- 2:30–3:20 **Di Fang** (Duke University)  
*How Mathematical Analysis can help better understand quantum algorithms*
- 3:30–4:00 *Break*
- 4:00–4:50 **Roy Araiza** (University of Illinois at Urbana-Champaign)  
*Lipschitz Cost of Quantum Channels on von Neumann Algebras*
- 5:00–5:15 *Lightning Poster Round*
- 5:00–6:30 *Poster Session & Reception (Hosted by IPAM)*

**Tuesday April 29, 2025**

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *Session Chair: Jean-Claude Zambrini (University of Lisbon)*
- 9:00–9:50 **Rocco Duvenhage** (University of Pretoria)  
*Quadratic Wasserstein distance between quantum dynamical systems*
- 10:00–10:15 *Break*

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- 10:15–11:05 **Melchior Wirth** (Institute of Science and Technology Austria (IST Austria))  
*Completely positive maps and the V-transform*
- 11:15–11:30 *Break*
- 11:30–12:20 **Katy Craig** (University of California, Santa Barbara (UCSB))  
*Vector Valued Optimal Transport: From Dynamic to Kantorovich Formulations*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Katy Craig (University of California, Santa Barbara (UCSB))*
- 2:30–3:20 **Franca Hoffmann** (California Institute of Technology)  
*Covariance-Modulated Optimal Transport Geometry*
- 3:30–4:00 *Break*
- 4:00–4:50 **Andrew Jordan** (Chapman University)  
*Continuous quantum measurements : The most likely path with pre- and post-selection*

### Wednesday April 30, 2025

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *Session Chair: Roy Araiza (University of Illinois at Urbana-Champaign)*
- 9:00–9:50 **Jean-Claude Zambrini** (University of Lisbon)  
*Integrability of Hamilton-Jacobi-Bellman equation. (J.C. Zambrini, with Qiao Huang)*
- 10:00–10:15 *Break*
- 10:15–11:05 **Francois Golse** (École Polytechnique)  
*Wasserstein Distance and the Observability Problem in Quantum Mechanics*
- 11:15–11:30 *Break*
- 11:30–12:20 **David Andrew Jekel** (University of Copenhagen)  
*Relating entropy and Wasserstein distance in free probability*
- 12:20–12:30 *Group Photo*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Rocco Duvenhage (University of Pretoria)*
- 2:30–3:20 **Wilfrid Gangbo** (University of California, Los Angeles (UCLA))  
*Viscosity solutions in non-commutative variables*
- 3:30–4:00 *Break*
- 4:00–5:00 *Core Working Group Presentations*

## Thursday May 1, 2025

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *Session Chair: Dima Shlyakhtenko (University of California Los Angeles (UCLA))*
- 9:00–9:50 **Karol Zyczkowski** (Jagiellonian University)  
*Transformations of classical and quantum states and discrete dynamics in the set of quantum measurements*
- 10:00–10:15 *Break*
- 10:15–11:05 **Dmitry Vorotnikov** (University of Coimbra)  
*Matrix-valued problems reminiscent of optimal transport and their applications to PDEs*
- 11:15–11:30 *Break*
- 11:30–12:20 **Peixue Wu** (Institute for Quantum Computing)  
*From non-commutative optimal transport to limitations of quantum simulations.*
- 12:30–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Marius Junge (University of Illinois at Urbana-Champaign)*
- 2:30–3:20 **Ralph Sabbagh** (University of California, Irvine (UCI))  
*On the Weyl symbols of Gaussian semigroups*
- 3:30–4:00 *Break*
- 4:00–5:00 *Core Working Group Presentations*

## Friday May 2, 2025

- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 9:00 *Session Chair: Eric Carlen (Rutgers University)*
- 9:00–9:50 **Marius Junge** (University of Illinois at Urbana-Champaign)  
*Why Ricci curvature (almost) failed us in noncommutative dynamics.*
- 10:00–10:15 *Break*
- 10:15–11:05 **Haonan Zhang** (University of South Carolina)  
*On the Ricci curvature lower bounds for quantum Markov semigroups*
- 11:15–11:30 *Break*
- 11:30–12:20 **Aaron Palmer** (University of California, Los Angeles (UCLA))  
*Non-Commutative Optimal Control and Viscosity Solutions*

