

Centre de recherches mathématiques  
Université de Montréal

Atelier sur l'information quantique et la physique statistique  
Du 18 au 21 octobre 2011

*Workshop on Quantum Information in Quantum Many-body Physics*  
*October 18-21, 2011*

## **HORAIRE / PROGRAM**

**Conférences :** salle 6214 (Pavillon André-Aisenstadt)

**Pauses-café :** salon Maurice-L'Abbé (salle 6245, Pavillon André-Aisenstadt)

**Salles de discussion :** 4348 & 5392

**Lectures:** Room 6214 (Pavillon André-Aisenstadt)

**Coffee Breaks:** Salon Maurice-L'Abbé (Room 6245, Pavillon André-Aisenstadt)

**Discussion Rooms:** 4348 & 5392

## Le mardi 18 octobre 2011 / *Tuesday, October 18, 2011*

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- 08:30 - 09:00** Inscription (salle 5345) et café-croissants (salle 6245)  
*Registration (Room 5345) and Coffee & Croissants (Room 6245)*
- 09:00 - 10:00** **Alioscia Hama** (Perimeter Institute)
- 10:00 - 11:00** **Sergey Bravyi** (IBM Research)  
*“Memory time of 3D spin Hamiltonians with topological order”*
- 11:00 - 11:20** Pause-café / *Coffee break*  
(Salle / Room 6245)
- 11:20 - 11:50** **Tzu-Chieh Wei** (SUNY at Stony Brook)  
*“Measurement-based quantum computation with thermal states and always-on interactions”*
- 11:50 - 12:20** **Anne E. B. Nielsen** (Max Planck Institute of Quantum Optics)  
*“Infinite-dimensional-matrix product states”*
- 12:20 - 15:30** Pause-déjeuner et temps libre / *Lunch break and Free time*
- 15:30 - 16:00** Café / *Coffee*  
(Salle / Room 6245)
- 16:00 - 17:00** **David Sénéchal** (Université de Sherbrooke)
- 17:00 - 17:30** **Guillaume Duclos-Cianci** (Université de Sherbrooke)  
*“Local equivalence of topological order : Kitaev’s code and color codes”*
- 17:30 - 18:00** **Philippe Corboz** (ETH Zürich)  
*“Recent progress in the simulation of strongly correlated systems in two dimensions with tensor network algorithms”*

## Le mercredi 19 octobre 2011 / *Wednesday, October 19, 2011*

**08:30 - 09:00** Café croissants / *Coffee & Croissants*  
(Salle / Room 6245)

**09:00 - 10:00** **Barbara Terhal** (RWTH Aachen)  
*“Adiabatic quantum computation and stoquastic Hamiltonians”*

**10:00 - 11:00** **Spiros Michalakis** (Caltech)  
*“Stability of frustration-free Hamiltonians”*

**11:00 - 11:20** Pause-café / *Coffee break*  
(Salle / Room 6245)

**11:20 - 11:50** **Norbert Schuch** (California Institute of Technology)  
*“Complexity of commuting Hamiltonians for qubits on a square lattice”*

**11:50 - 12:20** **Maarten Van den Nest** (Max Planck Institute)  
*“A monomial matrix formalism to describe quantum many-body states”*

**12:20 - 15:30** Pause-déjeuner et temps libre / *Lunch break and Free time*

**15:30 - 16:00** Café / *Coffee*  
(Salle / Room 6245)

**16:00 - 17:00** **Héctor Bombin** (Perimeter Institute)

**17:00 - 19:00** Session d'affiches / *Poster Session* (Salle / Room 6245)

**Courtney Brell** (University of Sydney)  
*“A perturbative approach to PEPS parent Hamiltonians”*

**Oliver Buerschaper** (Perimeter Institute)  
*“Topologically ordered tensor network states”*

**Andrew Darmawan** (University of Sydney)  
*“Measurement-based quantum computation in a 2D phase of matter”*

## Le jeudi 20 octobre 2011 / *Thursday, October 20, 2011*

**08:30 - 09:00** Café croissants / *Coffee & Croissants*  
(Salle / Room 6245)

**09:00 - 10:00** **Guifre Vidal** (Perimeter Institute for Theoretical Physics)  
*“Impurities, infrared catastrophe and renormalization: a principle of holographic quasi-locality”*

**10:00 - 11:00** **André-Marie Tremblay** (Université de Sherbrooke)  
*“Successes and limitations of dynamical mean field theory”*

**11:00 - 11:20** Pause-café / *Coffee break*  
(Salle / Room 6245)

**11:20 - 12:20** **Matthias Troyer** (ETH Zürich)

**12:20 - 15:30** Pause-déjeuner et temps libre / *Lunch break and Free time*

**15:30 - 16:00** Café / *Coffee*  
(Salle / Room 6245)

**16:00 - 17:00** **Chaire Aisenstadt Chair**  
**Renato Renner** (ETH Zürich)  
*“An information-theoretic view on thermalization”*

**17:00 - 18:00** **Tobias Osborne** (Leibniz Universität Hannover)  
*“The continuum limit of a quantum circuit: variational classes for quantum fields”*

## Le vendredi 21 octobre 2011 / *Friday, October 21, 2011*

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- 08:30 - 09:00** Café croissants / *Coffee & Croissants*  
(Salle / Room 6245)
- 09:00 - 10:00** **Roger Melko** (University of Waterloo)  
*“Entanglement entropy in exotic phases of quantum matter”*
- 10:00 - 11:00** **Frank Verstraete** (University of Vienna)  
*“The entanglement spectrum of gapped quantum spin systems”*
- 11:00 - 11:20** Pause-café / *Coffee break*  
(Salle / Room 6245)
- 11:20 - 11:50** **Stephen Inglis** (University of Waterloo)  
*“Measuring Renyi entropies in finite-temperature QMC using Wang-Landau sampling”*
- 11:50 - 12:20** **Jutho Haegeman** (University of Ghent)  
*“Time-dependent variational principle for quantum many-body systems”*
- 12:20 - 15:30** Pause-déjeuner et temps libre / *Lunch break and Free time*
- 15:30 - 16:00** Café / *Coffee*  
(Salle / Room 6245)
- 16:00 - 16:30** **Ann Kallin** (University of Waterloo)  
*“Scaling of entanglement entropy in the 2D Heisenberg ground state”*
- 16:30 - 17:00** **Johannes Wilms** (University of Vienna)  
*“Mutual information in the Lipkin-Meshkov-Glick model”*
- 17:00 - 17:30** **Winton Brown** (Université de Sherbrooke)  
*“Quantum Hammersley-Clifford theorem”*