

Quantum information in many-body systems

Olivier Landon-Cardinal
Department of Physics,
McGill University

DATE: Monday, February 1, 2016

TIME: 3:30 PM

PLACE: C2045

Donuts and coffee will be served before the seminar.

ABSTRACT: Quantum information sheds new light on quantum systems, complementary to the traditional point of view of energy. A key notion is entanglement, which measures quantum correlations within the system. Understanding entanglement of ground states is crucial to efficiently represent such many-body states using a small number of variational parameters. This is but one example of very powerful tools introduced by quantum information.

After introducing entanglement, I will focus on my current and future work. My two main themes of research are i) characterization of quantum systems and ii) topological quantum systems. First, I will briefly describe novel techniques introduced by collaborators and myself to reconstruct the many-body wave function of a large system through a small number of experimental measurements. Second, I will focus on using topological quantum spin systems as "quantum hard drives" and highlight some of my recent results on their thermalization.

ALL ARE WELCOME!