

## ORGANISERS

**André-Marie Tremblay,**  
Université de Sherbrooke, Canada

**Michel Côté,**  
Université de Montréal, Canada

**Gabriel Kotliar,**  
Rutgers University, New-Jersey

**Roger Melko,**  
University of Waterloo, Canada

**David Sénéchal,**  
Université de Sherbrooke, Canada

## SCOPE

Conceptual advances, new algorithms and the power of modern computers have allowed numerical methods to rank amongst new theoretical frameworks that are indispensable for **understanding collective electronic properties of complex solids**.

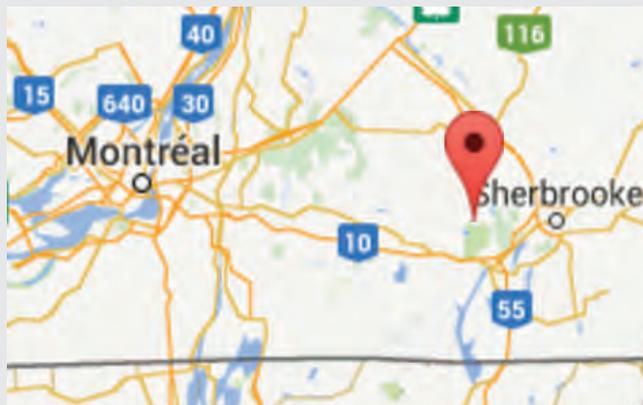
This School will focus on **computational tools** for both models and ab-initio methods that deal with so-called "**quantum materials**" whose spectacular properties, ranging from large thermopower, high-temperature superconductors to heavy fermions, topological insulators and colossal magnetoresistance materials, are consequences of the non-trivial quantum mechanical nature of electrons and of their interactions.

The merging of methods for **models of strongly correlated quantum materials** with **ab-initio methods** now allows one to make predictions for materials with d and f electrons that were unimaginable until recently. A good part of the School will be devoted to these.

Extensive **hands-on training** on freely available codes, **ABINIT**, **TRIQS**, **ITensor** and a few others such as **LDA+DMFT** will be an integral part of the School.

## LOCATION

**Jouvence** (resort)  
131, chemin de Jouvence  
Orford, (Québec) J1X 6R2  
jouvence@jouvence.com



There will be a **shuttle** from  
Trudeau International **Airport** (YUL),  
Montréal

## SPONSORS



Canada First  
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INTERNATIONAL  
**SUMMER**  
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**COMPUTATIONAL**  
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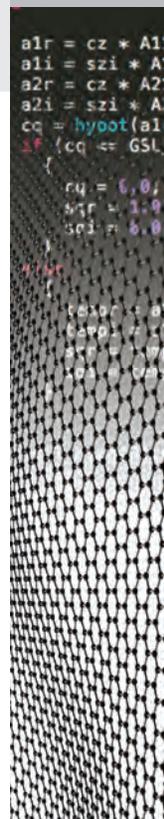


**MAY 30**  
to  
**JUNE 10**  
2016

Sherbrooke,  
Québec,  
Canada

REGISTRATION DEADLINE  
**FEBRUARY 1, 2016**

pitp.physics.ubc.ca/  
confs/sherbrooke2016



# LECTURERS

(In order of their first lecture)

**André-Marie Tremblay** - Sherbrooke  
Refresher on many-body theory

**Michel Côté** - Montréal  
Local Density Approximation,  
Density functional theory, ABINIT hands-on

**Xavier Gonze** - Louvain  
Abinit code, and hands-on

**Ion Garate** - Sherbrooke  
Topological Insulators

**David Sénéchal** - Sherbrooke  
Dynamical Mean-Field Theory (DMFT)  
and its cluster extensions

**Jan Gukelberger** - Sherbrooke  
Introduction to Monte Carlo methods and  
a few words about ALPS

**Philipp Werner** - Fribourg  
Continuous Time Quantum Monte Carlo

**Olivier Parcollet** - CEA Saclay  
TRIQS, a toolbox for Research  
on Interacting Quantum Systems

**Michel Ferrero** - École Polytechnique, Paris  
hands-on training: TRIQS

**Roger Melko** - Waterloo  
Quantum Monte Carlo, SSE, loop updates

**Adrian Del Maestro** - Vermont  
Worm algorithms

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(lecturers continued)

**Fabien Bruneval** - CEA Saclay  
ABINIT and GW method

**Gabriel Kotliar** - Rutgers  
Ab initio methods for correlated materials

**Kristjan Haule** - Rutgers  
Introduction, DMFT-LAPW

**Chuck-Hou Yee** - Rutgers  
Wien2k Tutorial

**Dominic Bergeron** - Sherbrooke  
Hands-on training:  
analytical continuation OmegaMaxEnt

**Uli Schollwöck** - Munich  
Density-Matrix Renormalization Group (DMRG)

**Miles Stoudenmire** - Perimeter Institute  
DMRG software and hands-on ITensor

## REGISTRATION

All students can register for this School as a three credit PhD level course with Université de Sherbrooke

Students that do not register for credit:  
single occupancy: **1600** CND\$  
double occupancy: **1200** CND\$  
multiple occupancy(3): **1000** CND\$

Students that register for credit:  
single occupancy: **1400** CND  
double occupancy: **1000** CND  
multiple occupancy(3): **800** CND

Limit of 60 students and postdocs.

For more information, and to register, visit our Website at :

**[pitp.physics.ubc.ca/confs/sherbrooke2016](http://pitp.physics.ubc.ca/confs/sherbrooke2016)**

There will be no classes during the weekend June 4th - June 5th and there is an additional 16% discount if you do not stay at the school during the weekend (i.e. 10 instead of 12 days). Please advise the hotel thirty days in advance in that case.