

CIFAR Quantum Materials Summer School 2016

April 24 – 27, 2016
Marriott Bloor Yorkville Hotel
90 Bloor St E
Toronto, ON

Summer School Schedule:

All talks during the summer school and main meeting will take place in the Forest Hill Room.

Monday, April 25th

08:00 – 09:00	Breakfast (<i>Yorkville Room</i>)
09:00 – 10:00	Stephen Julian - University of Toronto Quantum Oscillations in Strongly Correlated Metals
10:00 – 10:15	Coffee Break (<i>Yorkville Room</i>)
10:15 – 11:15	Sung-Sik Lee – McMaster University Low energy effective theories for metals
11:15 – 11:30	Break (<i>Yorkville Room</i>)
11:30 – 12:30	Sung-Sik Lee – McMaster University Quantum renormalization group
12:30 – 13:30	Lunch (<i>Yorkville Room</i>)
13:30 – 14:30	Takashi Imai – McMaster University How do we use NMR as a local probe of condensed matter?
14:30 – 16:30	Poster Session and Drinks Reception (<i>Yorkville Room</i>)
Evening	Dinner – Self-organized

Tuesday, April 26th

08:00 – 09:00	Breakfast (<i>Yorkville Room</i>)
09:00 – 10:00	Arun Paramekanti – University of Toronto Spins, Orbitals, and Spin-Orbit Coupling
10:00 – 10:15	Coffee Break (<i>Yorkville Room</i>)
10:15 – 11:15	Ivan Semeniuk – The Globe and Mail Science Journalism
11:15 – 11:30	Break (<i>Yorkville Room</i>)
11:30 – 12:30	David Hawthorn – University of Waterloo Charge density wave order and nematicity in cuprate superconductors
12:30 – 13:30	Lunch (<i>Yorkville Room</i>)
13:30 – 14:30	Rob Hill – University of Waterloo Low temperature measurement techniques
14:30 – 14:45	Coffee Break (<i>Yorkville Room</i>)
14:45 – 15:45	Bruce Gaulin – McMaster University Time-of-flight neutron scattering from quantum materials
15:45 – 16:00	Break (<i>Yorkville Room</i>)

16:00 – 17:30	Zahid Hasan – Princeton University Dirac fermions, Topological Insulators & Superconductors Weyl fermions, Fermi arcs & Topological Nodal Metals
19:00 – 21:00	Summer School Group Dinner (<i>Hothouse Restaurant</i>)

Wednesday, April 27th

08:00 – 09:00	Breakfast (<i>Yorkville Room</i>)
09:00 – 10:00	André-Marie Tremblay – Université de Sherbrooke Introduction to superconductivity and pseudogap in the cuprates
10:00 – 10:15	Coffee Break (<i>Yorkville Room</i>)
10:15 – 11:15	Hae-Young Kee – University of Toronto Topological crystalline semimetal with strong spin-orbit coupling
11:15 – 11:30	Break (<i>Yorkville Room</i>)
11:30 – 12:30	Leon Balents – University of California, Santa Barbara Part 1 - Quantum spin liquids
12:30 – 13:30	Lunch (<i>Yorkville Room</i>)
13:30 – 14:30	Leon Balents - University of California, Santa Barbara Part 2 - Quantum spin liquids
14:30 – 14:45	Coffee Break (<i>Yorkville Room</i>)
14:45 – 15:45	Emilia Morosan – Rice University Part 1 - Cooking with metals and more: design and growth of novel materials
15:45 – 16:00	Break (<i>Yorkville Room</i>)
16:00 – 17:30	Emilia Morosan – Rice University Part 2 - Cooking with metals and more: design and growth of novel materials
Evening	Dinner – Self-organized

Main Meeting Schedule:

Thursday, April 28th

07:00 – 08:45	Breakfast (<i>High Park Ballroom</i>)
09:00 – 09:45	Phuan Ong – Princeton University The chiral anomaly in Dirac and Weyl semimetals: an introduction
09:45 – 10:30	Senthil Todadri – MIT From quantum spin liquids to composite Fermi liquids through topological insulators
10:30 – 11:30	Coffee Break (<i>Yorkville Room</i>)
11:30 – 12:15	Joe Orenstein – University of California, Berkeley Quasiparticle and collective dynamics in cuprates and pnictides
12:30 – 14:30	Lunch (<i>High Park Ballroom</i>)

14:30 – 15:15	Pierre Richard – IOP Beijing ARPES on Fe-based superconductors: what can we say?
15:15 – 15:45	Poster Advertisements
15:45 – 19:00	Poster Session and Coffee Break (<i>High Park Ballroom</i>)
15:45 – 19:00	Main Meeting Group Dinner (<i>Marriott, Forest Hill Ballroom</i>)

Friday, April 29th

07:00 – 08:45	Breakfast (<i>High Park Ballroom</i>)
09:00 – 09:45	Jeff Tallon – University of Wellington Pseudogap in cuprate superconductors – what, when, why, where, how?
09:45 – 10:30	Dan Dessau – University of Colorado Direct connection of ARPES with optics, transport, and thermodynamics experiments in cuprate superconductors: the key role of electron self-energies
10:30 – 11:30	Coffee Break (<i>Yorkville Room</i>)
11:30 – 12:15	Louis Taillefer – Université de Sherbrooke Normal-state signatures of the pseudogap quantum critical point
12:30 – 14:30	Lunch (<i>High Park Ballroom</i>)
14:30 – 15:15	Andrey Chubukov – University of Minnesota Preconditions for the axial charge order in the cuprates
15:15 – 19:00	Poster Session and Coffee Break (<i>High Park Ballroom</i>)
Evening	Dinner – Self-organized

Saturday, April 30th

07:00 – 08:45	Breakfast (<i>High Park Ballroom</i>)
09:00 – 09:45	Gil Lonzarich – Cambridge The two-fluid model of the Kondo lattice and reconsideration of the Doniach phase diagram
09:45 – 10:30	Peter Abbamonte – University of Illinois Evidence for fluctuating charge order in optimally-doped Bi2212 from meV-resolved EELS
10:30 – 11:30	Coffee Break (<i>Yorkville Room</i>)
11:30 – 12:15	Andy Mackenzie – Max Planck Institute Hydrodynamic electron flow in PdCoO ₂ and graphene
12:30 – 14:30	Lunch (<i>High Park Ballroom</i>)
14:30 –	Departure

Poster Session Titles:

Kolawole Akintola	μ^+ SR studies of the Topological Kondo Insulator SmB_6
Arezoo Afshar	Critical Doping for the onset of Fermi-Surface Reconstruction by Charge-Density Wave order in the Cuprate Superconductor LSCO
Sven Badoux	Change of Carrier density at the pseudogap critical point of cuprate superconductor
Patrick Bourgeois-Hope	Thermal conductivity of the iron-based superconductor FeSe: Nodeless gap with strong two-band character
Oliver Breunig	Negative Magnetoresistance of $\text{TlBi}_x\text{Sb}_{1-x}\text{Te}_2$
Yipeng Cai	μ SR measurements on the frustrated glassy pyrochlore $\text{NaCaNi}_2\text{F}_7$
Clément Collignon	Fermi-surface transformation across the pseudogap critical point of the cuprate superconductor $\text{La}_{1.6-x}\text{Nd}_{0.4}\text{SrCuO}_4$
Zheng Cui	Time-Resolved Scanning SQUID (Superconducting QUantum Interference Device) Microscope
Ryan Day	A Tight-Binding Approach to Modelling ARPES Intensity
Ritika Dusad	Supercooled Spin Liquids: Status quo of Magnetically Frustrated Spin Ices?
Stephen Edkins	Detection of a Cooper-Pair Density Wave in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$
Brendan Faeth	CONQUEST: A New Paradigm for Materials Synthesis and Characterization
Jonathan Gaudet	Domain effects in magnetically diluted $\text{Er}_2\text{Ti}_2\text{O}_7$
Chris Granstrom	Andreev reflection spectroscopy on bismuth-chalcogenide topological insulators: implications on superconducting proximity-effect experiments
Alannah Hallas	Universal Dynamic Magnetism in Ytterbium Pyrochlores with Disparate Ground States
Ayami Hattori	Edge states of silicene, germanene and stanene nanoribbons with edge hydrogen terminations
Ciarán Hickey	Haldane-Hubbard Mott Insulator: Chiral Magnetic and Topological Order
Wen Huang	Leggett modes and novel multi-band superconductivity in Sr_2RuO_4
Joel Hutchinson	Rashba scattering in the low energy limit
Jason Iaconis	Kinetic Magnetism at the Interface between Mott and Band Insulators
Daniel Ish	Theory of Excitations and Dielectric Response at a Spin-Orbit Quantum Critical Point
Shaojian Jiang	Long-lived universal resonant Bose gases
Paige Kelley	Magnetic phase diagram of the honeycomb lattice system $\text{Ru}_{1-x}\text{Ir}_x\text{Cl}_3$
Ivan Kostylev	SrTiO_3 Under Uniaxial Strain

Vladyslav Kozii	Topological superconductors: odd, nematic and chiral
Fengmiao Li	Growth of Strontium Bismuthate Film with Oxide Molecular Beam Epitaxy
You-Sheng Li	Heat Capacity Measurements of Sr_2RuO_4 under uni-axial Strain
Jeff Maki	Quantum Scale Invariant Dynamics in Mesoscopic Bose Gases: Small is Different.
Christopher McMahon	Nematicity in Stripe Ordered Cuprates Probed via Resonant X-Ray Scattering
Tristin Metz	Large linear magnetoresistance and high carrier mobility in RhSb_3 as a Dirac semimetal candidate
Laleh Mohtashemi	Precision test of Fermi liquid theory with temperature-dependent terahertz conductivity measurements of MnSi
Matthew Neat	Scanning Tunnelling Microscopy/Spectroscopy of FeSe
Hilary Noad	Magnetism in $\text{LaAlO}_3/\text{SrTiO}_3$ Heterostructures Probed With Scanning SQUID
Anand Pal	Low temperature investigation of fluctuating loop-current order in underdoped cuprates by μSR
Johanna Palmstrom	Elastoresistance as a Probe of Nematicity in Fe-based Superconductors
Kirill Plekhanov	Generating a Chiral Superfluid quantum phase transition using Floquet engineered lattices
Amy Qu	Adatom-induced signatures of superconductivity in monolayer graphene
Shanta Saha (1)	High-spin Cooper pairing in topological half-Heusler semimetals
Shanta Saha (2)	High-temperature superconductivity in collapsed tetragonal phase of KFe_2As_2
Derek Sahota	Evidence for a spin bottleneck in the photoexcitation response of insulating cuprates
Zheng Shi	A fermionic approach to tunneling through junctions of multiple quantum wires
Kazuaki Takasan	Laser-induced Weyl semimetals in topological Kondo isolators
Vijin Venu	Quantum simulator for the Fermi-Hubbard model
Murray Wilson	Hidden order and Antiferromagnetism in Os and Fe doped URu_2Si_2
Liang Wu	Colossal Second Harmonic Generation In Inversion Symmetry Breaking Weyl Semi-metal
Shuhei M.Yoshida	Universality and Anisotropy in a Resonant p-Wave Fermi Gas
Hao Zhang	Novel Superoxygenated Phases in Superconducting Cuprate Thin Films

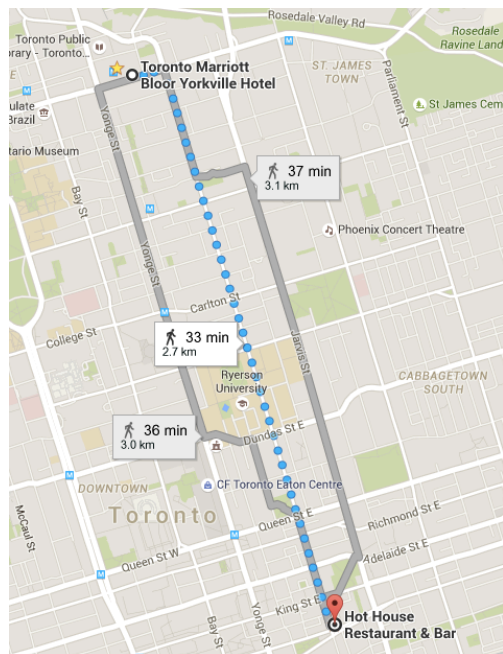
Directions to Summer School Group Dinner:

The summer school group dinner will be held at Hot House Restaurant and Bar, which is located at 35 Church Street, Toronto. The dinner will begin at 7pm on April 26th.

Getting there is easy, either on foot or by metro.

Walking Directions: Exiting the hotel on Bloor, turn left and walk 150 meters to Church Street. Turn right on Church St. and continue on for 2.6 km. The restaurant will be on your left side.

Metro Directions: Enter the Bloor Yonge Station (directly outside the hotel), and take the Yonge-University (Yellow "1") line towards Downsview. Get off at King Station. From here it is a 5 minute walk: Walk up King St East and turn right on Church St. Please note the Toronto Subway costs \$3.25 and tickets can be purchased at the station with cash only.



Organizing Committee:

The 2016 CIFAR Quantum Materials Summer School has been jointly organized by students from the University of Toronto and McMaster University with great assistance from CIFAR's Lori Dunn and Lara O'Donnell.

The organizing committee is:

Alannah Hallas (McMaster University)

Ciarán Hickey (University of Toronto)

Jonathan Gaudet (McMaster University)

Murray Wilson (McMaster University)



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