

Program

Wed. Aug. 5

15:00 19:00 registration and reception (Norris Center, 2nd floor)

Thurs. Aug. 6

8:30 9:00 coffee

9:00 9:05 welcome/announcements

Session A: Broken Symmetry

9:05 9:50 invited A1 (plenary)

George Pickett - *Cosmological Phenomena Simulated in the Laboratory*

9:50 10:10 invited A2

Yuriy Bunkov - *³He Experiments: Insights into Cosmology and Atomic Physics*

10:10 10:30 invited A3

Daniel Golubchik - *Spontaneous Flux Generation in a Superconducting Film*

10:30 10:50 coffee break

10:50 11:10 invited A4

Yutaka Sasaki - *Chaotic Decay of Long-Lived NMR Signal in Superfluid ³He-B*

11:10 11:30 invited A5

Anton Vorontsov - *Broken Spatial and Temporal Symmetries in ³He and Superconductors*

11:30 11:50 invited A6

Matthias Eschrig - *Spin Supercurrents through Superconducting-Ferromagnetic Junctions*

11:50 13:15 lunch

Session B: Exotic Superconductivity

13:15 14:00 invited B1 (plenary)

Vladimir Mineev - *Recent Developments in Unconventional Superconductivity Theory*

14:00 14:20 invited B2

Dai Aoki - *Coexistence of Superconductivity and Ferromagnetism in Uranium Compounds*

14:20 14:40 invited B3

Catherine Kallin - *Time-reversal Symmetry Breaking in Sr₂RuO₄*

14:40 15:00 invited B4

Dale Van Harlingen - *The Search for Complex Order Parameter Symmetry in Unconventional Superconductors*

15:00 15:30 coffee break

15:30 15:50 invited B5
Matthias Graf - *Parasitic Magnetism in the Superconducting Phase of CeCoIn5*

15:50 16:10 invited B6
Morten Eskildsen - *Paramagnetism in the Superconducting Vortex Phases of CeCoIn5*

16:10 16:40 8 invited poster summaries (IPS/AB)

16:40 18:00 poster session AB

20:00 Ravinia concert, Jonathan Biss pianist

Fri. Aug. 7

8:30 9:00 coffee
9:00 9:05 announcements

Session C: Charges & Spins in Quantum Fluids & Solids

9:05 9:50 invited C1 (plenary)
Kimitoshi Kono - *Electrons on the Surface of Superfluid 3He*

9:50 10:10 invited C2
Stephen Lyon - *Electrons on Helium - Spin Qubits*

10:10 10:30 invited C3
Humphrey Maris - *Experiments with Single Electrons in Liquid Helium*

10:30 10:50 coffee break

10:50 11:10 invited C4
Daisuke Takahashi - *Critical Velocity of 2D Snowballs Below the Free Surface of 4He-II*

11:10 11:30 invited C5
David Lee - *Stabilization of H and D Atoms in Kr Nano-clusters Immersed in Superfluid He*

11:30 11:50 invited C6
Igor Todoshchenko - *Nuclear Spin Order and Faceting of 3He*

11:50 13:15 lunch

Session D: 2D Quantum Liquids & Solids

13:15 14:00 invited D1 (plenary)
John Saunders - *Experiments on 2D Liquid and Solid Helium*

14:00 14:20 invited D2
Daisuke Sato - *Evidences for a Self-Condensed Liquid State in 2D 3He on Graphite*

- 14:20 14:40 invited D3
Keiya Shirahama - *4He in Nanoporous Media: QPT, LBEC and possible SuperSolidity*
- 14:40 15:00 invited D4
Henri Godfrin - *Neutron Scattering and Zero Sound in 2D ^3He*
- 15:00 15:30 coffee break
- 15:30 15:50 invited D5
Hidehiko Ishimoto - *Two-dimensional Anti-ferromagnetic Solid ^3He in High Magnetic Fields*
- 15:50 16:10 invited D6
Mark Meisel - *Magnetic Phase Diagram of the 2D Quantum AFM $\text{Cu}(\text{tn})\text{Cl}_2$*
- 16:10 16:40 8 invited poster summaries (IPS/CD)
- 16:40 18:00 poster session CD
- 19:00 22:00 JLTP Editorial Board meeting (Hilton)

Sat. Aug. 8

- 8:30 9:00 coffee
- 9:00 9:05 announcements
- Session E: Quantum Solids & Glasses
- 9:05 9:50 invited E1 (plenary)
Sebastien Balibar - *Supersolidity: Polycrystals vs. Single Crystals*
- 9:50 10:10 invited E2
John Beamish - *Shear Modulus of Solid ^4He : Defects & Dynamics*
- 10:10 10:30 invited E3
Joshua West - *Supersolid Behavior in Confined Geometry*
- 10:30 10:50 coffee break
- 10:50 11:10 invited E4
Alexander Andreev - *Momentum Deficit in Quantum Glasses*
- 11:10 11:30 invited E5
Séamus Davis - *Torsional Oscillator Studies of Solid ^4He "superglass"*
- 11:30 11:50 invited E6
Alexander Balatsky - *A Possible Quantum Glassy Nature of Solid ^4He at Low Temperatures*
- 12:45 18:00 conference excursion (buses leave from Foster-Walker residence)
Chicago Architecture Boat Tour

19:30 22:00 conference banquet (Louis Room, Norris Center)

Sun. Aug. 9

8:30 9:00 coffee

9:00 9:05 announcements

Session F: Superfluid Phases of ^3He

9:05 9:50 invited F1 (plenary)

Doug Osheroff - *Nucleation of $^3\text{He-B}$*

9:50 10:10 invited F2

Yoonseok Lee - *Suppression of the B-like Phase of ^3He in Aerogel by Magnetic Field*

10:10 10:30 invited F3

Osamu Ishikawa - *4th Sound of ^3He in Aerogel*

10:30 10:50 coffee break

10:50 11:10 invited F4

Akira Yamaguchi - *$^3\text{He-A1}$ Mechanical Spin Pump*

11:10 11:30 invited F5

Satoshi Murakawa - *Transverse acoustic impedance of the A1 and A2 phases of ^3He*

11:30 11:50 invited F6

John Davis - *Transverse Acoustics in $^3\text{He-B}$*

11:50 12:50 **Moses Chan/ Bob Richardson** - *"Helium Supply" discussion*
(box lunch provided on sign-up)

11:50 13:15 lunch

Session G: The Quantum Limit

13:15 14:00 invited G1 (plenary)

Dirk Bouwmeester - *Opto-mechanical Cooling and Quantum Superpositions of a Mirror*

14:00 14:20 invited G2

Jukka Pekola - *Electronic Refrigeration at the Quantum Limit*

14:20 14:40 invited G3

Eddy Collin - *Novel NEMS and MEMS Structures for Low Temperature Physics*

14:40 15:00 invited G4

John Owers-Bradley - *Dissipation in Gold Nanomechanical Resonators at Low Temperatures*

15:00 15:30 coffee break

15:30 15:50 invited G5

Keith Schwab - *Nanomechanical Devices in the Quantum Limit*
 15:50 16:10 invited G6
Jeevak Parpia - *Stress and Dissipation in Disordered Silicon Nitride*
 16:10 16:40 8 invited poster summaries (IPS/EFG)
 16:40 18:00 poster session EFG

Mon. Aug. 10

8:30 9:00 coffee
 9:00 9:05 announcements

Session H: Quantum Vortices
 9:05 9:50 invited H1 (plenary)
Erkki Thuneberg - *Vortex Structures in Superfluids: Examples in ^3He*
 9:50 10:10 invited H2
Ryosuke Ishiguro - *Rotating ^3He in Narrow Cylinders - Intrinsic Angular Momentum of $^3\text{He-A}$*
 10:10 10:30 invited H3
Takao Mizusaki - *Spin-Wave and Vortex Excitations of Rotating $^3\text{He-A}$ Slabs*

10:30 10:50 coffee break

10:50 11:10 invited H4
Viktor Tseplin - *Generation and Detection of Ballistic Vortex Rings in Superfluid $^3\text{He-B}$*
 11:10 11:30 invited H5
Andrei Golov - *Interacting Vortex Rings in Superfluid ^4He in the Low-Temperature Limit*
 11:30 11:50 invited H6
Makoto Tsubota - *Dynamics of Charged Quantized Vortices*

11:50 13:15 lunch

Session I: Quantum Turbulence
 13:15 14:00 invited I1 (plenary)
Paul Walmsley - *Quantum Turbulence in ^4He*
 14:00 14:20 invited I2
Ladislav Skrbek - *Generation of Turbulence by Vibrating Forks in $^4\text{He-II}$*
 14:20 14:40 invited I3
German Kolmakov - *Energy Cascade in Acoustic Turbulence of ^4He*
 14:40 15:00 invited I4

Risto Hänninen - *Theory and Simulation of Quantum Turbulence*

- 15:00 15:30 coffee break
- 15:30 15:50 invited I5
Matthew Paoletti - *Quantitative Characterization of Quantum Turbulence*
- 15:50 16:10 invited I6
Vanderlei Bagnato - Vortex Generation and Emergence of Turbulence in an Oscillating BEC
- 16:10 16:40 8 invited poster summaries (IPS/HIJ)
- 16:40 18:00 poster session HIJ
- 19:00 pub crawl/blues and jazz (meeting point -Foster street train station)

- 19:00 21:05 quantum turbulence workshop
chair: Makoto Tsubota
- 19:00 19:05 **Makoto Tsubota**, Greetings

QT by vibrating structures

- 19:05 19:25 **Shaun Fisher** - Quantum Turbulence at Low Temperatures: Generation and Detection using Vibrating Structures
- 19:25 19:40 **Hideo Yano** - Transition of Steady Quantum Turbulence Generated by Oscillating Structures in Superfluid 4He
- 19:40 19:55 **Eduard Ya. Rudavskii** - Transition to Turbulence and Critical Velocity in Superfluid Mixtures of 3He in 4He
- 19:55 20:10 **Risto Hänninen** - Universal Onset of Quantum Turbulence in Oscillating Flows and Crossover to Steady Flows

- 20:10 20:20 coffee break

Visualization

- 20:20 20:35 **Wei Guo** - Quantitative Study of the Normal-fluid Flow using Helium Molecules

Numerical simulation

- 20:35 20:50 **Shoji Fujiyama** - Vortex Line Density Fluctuation of Quantum Turbulence: Steady State of Counterflow Turbulence

Cold atoms

- 20:50 21:05 **Angela White** - Probing a Mini-turbulent state in an Atomic Bose-Einstein Condensate

Tues. Aug. 11

- 8:30 9:00 coffee

9:00 9:05 announcements

Session J: Ultra-Cold Atoms

9:05 9:50 invited J1 (plenary)
Wolfgang Ketterle - *Fermionic Condensates, Optical Lattices and BEC*

9:50 10:10 invited J2
David Clément - *Inelastic Light Scattering Studies of Correlated States of Bose Gases*

10:10 10:30 invited J3
Jérôme Estève - *Splitting a BEC in two: Number Fluctuations and Squeezing*

10:30 10:50 coffee break

10:50 11:10 invited J4
Nathan Gemelke - *Bosonic Mott Insulators and Fractional Quantum Hall Physics*

11:10 11:30 invited J5
Markus Greiner - *Cold Atoms in Optical Lattices*

11:30 11:50 invited J6
Nandini Trivedi - *Prediction and Detection of Larkin-Ovchinnikov States for Imbalanced Fermi Gases in Optical Lattices*

12:00 12:20 conference closing session

14:00 18:00 Vortex workshop
chairs: **Matthias Eschrig** and **Jim Sauls**

19:00 Chicago Cubs baseball game

Wed. Aug.12

9:00 16:00 Vortex workshop