

Programme Overview

Wednesday 9 August

16:00-19:00 REGISTRATION & WELCOME
RECEPTION (Engineering Building, Booth St E)

Thursday 10 August

9:00-9:20 OPENING WELCOME
9:20-10:50 TH1 Superfluid ^4He and ^3He
COFFEE
11:20-12:50 TH2 Superfluid ^3He
12:50-13:50 LUNCH
13:50-15:00 TH3 Exciton-Polaritons
COFFEE
15:30-17:00 TH4 Quantum Vortex
17:00-18:30 TH5 POSTERS & DRINKS 1: Bulk
and Confined Quantum Gases, Liquids & Solids

Friday 11 August

9:00-10:30 FR1 Confined ^4He
COFFEE
11:00-12:10 FR2 Quantum Fluids for Cosmology 1
12:10-13:10 LUNCH
13:10-14:40 FR3 Quantum Turbulence 1
COFFEE
15:10-17:00 FR4 A.F. ANDREEV Memorial and
Novel Superfluids/Superconductors
17:00-18:30 FR5 POSTERS & DRINKS 2:
Electrons on He/Ne, Cryogenic Techniques,
Superfl Optomechanics, Q. Fluids for Cosmology

Saturday 12 August

9:00-10:15 SA1 Quantum Gases
COFFEE
10:45-12:15 SA2 Confined Superfluid Helium
12:15-13:15 LUNCH
13:15-13:30 GROUP PHOTO
13:30-15:00 SA3 Electrons on Helium and Neon
COFFEE
15:30-17:00 SA4 Quantum Turbulence 2
17:00-18:30 SA5 POSTERS & DRINKS 3:
Quantum Vortices and Turbulence, Novel
Superfluids and Superconductors

Sunday 13 August

11:00-13:00 & 14:00-16:00 EXCURSIONS

Monday 14 August

9:00-10:30 MO1 Quantum Fluids for
Cosmology 2
COFFEE
11:00-12:30 MO2 Superfluid Optomechanics
12:30-13:30 LUNCH
13:30-15:00 MO3 Superfluid ^3He in Aerogel
COFFEE
15:30-17:35 MO4 HALL & VINEN Memorial
19:00-22:30 CONFERENCE DINNER
(Whitworth building, Oxford Road)

Tuesday 15 August

9:00-10:10 TU1 Cryogenic Techniques
COFFEE
10:40-11:50 TU2 Quantum Solids
11:50-12:30 CLOSING CEREMONY
12:30 PACKED LUNCH

Programme

Thursday 10 August

9:00-9:20 OPENING WELCOME

9:20-10:50 SESSION TH1 Superfluid ^4He and ^3He , chair Richard Haley

9:20 TH1.1 Jules Grucker, Brillouin spectroscopy of metastable superfluid helium-4

9:45 TH1.2 Jeevak Parpia, Observation of fluctuations in the viscosity just above the superfluid transition in ^3He

10:10 TH1.3 Jim Sauls, Pairing fluctuation effects on quasiparticle transport above T_c

10:30 TH1.4 Lev Melnikovsky, Overcritical Fermi superfluids

10:50-11:20 COFFEE

11:20-12:50 SESSION TH2 Superfluid ^3He , chair John Saunders

11:20 TH2.1 Anton Vorontsov, Superfluid He-3 suppression near atomically smooth surfaces

11:45 TH2.2 Alexander Shook, Measurement of ^3He -A critical velocity in micron-scale slabs

12:10 TH2.3 Dmitry Zmeev, Superconducting nano-oscillators fabricated with wire drawing technology

12:30 TH2.4 Yutaka Sasaki, Spectroscopic imaging study on the domain structure in superfluid ^3He

12:50-13:50 LUNCH

13:50-15:00 SESSION TH3 Exciton-Polaritons, chair Carlo Barenghi

13:50 TH3.1 Marzena Szymańska, Novel non-equilibrium phenomena in quantum fluids of light

14:15 TH3.2 Kosuke Yoshioka, Bose-Einstein condensation of excitons in a bulk semiconductor at sub-kelvin temperatures

14:40 TH3.3 Hyungsoon Choi, Controlling exciton-polariton vortices with orbital angular momentum of light

15:00-15:30 COFFEE

15:30-17:00 SESSION TH4 Quantum Vortex, chair Wei Guo

15:30 TH4.1 Sergei Kafanov, Non-linear dynamics of the trapped quantum vortex in superfluid ^4He

15:55 TH4.2 Vladimir Eltsov, Probing superfluid ^3He with a nanoelectromechanical oscillator

16:20 TH4.3 Yosuke Minowa, Quantized vortices visualized using silicon nanoparticles in superfluid helium

16:40 TH4.4 Ken Obara, Structure of superfluid suction vortex

17:00-18:30 POSTERS 1 TH5 Bulk and Confined Quantum Gases, Liquids and Solids

TH5.1 Filip Novotny, Influence of geometry on 2D turbulence in superfluid ^4He

TH5.2 William Freitas e Silva, Neural network-based trial function for bosonic systems: application to ^4He clusters

TH5.3 Oleg Kirichek, Direct observations of pure ^4He and ^3He in ^4He mixture films using neutron reflection.

TH5.4 Vitor Zampronio Pedroso, On the second layer of He-4 adsorbed on graphite: a shadow wave function approach.

TH5.5 Keiya Shirahama, Dielectric and elastic anomalies in helium films

TH5.6 Atsuki Kumashita, Search for the gas-liquid critical point in ^3He monolayer on graphite

TH5.7 Taku Matsushita, Spin diffusion of dilute ^3He fluid in ^4He -precoated 1D nanochannels

TH5.8 Jere Mäkinen, Experimental study of ^3He confined within a nematic carbon nanotube array

TH5.9 Riku Rantanen, Three dimensional Ginzburg-Landau calculations of vortex structures in $^3\text{He-B}$

TH5.10 Daksh Malhotra, Nanofluidic device for experimental realisation of the polar phase of superfluid ^3He

TH5.11 Yasumasa Tsutsumi, Analytical expression of Green's function for superfluid $^3\text{He B}$ phase with surface bound state under magnetic field

TH5.12 Petri Heikkinen, QUEST-DMC: Early-Universe phase transitions in nanoconfined superfluid helium-3

TH5.13 Lev Levitin, Tuning the phase diagram of superfluid ^3He with electric field

TH5.14 Samuli Autti, Quasiparticle transport in a two-dimensional boundary superfluid

TH5.15 Vladislav Zavjalov, Thermal transport between and within surface layers of superfluid $^3\text{He-B}$

TH5.16 Luke Whitehead, Scaling the edge of superfluid $^3\text{He-B}$

TH5.17 Aleksei Semakin, Experiments with hydrogen atoms at ultra-low energies

TH5.18 Cameron Wetzel, Studies of the structures of nitrogen-neon nanoclusters immersed into superfluid helium-4

TH5.19 Thomas Flynn, Quantum droplets in imbalanced atomic mixtures

TH5.20 Gary Liu, Collective-mode excitations and nonlinear dynamics in an attractive Bose-Bose mixture

TH5.21 Jack Griffiths, Machine learning methods in computational physics

TH5.22 Andrei Golov, Vacancion transport of charges in solid bcc and hcp helium

TH5.23 Jan Nyeki, The ^4He supersolid in two dimensions: a status report

9:00-10:30 SESSION FR1 Confined ^4He , chair Keiya Shirahama

9:00 FR1.1 Emil Varga, Finite-size effects and nonlinear behaviour in strongly confined superfluid helium

9:25 FR1.2 Akira Yamaguchi, Structural study of two-dimensional helium on graphite with synchrotron radiation X-rays

9:50 FR1.3 Adrian Del Maestro, Atomically thin superfluid and solid phases for atoms on strained graphene

10:10 FR1.4 Eunseong Kim, A novel experimental platform for unveiling quantum phenomena in helium films adsorbed on graphite

10:30-11:00 COFFEE

11:00-12:10 SESSION FR2 Quantum Fluids for Cosmology 1, chair Andrew Casey

11:00 FR2.1 Swati Singh, Searching for ultralight dark matter using superfluid helium optomechanical systems

11:20 FR2.2 Dan McKinsey, HeRALD: Measurement of dark matter scattering events in superfluid helium-4 through quantum evaporation and energy-resolved single photon detection

11:45 FR2.3 Elizabeth Leason, QUEST-DMC: low mass dark matter search with superfluid helium-3

12:10-13:10 LUNCH

13:10-14:40 SESSION FR3 Quantum Turbulence 1, chair Ladislav Skrbek

13:10 FR3.1 Vanderlei Bagnato, Characterization and universal scaling properties of a turbulent atomic superfluid

13:35 FR3.2 Wei Guo, Visualization study of the law of wall in superfluid helium-4

14:00 FR3.3 Dario Ballarini, 2D quantum turbulence in a fluid of light

14:20 FR3.4 Courtney Elmy, Flying balls in superfluid helium

14:40-15:10 COFFEE

15:10-17:00 FR4 ANDREEV Memorial & Novel Superfluids/Superconductors, chair Jim Sauls

15:10-15:50 FR4.1 ALEXANDER ANDREEV Memorial, speakers: Jim Sauls, George Pickett, Igor Todoshchenko

15:50 FR4.2 Shuqiu Wang, Visualizing the zero-energy surface Andreev bound states of spin-triplet superconductor UTe_2

16:15 FR4.3 Lev Levitin, Unconventional superconductivity underpinned by antiferromagnetism in YbRh_2Si_2

16:40 FR4.4 Priya Sharma, Light induced magnetism via the inverse Faraday effect

17:00-18:30 POSTERS 2 [FR5](#) **Electrons on He & Ne, Cryogenic Techniques, Superfluid Optomechanics, Quantum Fluids for Cosmology**

- [FR5.1](#) Alex Jones, Measurements of helium mixtures by neutron absorption
- [FR5.2](#) Azimjon Temurjonov, Performance evaluation of the nanopore heat exchanger
- [FR5.3](#) Roch Schanen, Development and testing of a low-frequency, high-amplitude, torsional oscillator for cryogenic studies.
- [FR5.4](#) Richard Down, Carbon footprint of the helium recovery system at the ISIS neutron and muon source
- [FR5.5](#) Rasul Gazizulin, Design of He-3 immersion cell to study low-dimensional electron systems
- [FR5.6](#) Andrew Casey, Study of thermal boundary resistance between ^3He and solids at ultralow temperatures
- [FR5.7](#) Saba Khan, Vibrating carbon nanotubes: a nanomechanical probe to study quantum phenomena in superfluid
- [FR5.8](#) Scott Henderson, Probing superfluid ^4He with oscillating carbon nanotubes
- [FR5.9](#) Ilya Golokolenov, Fully suspended mechanical probes for quantum fluids
- [FR5.10](#) Camille Mikolas, Two-dimensional plasmons in microchannel confined electrons on helium
- [FR5.11](#) Austin Schleusner, Correlated transport of electrons on helium through a gate-defined island
- [FR5.12](#) Jui-Yin Lin, Fast charge sensing for quantum-state detection in electrons on helium
- [FR5.13](#) Tomoyuki Tani, Rydberg transition of surface state electrons on liquid ^4He sensed by RF-reflectometry
- [FR5.14](#) Mikhail Belianchikov, Resonant image charge detection for e^- @He qubit
- [FR5.15](#) Asher Jennings, Integration of a cryogenic LC circuit for image-charge detection for surface electrons on helium
- [FR5.16](#) Tiffany Liu, Electron transport on thin helium films across mm-long transport line
- [FR5.17](#) Auratrik Sharma, Proposal towards transient enhancement of electron density above liquid helium into the quantum degenerate regime
- [FR5.18](#) Dillip Pradhan, focusing ultrasound in superfluid helium-4 using a Fresnel zone plate
- [FR5.19](#) Neda Shamim, Effect of convective flow on the dynamics of multielectron bubbles in liquid Helium-I
- [FR5.20](#) Shriganesh Neeramoole, Using a cylindrical piezoelectric transducer to focus ultrasound in superfluid helium
- [FR5.21](#) Raymond Harrison, Trapping sound with light
- [FR5.22](#) Gary Liu, Coherent structures and turbulence in fuzzy dark matter haloes
- [FR5.23](#) Kenta Asakawa, Anisotropic collective mode of self-gravitating Bose-Einstein condensates
- [FR5.24](#) Tineke Salmon, Superfluid helium-3 bolometers for a direct dark matter search
- [FR5.25](#) Zara Graham Jones, Proposal for analogue gravity using thin superfluid ^4He films
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Saturday 12 August

9:00-10:15 SESSION SA1 Quantum Gases, chair Vanderlei Bagnato

9:00 SA1.1 Thomas Bland (Innsbruck), Rotating dipolar quantum gases: vortices, supersolids, and glitches

9:25 SA1.2 Nick Keeper (Newcastle), Dimensionality crossover in a weakly interacting atomic Bose gas and the dynamics of quantum droplets: a study of phase transitions

9:50-10:15 SA1.3 DISCUSSION OF DIVERSITY & INCLUSION IN PHYSICS, speaker Priya Sharma

10:15-10:45 COFFEE

10:45-12:15 SESSION SA2 Confined Superfluid Helium, chair Hiroshi Fukuyama

10:45 SA2.1 Petri Heikkinen, Superfluid helium-3 under mesoscopic confinement: low magnetic fields and phase transitions

11:10 SA2.2 Takeshi Mizushima, Thermal generation of spin currents in superfluid ^3He

11:35 SA2.3 Keiya Shirahama, Multiple phase-slip phenomenon in ^4He superflow through a well-defined microchannel

11:55 SA2.4 Junko Taniguchi, Superfluidity and Luttinger-liquid behavior of helium in 1D limit

12:15-13:15 LUNCH

13:15-13:30 GROUP PHOTO

13:30-15:00 SESSION SA3 Electrons on Helium and Neon, chair Stephen Lyon

13:30 SA3.1 Dafei Jin, Single electrons on solid neon: a long-coherence high-fidelity solid-state qubit platform

13:55 SA3.2 Denis Konstantinov, Rydberg-state detection for electrons-on-helium qubits

14:20 SA3.3 Johannes Pollanen, High-frequency collective dynamics of electrons on helium

14:40 SA3.4 Ambarish Ghosh, Stability and dynamics of multielectron bubbles in liquid helium

15:00-15:30 COFFEE

15:30-17:00 SESSION SA4 Quantum Turbulence 2, chair Viktor Tsepelin

15:30 SA4.1 Zoran Hadzibabic, Quantum gas in a box

15:55 SA4.2 Giorgio Krstulovic, Turbulent steady states in Bose-Einstein condensates

16:20 SA4.3 Victor L'voy, HVBK equation-based theory of developed counterflow superfluid turbulence

16:40 SA4.4 Hiromitsu Takeuchi, Drag force due to quantum viscosity in superfluid ^4He at zero temperature

17:00-18:30 POSTERS 3 SA5 Quantum Vortices and Turbulence, Novel Superfluids and Superconductors

- SA5.1 Mehdi Zarea, Electromagnetic response of superconducting cavities
- SA5.2 James Sauls, Electron teleportation in Kitaev wire with Coulomb interaction
- SA5.3 James Sauls, Is YbRh_2Si_2 a spin-triplet superconductor?
- SA5.4 John Saunders, Determination of complex conductivity of superconducting YbRh_2Si_2 by measurements of low frequency ac magnetic susceptibility.
- SA5.5 Lev Levitin, Electrical transport study of unconventional superconductivity in YbRh_2Si_2
- SA5.6 Ryusuke Ikeda, Higher Landau level vortex state realized in superconducting FeSe
- SA5.7 Hiromichi Kobayashi, Effect of different mutual friction models on velocity fluctuation of normal-fluid in superfluid helium-4
- SA5.8 Issei Doki, Cascade and isotropization of momentum distribution of turbulence in two-component Bose-Einstein condensates
- SA5.9 Yuto Sano, Rotating turbulence in Bose-Einstein condensates
- SA5.10 Satoshi Yui, Vortex-filament bundle induced by normal-fluid turbulence in turbulent superfluid helium-4
- SA5.11 Weican Yang, Universal defect density scaling in an oscillating dynamic phase transition
- SA5.12 Tomo Nakagawa, Dynamics of pinned quantized vortices in superfluid ^4He in microelectromechanical oscillator
- SA5.13 Hiromitsu Takeuchi, Isolated fractional skyrmions generated by Kelvin-Helmholtz instability in a magnetic quantum gas
- SA5.14 Hiromitsu Takeuchi, Critical velocity for quantized vortex formation in a superfluid wake with a plate obstacle
- SA5.15 Richard Tattersall, Non-equilibrium dynamics of vortices in two-dimensional quantum fluids
- SA5.16 Piotr Stasiak, Energy and helicity transfer in superfluid helium
- SA5.17 Sam Patrick, Stability of quantised vortices in two-component condensates
- SA5.18 Ken Obara, Diffusion of vortex tangle in a narrow tube due to thermal counter-flow
- SA5.19 Ken Obara, Vortex emission from counter flow turbulence in superfluid helium 4
- SA5.20 Kimitoshi Kono, Radial thermal counter flow in superfluid ^4He studied by means of a quartz tuning fork
- SA5.21 Šimon Midlik, Vibrating micro-wire resonators used as a local probe of quantum turbulence in superfluid ^4He
- SA5.22 Manuel Arrayas, Shaking and stirring helium-4 with a superconducting levitating probe
- SA5.23 Chris Goodwin, Visualization of the motion of small particles in superfluid ^4He at $T < 1$ K
- SA5.24 Matt Doyle, Modelling turbulent flow of superfluid ^4He past a rough solid wall in the $T = 0$ limit
- SA5.25 Sio Lon Chan, A universal profile of a beam of charged vortex rings in superfluid ^4He in the $T = 0$ limit
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Monday 14 August

9:00-10:30 SESSION MO1 Quantum Fluids for Cosmology 2, etc., chair William Halperin

9:00 MO1.1 Mark Hindmarsh, The AB transition in superfluid ^3He and cosmological phase transitions

9:25 MO1.2 Patrik Svancara, Superfluid bathtub vortex: a potential simulator of a quantum black hole

9:50 MO1.3 Hikaru Ueki, Searching for axions and nonlinear QED with high-Q superconducting resonators

10:10 MO1.4 Alexei Chepelianskii, Landau level spectroscopy and edge magnetoplasmons on electrons on helium

10:30-11:00 COFFEE

11:00-12:30 SESSION MO2 Superfluid Optomechanics, chair Emil Varga

11:00 MO2.1 Cristopher Baker, Nonlinear waves and solitons in superfluid helium films

11:25 MO2.2 Yogesh Patil, Optomechanics with magnetically levitated drops of liquid ^3He and ^4He

11:50 MO2.3 Sebastian Spence, Three-tone coherent microwave optomechanical measurement of a superfluid Helmholtz resonator

12:10 MO2.4 Andrew Fefferman, Microwave optomechanics and cryogen-free nuclear demagnetization refrigeration

12:30-13:30 LUNCH

13:30-15:00 SESSION MO3 Superfluid ^3He in Aerogel, etc., chair Jeevak Parpia

13:30 MO3.1 John Scott, Magnetic susceptibility of Andreev bound states in superfluid ^3He -B in anisotropic aerogel

13:55 MO3.2 Evgeny Surovtsev, Oscillations of nematic aerogel in a superfluid medium

14:20 MO3.3 Man Nguyen, Superfluid ^3He in planar and nematic aerogels

14:40 MO3.4 Christopher Lawson, Neutron imaging of an operational dilution refrigerator

15:00 – 15:30 COFFEE

15:30-17:35 SESSION MO4 HALL & VINEN Memorial, chair Peter McClintock

15:30 MO4.1 Andrei Golov, The legacy of Henry Hall and Joe Vinen in quantum fluids and beyond

15:50 MO4.2 George Pickett, Henry Hall and the early days of superfluid ^3He at Manchester

16:15 MO4.3 Carlo Barenghi, Quantum turbulence: the legacy of W.F. Vinen

16:35 MO4.4 Ladislav Skrbek, Collective dynamics of ions and vortices in He II in experiments of Joe Vinen

16:55 MO4.5 Makoto Tsubota, Studies on quantum turbulence with Vinen

17:15 MO4.6 Jere Mäkinen, Rotating quantum wave turbulence and onset of the Kelvin wave cascade

19:00-22:30 CONFERENCE DINNER (Whitworth building, Oxford Road)

Tuesday 15 August

9:00-10:10 SESSION TU1 Cryogenic Techniques, chair Andrew Fefferman

9:00 TU1.1 Hiroshi Fukuyama, Development of the continuous sub-millikelvin refrigerator

9:25 TU1.2 Jan Nyeki, High performance rapid turn-around cryogen-free microkelvin platform: unlocking the sub-1mK temperature range for quantum materials research

9:50 TU1.3 Jonathan Prance, On-chip magnetic cooling of nanoelectronic devices

10:10-10:40 COFFEE

10:40-11:50 TU2 Quantum Solids, chair Xavier Rojas

10:40 TU2.1 Igor Todoshchenko, Acoustic Casimir effect and fate of thermodynamics in mesoscopic matters

11:05 TU2.2 Anatoly Kuklov, Supertransport in the core of dislocations in solid helium-4

11:30 TU2.3 Vladimir Khmelenko, Influence of ortho-H₂ molecules on accumulation and spatial diffusion of H atoms in solid H₂ films

11:50-12:30 CLOSING

12:30 PACKED LUNCH
