

C5 Activity Report for the IUPAP Council and Commission Chairs Meeting October 2021-October 2024

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Activity Report

This review covers the period October 2021 – October 2024

1.1 Conferences Organized and Endorsed

Type A

International Conference on Low Temperature Physics (LT29)

Aug.18-24, 2022 Sapporo, Japan

Chair: Naoto Nagaosa and Yoshiteru Maeno

<https://www.lt29.jp/>

Themes: 1. Quantum Gases, Fluids and Solids, 2. Superconductivity, 3. Magnetism and Quantum Phases, 4. Nanophysics and Quantum Information, 5. Cryogenic Techniques and Device Applications

Organizing committee 27 members (4 females)

Program Committee (5 females)

Chair: Masashi Takigawa (Univ. of Tokyo)

Vice-Chair: Naoto Nagaosa (Univ. of Tokyo & RIKEN)

(1) Quantum Gases, Fluids and Solids

Chair: Makoto Tsubota (Osaka Metropolitan Univ.) Kimitoshi Kono (National Yang Ming Chiao Tung University) Vladimir Eltsov (Aalto Univ.) Yong-il Shin (Seoul National University) Natalia Berloff (Univ. Cambridge) Andrei Golov (Univ. Manchester) James A. Sauls (Northwestern Univ.)

(2) Superconductivity

Chair: Yoshiteru Maeno (Kyoto Univ.) Masatoshi Sato (Kyoto Univ.) Hai-Hu Wen (Nanjing Univ.) Fuchun Zhang (KITS) Hermann Suderow (Universidad Autonoma de Madrid) Annica Black-Schaffer (Uppsala Univ.) Warren Pickett (UC Davis) Filip Ronning (LANL)

(3) Magnetism and Quantum Phases

Chair: Yuji Matsuda (Kyoto Univ.) Masao Ogata (Univ. of Tokyo) Qi-kun Xue (Tsinghua Univ.) Kamran Behnia (ESPCI) Roser Valenti (Goethe Univ.) Leon Balents (UC Santa Barbara) Douglas E. MacLaughlin (UC Riverside) Joe D. Thompson (LANL)

(4) Nanophysics and Quantum Information

Chair: Seigo Tarucha (RIKEN) Kensuke Kobayashi (Univ. of Tokyo) Alexandre Blais (Univ. Sherbrooke) Charlie Marcus (Univ. Copenhagen) Christopher Bauerle (Neel Institute) Helene Bouchiat (Univ. Paris-Sud) Eva Weig (Technical Univ. of Munich) William Oliver (MIT Lincoln Lab.)

(5) Cryogenic Techniques and Device Applications

Chair: Yasunobu Nakamura (Univ. of Tokyo) Osamu Ishikawa (Osaka City Univ.) Christian Enss (Univ. Heidelberg) Val Zwiller (KTH Stockholm) Anna Herr (Northrop Grumman Corporation) Peter Shirron (NASA)

International Advisory committee 157 (21 females)

Special Symposium "Physics of Superfluid Helium 3 - Past, Present, and Future"
4 speakers

Plenary 6 speakers (1 female)

Half-Plenary 20 speakers (3 females)

Invited speakers 68 (7 females)

Participants list 1143 participants from 34 countries/regions. (~ 100 females (We cannot count the # of women since we did not ask the sex of the participants))

Country	Total	Onsite	Remote
Japan	797	631	166
USA	73	28	45
UK	43	22	21
Germany	37	21	16
Korea	24	8	16
Finland	22	10	129
France	19	6	13
Taiwan	18	4	14
China	13	0	13
Netherlands	10	6	4
Slovakia	9	5	4
Sweden	8	4	3
Poland	7	6	1
Switzerland	7	3	4
Canada	7	2	5
Russia	6	3	3
Austria	5	4	1

Country	Total	Onsite	Remote
Ukraine	5	1	4
Czech Republic	4	4	0
India	4	0	4
Mexico	4	0	4
Australia	3	2	1
Israel	3	2	1
Spain	3	2	1
Croatia	2	0	2
Italy	2	1	1
Argentina	1	0	1
Denmark	1	0	1
Hong Kong	1	1	0
Hungary	1	1	0
Norway	1	1	0
Philippines	1	0	1
Singapore	1	1	0
South Africa	1	0	1
TOTAL	1143	778	365

Type B

1. International Conference on Ultra Low Temperature Physics

Aug. 25-28, 2022, Otaru, Japan

Chair: Keiya Shirahama (Keio Univ.)

<https://ult2022.org/>

Themes: Quantum fluids, solids, and gases, Unconventional and topological superfluids and superconductors, Strongly correlated condensed matter systems, Quantum hydrodynamics particularly quantum turbulence, Magnetism, particularly quantum spin liquids, Quantum phase transitions and criticality, Ultralow temperature techniques and its application to quantum information science.

Number of members of the International Organizing Committee (including conference organizers): 25 (including 3 women)

The total number of participants was 129 (including 14 women) from 14 countries.

Local participants: 93

(Japan 46, UK 18, USA 12, Czech Republic 4, Finland 3, Netherlands 3, Slovakia 3, Germany 1, Korea 1, Spain 1, France 1 (11 countries))

Online participants: 36

(Japan 13, UK 9, USA 3, China 2, Taiwan 2, Finland 2, France 1, Germany 1, Russia 1, Switzerland 1 (10 countries))

Number of invited talks: 17 (11 on-site, 6 online, 1 female)

Number of other oral presentations: 35 (28 on-site, 7 online)

Number of poster Presentations: 50 (41 on-site, 9 online)

Invited speakers: 17 (including 1 female speaker)

2. International Conference on Quantum Fluids and Solids 2023

Aug.9-15, Manchester, UK.

Chair: Andrei Golov and Paul Walmsley

<https://qfs2023.org/>

Themes: Quantum Gases, Quantum Liquids in General, Superfluid ^3He , Novel Superfluids and Superconductors, Confined ^3He and ^4He , Impurities and Excitations in Quantum Fluids, Quantum Vortices, Quantum Turbulence, Electrons in/on Helium and Neon, Quantum Fluids for Cosmology, Superfluid Optomechanics, Quantum Solids, Cryogenic Techniques

149 registered delegates (12 females, 43 students)

6 exhibitors who represented Oxford Instruments and Cryogenic.

The total number of participants was 163.

19 countries: - 73 from Europe (UK 51, Finland 5, France 4, Czech Rep. 4, Israel 2, then 1 each from: Austria, Germany, Ireland, Russia, Spain), - 44 from Asia and Oceania (Japan 28, India 5, China 5, S. Korea 3, Australia 2, Taiwan 1), - 32 from Americas (USA 26, Canada 4, Brazil 2).

Total of 136 presentations, which included 66 (of which 4 by females) invited oral and 70 (of which 6 by females) poster presentations.

Program committee: Carlo Barenghi, Richard Haley and John Saunders together with Andrei Golov and Paul Walmsley.

International Advisory Committee which included 42 members (including 5 women) from 15 countries.

3. International Conference on Quantum Fluids and Solids 2024

July 24-30, 2024

University of Florida, Jacksonville, Florida, USA

Chairs: Prof. Wei Guo (Florida State University),
Prof. Yoonseok Lee (University of Florida)

Themes: Cold Atoms, Quantum Liquids and Solids, Topological Materials, Superfluid ^3He , Confined QFS Systems, Vortices and Quantum Turbulence, Quantum Fluids for Cosmology, Superfluid Optomechanics, Superconductivity and Low-Temperature Physics, Quantum Information Science Using QFS Systems, Impurities and Excitations in QFS, Cryogenics Techniques

Information on Participants and Presentations:

Total Participants: 172 (12 females)

Countries Represented: 15

Invited Speakers: 49 (4 females)

Contributed Talks: 29

Poster Presentations: 70

Committee Members: Katherine Risher (female),
Kevin Jackson (UF Conference Department)

Local Program Committee: (7 members, 1 female)

International Advisory Committee: 36 members from 14 countries with 5 females,

1.2 Commission Meetings

Commission C5 met at LT29 in August 2022. Subsequent business has been conducted by e-mail and will continue in this mode until the next face-to-face meeting in 2025 at the next Low Temperature Conference. The organisers/site of LT30 in 2025 has been settled and work is in progress to identify the second next Low Temperature Conference (LT31, Type A) in 2028.

1.3 C5 Sponsored Prizes Awarded

FRITZ LONDON MEMORIAL PRIZE 2020

Professor Frank Steglich

Professor Valerii Vinokur

Professor Qi-Kun Xu

SIMON MEMORIAL PRIZE 2020

Professor Jukka Pekola

2022 IUPAP Early Career Scientist Prize in Low Temperature Physics

Dr. Qiong Ma

Dr. Xiaolong Liu

Dr. Matthew Yankowitz

Dr. Matthias Saneyuki Ikeda

1.4 Anticipated Sponsored Conferences

Type A

30th International Conference on Low Temperature Physics (LT30)

Date: Aug 7 - Aug 13, 2025

Location: Bilbao, Spain

Venue: Bilbao Exhibition Centre

About 1,200 participants

Chair: Hermann Suderow

This proposal was approved by C5 at its meeting at LT29. It has been submitted for approval for Type A sponsorship to IUPAP.

<https://www.cryoeurope.org/events/conferences/lt/30th-international-conference-on-low-temperature->

[physics.html#:~:text=The%2030th%20International%20Conference%20on%20Low%20Temperature%20Physics,he%20International%20Year%20of%20Quantum%20Science%20and%20Technology.](https://www.cryoeurope.org/events/conferences/lt/30th-international-conference-on-low-temperature-#:~:text=The%2030th%20International%20Conference%20on%20Low%20Temperature%20Physics,he%20International%20Year%20of%20Quantum%20Science%20and%20Technology.)

Type B

ULT2025 - Frontiers of Low Temperature Physics - (International Conference on Ultralow Temperature Physics 2025)

Lancaster University, Lancaster, UK

Aug. 14-19,

Chair: Richard Haley

Naoto Nagaosa, C5 chair, October 2024