Finite-Temperature Non-Equilibrium Superfluid Systems

FINESS-2015

PROGRAMME



September 14-18, 2015, Sopot, Poland

Program Committee

Local organiser and chair

Piotr Deuar *(Institute of Physics, Polish Academy of Sciences, Poland)*

International chair

Andrew Daley *(University of Strachclyde, UK)*

Nick Proukakis *(University of Newcastle, UK)*

Immanuel Bloch *(Max-Planck-Institut für Quantenoptik, Germany)*

Simon Gardiner *(University of Durham, UK)*

Marzena Szymańska *(Universty College London, UK)*

Thomas Gasenzer *(Heidelberg University, Germany)*

Kazimierz Rzążewski *(Center for Theoretical Physics, Polish Academy of Sciences, Poland)*

Ashton Bradley *(University of Otago, New Zealand)*

Mariusz Gajda *(Institute of Physics, Polish Academy of Sciences, Poland)*

Michael Fleischhauer *(Kaiserslautern University of Technology, Germany)*

Luis Santos *(University of Hannover, Germany)*

Organizers

Piotr Deuar *(Institute of Physics, Polish Academy of Sciences, Poland)*

Mariusz Gajda *(Institute of Physics, Polish Academy of Sciences, Poland)*

Kazimierz Rzążewski *(Center for Theoretical Physics, Polish Academy of Sciences, Poland)*

Mirosław Brewczyk (*University of Białystok)*

Tomasz Świsłocki *(Institute of Physics, Polish Academy of Sciences, Poland)*

Krzysztof Pawłowski *(Center for Theoretical Physics, Polish Academy of Sciences, Poland)*

Maciej Zajączkowski *(Institute of Physics, Polish Academy of Sciences, Poland)*

Joanna Pietraszewicz *(Institute of Physics, Polish Academy of Sciences, Poland)*

Nataliya Bobrovska *(Institute of Physics, Polish Academy of Sciences, Poland)*

Michał Kulczykowski *(Institute of Physics, Polish Academy of Sciences, Poland)*

Tuesday - morning session (9:00 – 10:50)

Chair: Piotr Deuar

9:00 – 9:40

Kazimierz Rzążewski
Center for Theoretical, Physics Polish Academy of Sciences, Poland

Dipolar dark solitons

9:40 – 10:20

Andrew Daley
University of Strachclyde, UK

Engineered dissipation in interacting systems of cold atoms

10:20 – 10:50

Tarik Yefsah
Max-Planck-Institut für Quantenoptik, Germany

Cascade of Solitonic Excitations in a Superfluid Fermi Gas

Tuesday - before-lunch session (11:20 – 13:00)

Chair: Matthew Davis

11:20 – 12:00

Wojciech Żurek
Los Alamos National Laboratory, USA

Topological relics of symmetry breaking: Winding numbers and scaling tilts from random vortex- antivortex pairs

12:00 – 12:40

Jacek Dziarmaga
Jagiellonian University, Poland

Quantum Kibble-Zurek mechanism

12:40 – 13:00

Peter Schmelcher
Universität Hamburg, Germany

Nonequilibrium quantum dynamics of ultracold bosonic ensembles via MCTDHB and ML-MCTDHB: Correlation Transfer in Collisionally Coupled Bosonic Systems and Many-Body Processes in Dark Solitons

Tuesday - after-lunch session (14:30 – 16:10)

Chair: Cheng Chin

14:30 – 15:10

Vanderlei Bagnato
Universidade de São Paulo, Brazil

Exciting a Bose-Condensate: Generation of turbulence and its characteristics

15:10 – 15:50

Luis Santos
University of Hannover, Germany

Periodically modulated interactions and density-dependent synthetic magnetism

15:50 – 16:10

Thomas Billam
Durham University, UK

Far-from-equilibrium quantum vortex dynamics

Tuesday - evening session (16:40 – 18:00)

Chair: Marzena Szymańska

16:40 – 17:20

Corinna Kollath
Universität Bonn, Germany

Unconventional dynamics and the self-organization of a chiral current in dissipative ultracold gases

17:20 – 18:00

Thomas Gasenzer
Heidelberg University, Germany

Universal dynamics and non-thermal fixed pointsin ultracold gases

Wednesday - morning session (9:00 – 10:50)

Chair: Kazimierz Rzążewski

9:00 – 9:40

Cheng Chin
University of Chicago, USA

Quantum dynamics with spatiotemporal control of interactions in a quantum gas

9:40 – 10:20

Matthew Davis
University of Queensland, Australia

Relaxation of Bose gases at finite temperature

10:20 – 10:50

Kali Wilson
Heriot-Watt University, UK

Construction of a quantum vortex microscope: in situ measurements of two-dimensional vortex distributions and dynamics in Bose-Einstein condensates

Wednesday - before-lunch session(11:20-13:00)

Chair: Andrew Daley

11:20 – 12:00

Iacopo Carusotto
Università di Trento, Italy

Non-equilibrium many-body physics with quantum fluids of light

12:00 – 12:40

Marzena Szymańska
University College London, UK

Non-equilibrium Phase Transition in a Two-Dimensional Dissipative-Driven Quantum Fluid

12:40 – 13:00

Michiel Wouters
Universiteit Antwerpen, Belgium

Dynamical Casimir effect in polariton condensates

Wednesday - after-lunch session(14:30 – 16:10)

Chair: NikolaosProukakis

14:30 – 15:10

David Snoke
University of Pittsburgh, USA

Superfluids of Light

15:10 – 15:50

Michał Matuszewski
Institute of Physics, Polish Academy of Sciences, Poland

Universality in condensation of exciton-polaritons

15:50 – 16:10

Barbara Piętka
University of Warsaw, Poland

Giant Zeeman effect and polariton lasing in microcavities embedding quantum wells with magnetic ions

Wednesday - evening session (16:40 – 17:20)

Chair: Gabriele Ferrari

16:40 – 17:20

Bogdan Damski
Jagiellonian University, Poland

From fidelity approach to quantum phase transitions to dynamics of quantum systems

Thursday - morning session (9:00 – 10:50)

Chair: Vanderlei Bagnato

9:00 – 9:40

Giacomo Roati
University of Florence, Italy

Dynamics of superfluid ^{6}Li gases through a thin barrier

9:40 – 10:20

Nikolaos Proukakis
University of Newcastle, UK

Quenched Quantum Gas Dynamics: Atomic & Polariton Condensates

10:20 – 10:50

Ivan Pshenichnyuk
Skoltech, Russia

Pressure-induced vortex rings multiplication as a source of vorticity in superfluids

Thursday - before-lunch session (12:00 – 13:00)

Chair: Marzena Szymańska

12:00 – 12:40

Emilia Witkowska
Institute of Physics Polish Academy of Sciences, Poland

Self-trapping of entangled states by classical fixed points

12:40 – 13:00

Nir Navon
University of Cambridge, UK

Uniform Bose gases Out of Equilibrium: from Collective Modes to Turbulence

Thursday - after-lunch session (14:30 – 16:10)

Chair: Simon Gardiner

14:30 – 15:10

Gabriele Ferrari
University of Trento, Italy

Dynamics and interaction of vortex lines in an elongated Bose-Einstein condensate

15:10 – 15:30

Nadine Meyer
University of Birmingham, UK

Dark soliton like excitations in a disk shaped Bose-Einstein Condensate

15:30 – 15:50

Cord Mueller
Insitut Non Lineaire de Nice, France

On the superfluid depletion of disordered Bose gases

15:50 – 16:10

Laurent Sanchez-Palencia
Institut d'Optique, France

Spreading of quantum correlations in short- long-range interacting systems

Thursday - evening session (16:40 – 18:00)

Chair: Mirosław Brewczyk

16:40 – 17:20

Walter Hofstetter
Goethe University Frankfurt, Germany

Competing Quantum Phases in Bosonic Optical Lattice Systems at Near-Resonant Rydberg Dressing

17:20 – 17:40

Herwig Ott
University of Kaiserslautern, Germany

Bistability in a driven-dissipative superfluid

17:40 – 18:00

Hayder Salman
University of East Anglia, UK

Geometry Induced Phase Transitions of Turbulent Vortex States in Two-Dimensional Bose-Einstein Condensates

Friday - morning session (9:00 – 10:50)

Chair: David Snoke

9:00 – 9:40

Alice Sinatra
ENS, France

Thermal blurring of a coherent Fermi gas

9:40 – 10:20

Simon Gardiner
University of Durham, UK

Mean-Field and Beyond-Mean-Field Dynamics in Single- and Multi-Component Condensates

10:20 – 10:50

Thomas Schweigler
TU Wien, Austria

Solving a quantum many-body problem by experiment

Friday - before-lunch session(11:20-12:20)

Chair: Thomas Gasenzer

11:20 – 12:00

Simon Fölling
Max-Planck-Institut für Quantenoptik, Germany

SU(N)-symmetric two-orbital quantum gases with ultracold Ytterbium

12:00 – 12:20

Shannon Whitlock
University of Heidelberg, Germany

Dipolar spin transport with Rydberg dressed atoms

Poster Session – Tuesday (start 18:00)

1. Nataliya Bobrovska
Institute of Physics Polish, Academy of Sciences, Poland

Stability and spatial coherence of nonresonantly pumped exciton-polariton condensates and adiabatic approximation

2. Abdelaali Boudjemaa
Hassiba Benbouali University of Chlef, Algeria

Soliton train in a Bose-Einstein condensate-impurity mixture at finite temperature

3. Jae-yoon Choi
Max-Planck-Institut fur Quantenoptik, Germany

Many-body localization in a two dimensional Bose gases

4. Agnieszka Cichy
Institut fur Theoretische Physik, Goethe-Universitat Frankfurt am Main, Germany

Dynamical Mean-Field Theory of the Two-Band Hubbard Model Magnetic orderings and Hund's coupling

5. Andre Cidrim
Universidade de Sao Paulo, Brazil

Controlling polarization of two-dimensional quantum turbulence in atomic condensates

6. Paolo Comaron
JQC, Durham-Newcastle, UK

Non-Equilibrium BKT and Quenched Exciton-Polariton Dynamics

7. Piotr Deuar
Institute of Physics, Polish Academy of Sciences, Poland

The Wigner Stochastic Gross-Pitaevskii Equation: A c-field theory that includes both thermal and quantum fluctuations

8. Eliezer Estrecho
The Australian National University, Australia

Exploring non-Hermitian physics of open quantum systems with exciton–polariton condensates

9. Krzysztof Gawryluk
University of Białystok, Poland

Static structure factor for an elongated Bose-Einstein condensate

10. Andrew Groszek
Monash University, Australia

Onsager vortex formation in anharmonically trapped Bose-Einstein condensates

11. David Hutchinson
Dodd-Walls Centre for Photonic and Quantum Technologies, New Zealand

Quantum enhancement of energy transport in photosynthetic bacteria

12. Dariusz Kajtoch
Institute of Physics Polish, Academy of Sciences, Poland

Quantum dynamics generated by the two-axis counter-twisting Hamiltonian

13. Tomasz Karpiuk
University of Białystok, Poland

Losses and oscillations of the Bose-Einstein condensate induced by Rydberg atoms

14. Michał Kulczykowski
Institute of Physics, Polish Academy of Sciences, Poland

Bright sink-type localized states in exciton-polariton condensates

15. Kean Loon Lee
JQC, Durham-Newcastle, UK

Kinetics of two-component trapped condensates at finite temperature

16. I-Kang Liu
National Changhua University of Education,Taiwan

Quenched Solitonic Vortex Generation in Elongated Trapped Bose Gases

17. Axel U. J. Lode
University of Basel, Switzerland

Angular momentum in interacting many-body systems hides in phantom vortices

18. Giovanni Lombardi
TQC, Universiteit Antwerpen, Belgium

Dark solitons in imbalanced Fermi superfluids

19. Damian Makieła
University of Silesia, Katowice, Poland

Temperature quench of a Bose gas on a ring

20. Anna Marchant
University of Durham, UK

Controlled formation and reflection of bright solitary matter-waves

21. Kazuma Nagao
Yukawa Institute for Theoretical Physics, Japan

Finite-temperature effects on damping of the Nambu-Goldstone and Higgs modes of superfluid Bose gases in optical lattices

22. Stefan S. Natu
University of Maryland and the Joint Quantum Institute, USA

Emergent Phases in spin-orbit coupled spin-1 superfluids

23. Igor Nowicki
Institute of Physics Polish, Academy of Sciences, Poland

The occurrence and visibility of spontaneous “wild” solitons in ultracold gases

24. Paula Ostmann
TU Dresden, Germany

Single particle dynamics in ultracold environments

25. Joanna Pietraszewicz
Institute of Physics Polish, Academy of Sciences, Poland

The accuracy and applicability of classical fields to quantum systems

26. Krzysztof Pomorski
University of Warsaw, Poland

Justification of the canonical quantization of the Josephson effect

27. Robert Smith
University of Cambridge, UK

Critical dynamics of spontaneous symmetry breaking in a homogeneous Bose gas

28. Tomasz Świsłocki
Institute of Physics, Polish Academy of Sciences, Poland

Quasicondensate dynamics with both classical field and quantum fluctuations included

29. Otto Vainio
University of Turku, Finland

Bose-Einstein Condensation of Magnons in Atomic Hydrogen Gas

30. Reinhold Walser
Institute for Applied Physics, Germany

Simulating matter-wave interferometers with ray tracing

31. Shih-Wei Su
Department of Physics and Graduate Institute of Photonics, Taiwan

Prethermalization in the decoupling of two coupled Bose-Einstein condensates in the thermal-noise-dominating regime

32. Alejandro Zamora
University College London, UK

Kibble-Zurek mechanism in driven dissipative systems

	Monday 14 IX	Tuesday 15 IX	Wednesday 16 IX	Thursday 17 IX	Friday 18 IX
8:50 - 9:00		welcome			
9:00 - 9:40		Rzążewski	Chin	Roati	Sinatra
9:40 - 10:20		Daley	Davis	Proukakis	Gardiner
10:20 - 10:50		Yefsah	Wilson	Pshenichnyuk	Schweigler
10:50 - 11:20		coffee	coffee	coffee	coffee
11:20 - 12:00		Żurek	Carusotto	discussion session	Fölling
12:00 - 12:40		Dziarmaga	Szymańska	Witkowska	Whitlock
12:40 - 13:00		Schmelcher	Wouters	Navon	
13:00 - 14:30		lunch	lunch	lunch	lunch
14:30 - 15:10		Bagnato	Snoke	Ferrari	
15:10 - 15:50		Santos	Matuszewski	Meyer Müller	
15:50 - 16:10		Billam	Piętka	Sanchez-Palencia	
16:10 - 16:40		coffee	coffee	coffee	
16:40 - 17:20		Kollath	Damski	Hofstetter	
17:20 - 18:00		Gasenzer		Ott Salman	
18:00 - 19:00	get together	poster session		18:20 walk to dinner	
19:00 -				Harnaś restaurant	