



Cold-atom On-Line Meeting

Nov. 17-19, 2021

online (9-18 Paris time)

Program at a glance:

	Wednesday 17 Nov.	Thursday 18 Nov.	Friday 19 Nov.
8:50 - 9:00	Opening remarks		
9:00 - 9:30	David Clément	Christof Weitenberg	Igor Ferrier-Barbut
9:30 - 10:00	Leonardo Mazza	Laurent Vernac	Benjamin Pasquiou
10:00 - 10:30	<i>Discussion</i>	<i>Discussion</i>	<i>Discussion</i>
10:30-11:00	- Coffee break -	- Coffee break -	- Coffee break -
11:00 - 11:30	Cécile Repellin	Zoran Hadzibabic	Dimitry Yankelev
11:30 - 12:00	Adam Raçon	Jérôme Beugnon	Andrea Bertoldi
12:00 - 12:30	<i>Discussion</i>	<i>Discussion</i>	<i>Discussion</i>
12:30 - 14:00	- Lunch break -	- Lunch break -	- Lunch break -
14:00 - 14:30	Patrizia Vignolo	Poster session	Patrick Cheinet
14:30 - 15:00	Ian Spielman		Giulia Semeghini
15:00 - 15:30	<i>Discussion</i>		<i>Discussion</i>
15:30 - 16:00	- Coffee break -	Ana-Maria Rey	Closing remarks
16:00 - 16:30	Peter Schwindt Sylvain Gigan	Kang-Kuen Ni	
16:30 - 17:00	Michael Foss-Feig	<i>Discussion</i>	
17:00 - 17:30	<i>Discussion</i>		

Topical sessions:

Entanglement & correlations

Quantum dynamics & topology

Quantum tech industry

Optical lattices

Superfluid dynamics

Cold molecules

Atom-light interactions

Metrology

Rydberg atoms

Program in detail: see the following pages.

Day 1: Wednesday 17 November 2021

8:50 – 9:00 Robin Kaiser: Opening remarks

Entanglement and correlations (Chair: Tommaso Roscilde)

9:00 – 9:30 David Clément (Institut d'Optique, Palaiseau, France): *Observation of momentum-correlated Bogoliubov's pairs in the quantum depletion of an interacting Bose gas*

9:30 – 10:00 Leonardo Mazza (LPTMS, Paris Saclay, France): *Two-body losses in strongly-correlated one-dimensional gases*

10:00 – 10:30 Discussion (with the two speakers)

10:30 – 11:00 *Coffee break*

Quantum dynamics & topology (Chair: H el ene Perrin)

11:00 – 11:30 C ecile Repellin (LPMMC, Grenoble, France): *Detecting fractional quantum Hall states of few bosons in ultracold gases*

11:30 – 12:00 Adam Ran on (PhLAM, Lille, France): *Effective thermalization of a many-body dynamically localized Bose gas*

12:00 – 12:30 Discussion (with the two speakers)

12:30 – 14:00 *Lunch break*

14:00 – 14:30 Patrizia Vignolo (INPHYNI, Univ. C ote d'Azur, France): *Quantum boomerang effect: beyond the standard Anderson model*

14:30 – 15:00 Ian Spielman (JQI NIST, Maryland, USA): *Floquet-engineering topological Dirac bands in an optical lattice*

15:00 – 15:30 Discussion (with the two speakers)

15:30 – 16:00 *Coffee break*

Quantum tech industry (Chair: Robin Kaiser)

16:00 – 16:20 Peter Schwindt (Sandia National Laboratories, Albuquerque, USA): *Progress towards a miniature cold-atom accelerometer*

16:20 – 16:40 Sylvain Gigan (LightOn, Paris, France): *Computing with Disorder: programmable linear quantum networks with a multimode fiber*

16:40 – 17:00 Michael Foss-Feig (Honeywell Quantum Solution, USA): *Trapped-ion quantum computing at Honeywell: Progress toward fault tolerant computing*

17:00 – 17:30 Discussion (with the three speakers)

Day 2: Thursday 18 November 2021

Optical lattices (Chair: David Clément)

- 9:00 – 9:30 Christof Weitenberg (Univ. Hamburg, Germany): *Studying optical lattice physics with a quantum gas magnifier*
- 9:30 – 10:00 Laurent Vernac (LPL, Paris Nord, France): *Detecting correlations in large ensemble of large spin atoms*
- 10:00 – 10:30 Discussion (with the two speakers)
- 10:30 – 11:00 *Coffee break*

Superfluid dynamics (Chair: Igor Ferrier-Barbut)

- 11:00 – 11:30 Zoran Hadzibabic (Cambridge, UK): *Shaken 2D Bose gases*
- 11:30 – 12:00 Jérôme Beugnon (LKB, ENS Paris, France): *Observation of a two-dimensional scale-invariant soliton in a Bose gas*
- 12:00 – 12:30 Discussion (with the two speakers)
- 12:30 – 14:00 *Lunch break*

Poster session

- 14:00 – 15:30 List of posters: see pages 5-6

Cold molecules (Chair: Mathilde Hugbart)

- 15:30 – 16:00 Ana-Maria Rey (JILA, Boulder, USA): *Exploring dipolar exchange interactions in polar molecules*
- 16:00 – 16:30 Kang-Kuen Ni (Harvard, USA): *State-to-State Molecular Reactions in the Ultracold Regime*
- 16:30 – 17:00 Discussion (with the two speakers)

Day 3: Friday 19 November 2021

Atom-light interaction (Chair: William Guerin)

- 9:00 – 9:30 Igor Ferrier-Barbut (Institut d'Optique, Palaiseau, France): *Dynamics of laser-driven two-level atomic ensembles near Dicke's regime*
- 9:30 – 10:00 Benjamin Pasquiou (Univ. Amsterdam, The Netherlands): *Continuous-wave Bose-Einstein condensate*
- 10:00 – 10:30 Discussion (with the two speakers)
- 10:30 – 11:00 *Coffee break*

Metrology (Chair: Carlos Garrido Alzar)

- 11:00 – 11:30 Dimitry Yankelev (MPQ Garching, Germany): *High Dynamic-Range Atom Interferometry*
- 11:30 – 12:00 Andrea Bertoldi (LP2N, Institut d'Optique, Bordeaux, France): *Rubidium atoms in telecom dipole traps for fundamental physics*
- 12:00 – 12:30 Discussion (with the two speakers)
- 12:30 – 14:00 *Lunch break*

Rydberg atoms (Chair: Thomas Bourdel)

- 14:00 – 14:30 Patrick Cheinet (LAC, Paris Saclay, France): *Coherent Light Shift on Alkaline-Earth Rydberg Atoms from Isolated Core Excitation without Auto-Ionization*
- 14:30 – 15:00 Giulia Semeghini (Harvard, USA): *Topological spin liquids and new scientific frontiers with programmable atom arrays*
- 15:00 – 15:30 Discussion (with the two speakers)
- 15:30 – 15:40 Thomas Bourdel: Closing remark

Poster session

The poster session will take place on **Discord**, which easily allows several discussion rooms in parallel, with the possibility of going from one room to another.

You can use the [desktop application](#) or run Discord from your web browser. You might access more options from the application.

To use from your web browser, simply follow this link sent by email. For use in the Discord application, click on the “+” sign at the top left (“add a server”), then choose “You already have an invitation – join a server”, and paste the invitation link above.

You can join any of the posters by clicking on the poster number on the left. Below is the list of posters with their number.

The abstracts of all posters are available online on the [conference website](#), and the posters themselves will be made available as soon as possible.

Poster 1 – Sébastien Garcia: *A Rydberg superatom for cavity QED applications*

Poster 2 – Martin Robert-de-Saint-Vincent: *Adiabatic spin-dependent momentum transfer in an $SU(N)$ degenerate Fermi gas*

Poster 3 – Dolf Huybrechts: *Arnoldi-Lindblad time evolution: Faster-than-the-clock algorithm for the spectrum of (Floquet) open quantum systems*

Poster 4 – Florin Lucian Constantin: *Calibration of Electromagnetic Fields in Three Dimensions by Precision Spectroscopy of Hydrogen Molecular Ions*

Poster 5 – Pierre-Antoine Bourdel: *Cavity Protected Multifrequency Polaritons in a Cold Atomic System*

Poster 6 – Charbel Karam: *Control of ultracold molecular gases by optical shielding*

Poster 7 – Emanuele Tirrito: *Correlated Chern insulators in two-dimensional Raman lattices: a cold-atom regularization of strongly-coupled four-Fermi field theories*

Poster 8 – Clément Salducci: *Development of an onboard cold atom inertial measurement unit*

Poster 9 – Shiva Kant Tiwari: *Dynamics of Atoms Within Atoms*

Poster 10 – Youssef Trifa: *Entangled states of dipolar magnetic atoms in multimode traps*

Poster 11 – Sidharth Rammohan: *Imaging the interface of a qubit and its quantum-many-body environment*

Poster 12 – Lorenzo Gotta: *Kinetic formation of trimers in a spinless fermionic chain*

Poster 13 – Jean-Baptiste Bouhiron: *Laughlin's topological charge pump in an atomic Hall cylinder*

Poster 14 – Jose Alberto De La Paz: *Long-lived spin squeezing in a metrologically relevant regime*

Poster 15 – Andrea Litvinov: *Measuring densities of cold atomic clouds smaller than the resolution limit*

Poster 16 – Tianwei Zhou: *Observation of universal Hall Response in strongly interacting fermions*

Poster 17 – Bruno Peaudecerf: *Optimal control of the quantum state of a Bose Einstein Condensate in an optical lattice*

Poster 18 – Yohann Machu: *Quantum simulation with laser-trapped circular Rydberg atoms*

Poster 19 – Tommaso Comparin: *Spin squeezing in quantum simulators*

Poster 20 – Stephan Asselie: *Superradiant dynamics in dilute cold atomic clouds*

Poster 21 – Giulia De Rosi: *Thermal instability, evaporation, and thermodynamics of one-dimensional liquids in weakly interacting Bose-Bose mixtures*

Poster 22 – Giovanni Pecci: *Universal scaling of spin mixing dynamics in a strongly interacting one-dimensional Fermi gas*