

# Thierry Lahaye's CV

*Latest update: May 6, 2023*

CNRS Senior researcher (DR2)

Laboratoire Charles Fabry

Institut d'Optique

2, avenue Augustin Fresnel

F-91127 Palaiseau, France.

Born 14 September 1979 in Toulouse.

Married, one child.

French nationality.

## Career

**Oct. 2022–present:** Senior researcher (DR2) at CNRS, Laboratoire Charles Fabry, UMR 8501, Palaiseau.

**March 2019–present:** Co-founder and scientific adviser of the company [PASQAL](#).

**Oct. 2012–Sept. 2022:** Researcher (CR1/CRCN) at CNRS, Laboratoire Charles Fabry, UMR 8501, Palaiseau.

**Jan. 2012–Oct. 2012:** Researcher (CR2) at CNRS, Laboratoire Charles Fabry, UMR 8501, Palaiseau.

**Oct. 2008– Dec. 2011:** Researcher (CR2) at CNRS, LCAR, UMR 5589, Toulouse.

**2006–2008:** Post-doctoral researcher, University of Stuttgart (Germany), in Tilman Pfau's group.

**2003–2005:** Teaching assistant (allocataire-moniteur), Université Paris 6.

**1999–2003:** Student at École Normale Supérieure, Paris.

## Education

**2015:** Habilitation à diriger des recherches, defended on 11 May 2015 ([manuscript](#)).

**2002–2005:** PhD thesis in the Cold Atom group of Laboratoire Kastler Brossel, ENS, Paris, under the supervision of D. Guéry-Odelin and J. Dalibard, with honors (*Mention Très Honorable*). Title of the thesis: *Evaporative cooling of a magnetically guided atomic beam* ([manuscript](#)).

**2001–2002:** DEA of quantum physics, ENS, Paris: with honors (“mention TB”), rank joint 1<sup>st</sup>.

**1999–2001:** studies in Physics at ENS, Paris [2000: “Licence”, with honors (“mention TB”); 2001: “Maîtrise”, with honors (“mention TB”)].

**1999:** Admitted at École Polytechnique (ranked 1) and ENS Paris (ranked 4).

**1997–1999:** Classes préparatoires PCSI–PC\*, Lycée Pierre de Fermat, Toulouse.

**1997:** Baccalauréat S, with honors (“félicitations du jury”).

## Awards

**2019:** *Outstanding referee* of the American Physical Society.

**2009:** Louis Armand Prize of the French Academy of Sciences “for the realization of the first purely dipolar quantum gas”.

**2006:** Individual Marie Curie EU fellowship.

## Tasks of general interest

- 2020–: *Membre élu* of the *Commission de la Recherche* of the Université Paris-Saclay.
- 2015–2019: *Membre nommé* of the *Conseil de laboratoire* of LCF.
- Referee for Nature, Nature Physics, Nature Communications, Phys. Rev. Lett., Phys. Rev. X, Phys. Rev. A, New Journal of Physics, Small, EuroPhysics Letters, Optics Express, Journal of Physics B.
- Referee for the IFRAF (Institut Francilien de Recherche sur les Atomes Froids), for the French Agency of Research (ANR), for the Austrian Science Fund, for the Mairie de Paris, for various ‘LABEX’.

- Since 2015, I have taken part in 14 PhD defenses as a member of the jury (12 times as *rapporteur*, i.e. referee). I have been the chairman of one jury.

Date	Student	Institution	PhD supervisor	Role
2015	Aurélie de Paz	LPL (Villetaneuse)	B. Laburthe-Tolra	Referee
2016	Dany Ben Ali	LPL (Villetaneuse)	H. Perrin	Referee
2016	Thanh Long Nguyen	LKB (Paris)	M. Brune	Referee
2017	Davide Dreon	LKB (Paris)	J. Dalibard	Referee
2019	Paul Hilaire	C2N (Palaiseau)	L. Lanco	Referee
2019	Frédéric Assémat	LKB (Paris)	J.-M. Raimond	Referee
2019	Mathieu Pierce	LKB (Paris)	F. Chevy	Referee
2020	Raphaël Menu	ENS (Lyon)	T. Roscilde	Examiner
2020	Édouard Le Cerf	LKB (Paris)	J. Beugnon	Referee
2021	Romain Veyron	LP2N (Bordeaux)	S. Bernon	Referee
2022	Youssef Aziz Alaoui	LPL (Villetaneuse)	B. Laburthe-Tolra	Referee
2022	Brice Ravon	LKB (Paris)	M. Brune	Referee
2022	Raphaël Piccon	SYRTE (Paris)	F. Pereira dos Santos	Referee
2023	Romarc Journet	LCF (Palaiseau)	M. Cheneau	Examiner (chairman)

- Organizer of the weekly colloquium of LCAR (september 2010–september 2011).
- Co-organizer of a parallel session *Condensed-matter with cold atoms* at the *Congrès Général de la Société Française de Physique* (Bordeaux, France, 4–8 July 2011).
- Co-organizer, with A. Browaeys, C. S. Adams, and J. V. Porto, of a Les Houches summer school entitled “Current trends in atomic physics”, in July 2016.
- *Webmaster* of the website of the cold atom group LCAR (2008–2011).
- Outreach: *Fête de la Science* at LCAR and then LCF, 50<sup>th</sup> anniversary of the laser in Toulouse in 2010, supervision of CPGE students for their TIPE, International Year of Light in 2015 (Science break, January 2015; participation to an exhibition at *Musée des arts et métiers*, Paris, May 2015; construction of a laser fountain to demonstrate the guiding of light in a water jet)...

## Teaching

**2012–2020:** Lectures on Quantum mechanics at the “Préparation à l’Agrégation de Physique”, ENS Cachan.  
**2017–2020:** Laboratory classes on “Polarization of light”, Institut d’Optique.  
**2008–2010:** TA for the lecture “Photons and Atoms” by C. Fabre, Master 2 Quantum Physics, ENS Paris.  
**2006–2007:** Advanced Physical Laboratory, international master programme, University of Stuttgart.  
**2005–2006:** Oral exams (“colles”) in Physics, MPSI, Lycée Louis-le-Grand, Paris.  
**2003–2006:** Teaching assistant (“moniteur”), University Paris 6.

## Supervision of PhD students

**Oct. 2021–** : Supervision of the PhD thesis of Grégoire Pichard. Defense planned in 2025.  
**Oct. 2021–** : Supervision of the PhD thesis of Lucas Leclerc. Defense planned in 2024.  
**Sep. 2021–** : Supervision of the PhD thesis of Gabriel Emperauger. Defense planned in 2024.  
**Nov. 2020–** : Supervision of the PhD thesis of Guillaume Bornet. Defense planned in 2023.  
**Nov. 2018–Mar. 2022** : Supervision of the PhD thesis of Kai-Niklas Schymik, *Scaling-up the Tweezer Platform — Trapping Arrays of Single Atoms in a Cryogenic Environment*, defended on the 24 of March 2022. Kai-Niklas Schymik is now a post-doc at QTech in Delft (NL), in the group of Tim Taminiau.  
**Sep. 2018–Dec. 2021** : Co-supervision of the PhD thesis of Pascal Scholl, *Quantum simulation of spin models using large arrays of Rydberg atoms*, defended on the 6 of December 2022. Pascal Scholl is now a post-doc at

Caltech (USA) in Manuel Endres' group.

**Sept. 2016–Dec. 2019:** Supervision of the PhD thesis of Vincent Lienhard, *Experimental quantum many-body physics with arrays of Rydberg atoms*, defended on 18 Dec. 2019. Vincent Lienhard is now doing a post-doc at LPENS, Paris.

**Jan. 2018–Dec. 2018:** Co-supervision of the second part of the PhD thesis of Eric Magnan, *Spontaneous decoherence in large Rydberg ensembles*, defended on 17 Dec. 2018. Eric Magnan is now an engineer at Thales R&D.

**June 2015–Dec. 2018:** Supervision of the PhD thesis of Sylvain de Léséleuc, *Quantum simulation of spin models with assembled arrays of Rydberg atoms*, defended on 10 Dec. 2018. Sylvain de Léséleuc is now an Assistant Professor at IMS, Okasaki, Japan.

**Jan. 2013–Feb. 2016:** Co-supervision of the PhD thesis of Henning Labuhn, *Rydberg excitation dynamics and correlations in arbitrary 2D arrays of single atoms*, defended on 26 February 2016. Henning Labuhn is now a data scientist for the company *Shift technology*.

**Jan. 2013–July 2015:** Co-supervision of the PhD thesis of Sylvain Ravets, *Development of tools for quantum engineering using individual atoms: optical nanofibers and controlled Rydberg interactions*, defended on 16 December 2014. S. Ravets is currently a CNRS researcher at C2N (Palaiseau).

**Jan. 2012–Dec. 2013:** Co-supervision of the PhD thesis of Lucas Béguin, *Measurement of the van der Waals interaction between two Rydberg atoms*, defended on 13 December 2013. Lucas Béguin is now at the head of the Engineering department of Pasqal (Massy).

**Sept. 2010–Dec. 2011:** Co-supervision of the PhD thesis of Pierrick Cheiney, *Diffusion d'ondes de matière sur des potentiels complexes*. Pierrick Cheiney is now an engineer at iXblue.

**Sept. 2009–Dec. 2011:** Co-supervision of the PhD thesis of Charlotte Fabre, *Miroirs de Bragg pour ondes de matière et apport de la supersymétrie aux potentiels exponentiels*. Charlotte Fabre is now a professeur agrégée in classes préparatoires.

## Co-supervision of post-docs

**Sept. 2021–:** co-supervision of the post-doc of Cheng Chen.

**Nov. 2019–Aug. 2021:** co-supervision of the post-doc of Hannah Williams.

**Oct. 2018–Oct. 2019:** co-supervision of the post-doc of Thomas Boulier.

**May 2013–Dec. 2020:** co-supervision of the post-doc of Daniel Barredo.

**Jan. 2012–May 2013:** co-supervision of the post-doc of Aline Vernier.

## Supervision of undergraduate students

**Mar.–July 2023:** Supervision of the internship of Bastien Gély (M2 QLMN, IOGS).

**Sept. 2022–June 2023:** Supervision of the pre-doctoral stay of Jamie Boyd (U. Oklahoma).

**Feb.–Aug. 2022:** Supervision of the Arteq internship (master 1 level) of Géraud Dupuy (ENS Paris-Saclay).

**Feb.–Sept. 2021:** Supervision of the master thesis of Sara Pancaldi (University of Florence, Italy).

**April–July 2021:** Supervision of the internship of Gabriel Emperauger (M2 ICFP, ENS Ulm).

**Mar.–July 2020:** Supervision of the internship of Gilles Kuhorn (École Polytechnique, 3ème année).

**Mar.–July 2018:** Supervision of the internship of Pascal Scholl (M2 LOM).

**June 2017:** Supervision of the L3 internship of Joris Verstraten (ENS Ulm).

**Jan.–April 2016:** Supervision of the internship of Vincent Lienhard (M2 *Mécanique quantique*, ENS Ulm).

**July 2015:** Supervision of the L3 internship of Arnaud Fanthomme (ENS Ulm).

**June 2015:** Supervision of the L3 internship of Pascal Scholl (ENS Cachan).

**June 2014:** Supervision of the L3 internship of Kevin Roux (IOGS).

**June 2013:** Supervision of the L3 internship of Vincent Lienhard (ENS Cachan).

**July 2012:** Supervision of the L3 internship of Pierre-Yves Perrin (IOGS).

**July 2010:** Supervision of the L3 internship of Clement Lao-Thiane (IOGS).

**Jan.–March 2010:** Co-supervision of the internship of Pierrick Cheiney (M2 *Mécanique quantique*, ENS).

**July 2009:** Supervision of the L3 internship of Sebastien Garcia (ENS Ulm).

**May–June 2009:** Co-supervision of the M1 internship of Sven Badoux (Université Paul Sabatier).  
**April–June 2009:** Co-supervision of the internship of Charlotte Fabre (M2 Université Paul Sabatier).  
**Oct 2007–July 2008:** Supervision of the master thesis of Alaksei Charnukha (Universität Stuttgart).  
**July 2007–July 2008:** Supervision of the *diplomarbeit* of Maximilian Meister (Universität Stuttgart).  
**July 2006–July 2007:** Supervision of the *diplomarbeit* of Bernd Fröhlich (Universität Stuttgart).  
**Jan.–March 2006:** Co-supervision of the internship of Antoine Couvert (M2 *Mécanique quantique*, ENS Ulm).

## Publication list

### A. Refereed publications

1. C.Chen, G. Bornet, M. Bintz, G. Emperauger, L. Leclerc, V. S. Liu, P. Scholl, D. Barredo, J. Hauschild, S. Chatterjee, M. Schuler, A. M. Läuchli, M.P. Zaletel, T. Lahaye, N.Y. Yao, and A. Browaeys, *Continuous Symmetry Breaking in a Two-dimensional Rydberg Array*, [Nature](#) **616**, 691 (2023).
2. K.-N. Schymik, B. Ximenez, E. Bloch, D. Dreon, A. Signoles, F. Nogrette, D. Barredo, A. Browaeys, and T. Lahaye, *In situ equalization of single-atom loading in large-scale optical tweezer arrays*, [Phys. Rev. A](#) **106**, 022611 (2022).
3. S. Weber, R. Bai, N. Makki, J. Mögerle, T. Lahaye, A. Browaeys, M. Daghofer, N. Lang, and H. P. Büchler, *Experimentally Accessible Scheme for a Fractional Chern Insulator in Rydberg Atoms*, [Phys. Rev. X Quantum](#) **3**, 030302 (2022).
4. P. Scholl, H. J. Williams, G. Bornet, F. Wallner, D. Barredo, L. Henriët, A. Signoles, C. Hainaut, T. Franz, S. Geier, A. Tebben, A. Salzinger, G. Zürn, T. Lahaye, M. Weidemüller, and A. Browaeys, *Microwave Engineering of Programmable XXZ Hamiltonians in Arrays of Rydberg Atoms*, [Phys. Rev. X Quantum](#) **3**, 020303 (2022). Editors' suggestion.
5. K.-N. Schymik, S. Pancaldi, F. Nogrette, D. Barredo, J. Paris, A. Browaeys, and T. Lahaye, *Single Atoms with 6000-Second Trapping Lifetimes in Optical-Tweezer Arrays at Cryogenic Temperatures*, [Phys. Rev. Applied](#) **16**, 034013 (2021).
6. P. Scholl, M. Schuler, H.J. Williams, A.A. Eberharter, D. Barredo, K.-N. Schymik, V. Lienhard, L.P. Henry, T.C. Lang, T. Lahaye, A.M. Läuchli, and A. Browaeys, *Quantum simulation of 2D antiferromagnets with hundreds of Rydberg atoms*, [Nature](#) **595**, 233 (2021).
7. K.-N. Schymik, V. Lienhard, D. Barredo, P. Scholl, H. Williams, A. Browaeys and T. Lahaye, *Enhanced atom-by-atom assembly of arbitrary tweezers arrays*, [Phys. Rev. A](#) **102**, 063107 (2020). Editors' suggestion.
8. Loïc Henriët, Lucas Beguin, Adrien Signoles, Thierry Lahaye, Antoine Browaeys, Georges-Olivier Reymond, and Christophe Jurczak, *Quantum Computing with Neutral Atoms*, [Quantum](#) **4**, 327 (2020).
9. V. Lienhard, P. Scholl, S. Weber, D. Barredo, S. de Léséleuc, R. Bai, N. Lang, M. Fleischhauer, H.P. Büchler, T. Lahaye, and A. Browaeys, *Realization of a density-dependent Peierls phase in a synthetic, spin-orbit coupled Rydberg system*, [Phys. Rev. X](#) **10**, 021031 (2020).

10. A. Browaeys and T. Lahaye,  
*Many-body physics with individually controlled Rydberg atoms*,  
[Nature Phys.](#) **16**, 132 (2020).
11. D. Barredo, V. Lienhard, P. Scholl, S. de Léséleuc, T. Boulier, A. Browaeys, and T. Lahaye,  
*Three-Dimensional Trapping of Individual Rydberg Atoms in Ponderomotive Bottle Beam Traps*,  
[Phys. Rev. Lett.](#) **124**, 023201 (2020).  
Editor's suggestion and Physics Synopsis.
12. S. de Léséleuc, V. Lienhard, P. Scholl, D. Barredo, S. Weber, N. Lang, H.P. Büchler, T. Lahaye, and A. Browaeys,  
*Observation of a symmetry-protected topological phase of interacting bosons with Rydberg atoms*,  
[Science](#) **365**, 775 (2019).
13. D. Barredo, V. Lienhard, S. de Léséleuc, T. Lahaye, and A. Browaeys,  
*Synthetic three-dimensional atomic structures assembled atom by atom*,  
[Nature](#) **561**, 79 (2018).  
[News and Views](#) by N. Lundblad.
14. S. Weber, S. de Léséleuc, V. Lienhard, D. Barredo, T. Lahaye, A. Browaeys, and H.P. Büchler,  
*Topologically protected edge states in small Rydberg systems*,  
[Quantum Sci. Technol.](#) **3**, 044001 (2018).
15. V. Lienhard, S. de Léséleuc, D. Barredo, T. Lahaye, A. Browaeys, M. Schuler, L.-P. Henry, and A. M. Läuchli,  
*Observing the space- and time-dependent growth of correlations in dynamically tuned synthetic Ising antiferromagnets*,  
[Phys. Rev. X](#) **8**, 021070 (2018).  
[Physics viewpoint](#) by K.R.A. Hazzard.
16. S. de Léséleuc, D. Barredo, V. Lienhard, A. Browaeys, and T. Lahaye,  
*Analysis of imperfections in the coherent optical excitation of single atoms to Rydberg states*,  
[Phys. Rev. A](#) **97**, 053803 (2018). Editor's suggestion.
17. S. de Léséleuc, S. Weber, V. Lienhard, D. Barredo, H.P. Büchler, T. Lahaye, and A. Browaeys,  
*Accurate mapping of multilevel Rydberg atoms on interacting spin-1/2 particles for the quantum simulation of Ising models*,  
[Phys. Rev. Lett.](#) **120**, 113602 (2018).
18. S. de Léséleuc, D. Barredo, V. Lienhard, A. Browaeys, and T. Lahaye,  
*Local optical control of the resonant dipole-dipole interaction between Rydberg atoms*,  
[Phys. Rev. Lett.](#) **119**, 053202 (2017). Editor's suggestion.
19. M. Marcuzzi, J. Minár, D. Barredo, S. de Léséleuc, H. Labuhn, T. Lahaye, A. Browaeys, E. Levi, and I. Lesanovsky,  
*Facilitation Dynamics and Localization Phenomena in Rydberg Lattice Gases with Position Disorder*,  
[Phys. Rev. Lett.](#) **118**, 063606 (2017).
20. D. Barredo, S. de Léséleuc, V. Lienhard, T. Lahaye, and A. Browaeys,  
*An atom-by-atom assembler of defect-free arbitrary two-dimensional atomic arrays*,  
[Science](#) **354**, 1021 (2016).  
[Perspective](#) by C.A. Regal.
21. A. Browaeys, D. Barredo, and T. Lahaye  
*Experimental investigations of the dipolar interactions between a few individual Rydberg atoms*  
[J. Phys. B](#) **49**, 152001 (2016).

22. H. Labuhn, D. Barredo, S. Ravets, S. de Léséleuc, T. Macrì, T. Lahaye and A. Browaeys  
*Tunable two-dimensional arrays of single Rydberg atoms for realizing quantum Ising models*  
[Nature](#) **534**, 667 (2016).
23. S. Ravets, H. Labuhn, D. Barredo, T. Lahaye, and A. Browaeys  
*Measurement of the angular dependence of the dipole-dipole interaction between two individual Rydberg atoms at a Förster resonance*  
[Phys. Rev. A](#) **92** 020701(R) (2015). Editor's suggestion.
24. D. Barredo, H. Labuhn, S. Ravets, T. Lahaye, A. Browaeys, and C. S. Adams,  
*Coherent Excitation Transfer in a "Spin Chain" of Three Rydberg Atoms*  
[Phys. Rev. Lett.](#) **114**, 113002 (2015).
25. S. Ravets, H. Labuhn, D. Barredo, L. Béguin, T. Lahaye, and A. Browaeys,  
*Coherent dipole-dipole coupling between two single Rydberg atoms at an electrically-tuned Förster resonance*  
[Nature Phys.](#) **10**, 914 (2014). [News and Views](#) by Robert Löw.
26. H. Labuhn, S. Ravets, D. Barredo, L. Béguin, F. Nogrette, T. Lahaye, and A. Browaeys,  
*Single-atom addressing in microtraps for quantum-state engineering using Rydberg atoms*  
[Phys. Rev. A](#) **90**, 023415 (2014).
27. F. Nogrette, H. Labuhn, S. Ravets, D. Barredo, L. Béguin, A. Vernier, T. Lahaye, and A. Browaeys,  
*Single-Atom Trapping in Holographic 2D Arrays of Microtraps with Arbitrary Geometries*  
[Phys. Rev. X](#) **4**, 021034 (2014).
28. D. Barredo, S. Ravets, H. Labuhn, L. Béguin, A. Vernier, F. Nogrette, T. Lahaye, and A. Browaeys,  
*Demonstration of a Strong Rydberg Blockade in Three-Atom Systems with Anisotropic Interactions*  
[Phys. Rev. Lett.](#) **112**, 183002 (2014).
29. L. Béguin, A. Vernier, R. Chicireanu, T. Lahaye and A. Browaeys,  
*Direct measurement of the van der Waals interaction between two Rydberg atoms*  
[Phys. Rev. Lett](#) **110**, 263201 (2013).  
Editor's suggestion and [Physics Viewpoint](#) by M. Weidemüller.
30. P. Cheiney, C. M. Fabre, F. Vermersch, G. L. Gattobigio, R. Mathevet, T. Lahaye and D. Guéry-Odelin  
*Matter wave scattering on an amplitude-modulated optical lattice*  
[Phys. Rev. A.](#) **87**, 013623 (2013).
31. T. Lahaye  
*Measuring the eccentricity of the Earth's orbit with a nail and a piece of plywood*  
[Eur. J. Phys.](#) **33** 1167 (2012).
32. T. Lahaye, P. Labastie and R. Mathevet  
*Fizeau's "aether-drag" experiment in the undergraduate laboratory*  
[Am. J. Phys.](#) **80** 497 (2012).
33. C.M. Fabre, P. Cheiney, G.L. Gattobigio, F. Vermersch, S. Faure, R. Mathevet, T. Lahaye and D. Guéry-Odelin  
*Realization of a distributed Bragg reflector for propagating guided matter waves*  
[Phys. Rev. Lett.](#) **107**, 230401 (2011).
34. P. Cheiney, O. Carraz, D. Bartoszek-Bober, S. Faure, F. Vermersch, C.M. Fabre, G.L. Gattobigio, T. Lahaye, D. Guéry-Odelin, and R. Mathevet  
*Zeeman slowers made simple with permanent magnets in a Halbach configuration*  
[Rev. Sci. Inst.](#) **82** 063115 (2011).

35. T. Lahaye, T. Pfau, and L. Santos  
*Mesoscopic ensembles of polar bosons in triple-well potentials*  
[Phys. Rev. Lett. \*\*104\*\*, 170404 \(2010\)](#); Erratum, [Phys. Rev. Lett. \*\*105\*\*, 239904 \(2010\)](#).
36. T. Lahaye, C. Menotti, L. Santos, M. Lewenstein and T. Pfau  
*The physics of dipolar bosonic quantum gases*  
[Rep. Prog. Phys. \*\*72\*\*, 126401 \(2009\)](#).
37. J. Metz, T. Lahaye, B. Fröhlich, A. Griesmaier, T. Pfau, H. Saito, Y. Kawaguchi and M. Ueda  
*Coherent collapses of dipolar Bose-Einstein condensates for different trap geometries*  
[New J. Phys. \*\*11\*\*, 055032 \(2009\)](#).
38. T. Lahaye, J. Metz, B. Fröhlich, T. Koch, M. Meister, A. Griesmaier, T. Pfau, H. Saito, Y. Kawaguchi and M. Ueda  
*d-wave collapse and explosion of a dipolar Bose-Einstein condensate*  
[Phys. Rev. Lett. \*\*101\*\*, 080401 \(2008\)](#).
39. T. Koch, T. Lahaye, J. Metz, B. Fröhlich, A. Griesmaier and T. Pfau  
*Stabilization of a purely dipolar quantum gas against collapse*  
[Nature Phys. \*\*4\*\*, 218 \(2008\)](#).
40. G. Reinaudi, T. Lahaye, Z. Wang, and D. Guéry-Odelin  
*Strong saturation absorption imaging of dense clouds of ultracold atoms*  
[Opt. Lett. \*\*32\*\*, 3143 \(2007\)](#).
41. T. Lahaye, T. Koch, B. Fröhlich, M. Fattori, J. Metz, A. Griesmaier, S. Giovanazzi and T. Pfau  
*Strong dipolar effects in a quantum ferrofluid*  
[Nature \*\*448\*\*, 672 \(2007\)](#).
42. B. Fröhlich, T. Lahaye, B. Kaltenhäuser, H. Kübler, S. Müller, T. Koch, M. Fattori and T. Pfau  
*Two-frequency acousto-optic modulator driver to improve the beam-pointing stability during intensity ramps*  
[Rev. Sci. Instrum. \*\*78\*\*, 043101 \(2007\)](#).
43. T. Lahaye  
*Refroidissement par évaporation d'un jet atomique guidé magnétiquement*  
[Ann. Phys. Fr. \*\*31-1\*\*, 1 \(2006\)](#).
44. G. Reinaudi, Z. Wang, A. Couvert, T. Lahaye and D. Guéry-Odelin  
*A moving magnetic mirror to slow down a bunch of atoms*  
[Eur. Phys. J. D \*\*40\*\*, 405 \(2006\)](#).
45. T. Lahaye, G. Reinaudi, Z. Wang, A. Couvert, and D. Guéry-Odelin  
*Transport of atom packets in a train of Ioffe-Pritchard traps*  
[Phys. Rev. A \*\*74\*\*, 033622 \(2006\)](#).
46. T. Lahaye and D. Guéry-Odelin  
*Kinetics of the evaporative cooling of an atomic beam*  
[Phys. Rev. A. \*\*73\*\*, 063622 \(2006\)](#).
47. G. Reinaudi, T. Lahaye, A. Couvert, Z. Wang and D. Guéry-Odelin  
*Evaporation of an atomic beam on a material surface*  
[Phys. Rev. A \*\*73\*\*, 035402 \(2006\)](#).
48. T. Lahaye, Z. Wang, G. Reinaudi, S. P. Rath, J. Dalibard and D. Guéry-Odelin  
*Evaporative cooling of a Rubidium atomic beam*  
[Phys. Rev. A \*\*72\*\*, 033411 \(2005\)](#).



49. T. Lahaye and D. Guéry-Odelin  
*Discrete-step evaporation of an atomic beam*  
*Eur. Phys. J. D* **33**, 67 (2005).
50. T. Lahaye, J. M. Vogels, K. Guenter, Z. Wang, J. Dalibard, and D. Guéry-Odelin  
*Realization of a magnetically guided atomic beam in the collisional regime*  
*Phys. Rev. Lett.* **93**, 093003 (2004).
51. D. Guéry-Odelin and T. Lahaye  
*Dynamics of a trapped ultracold two-dimensional atomic gas*  
*Comptes Rendus Physique* **5**, 55 (2004).
52. J. M. Vogels, T. Lahaye, C. Roos, J. Dalibard, and D. Guéry-Odelin  
*How to reach the collisional regime on a magnetically guided atomic beam?*  
*J. Phys. IV France* **116**, 259 (2004).
53. C. F. Roos, P. Cren, T. Lahaye, J. Dalibard, and D. Guéry-Odelin  
*Injection of a cold atomic beam into a magnetic guide*  
*Laser Physics* **13**, 607 (2003).
54. T. Lahaye, P. Cren, C. Roos, and D. Guéry-Odelin  
*Propagation of guided cold atoms*  
*Commun. Nonlinear Sci.* **8**, 315 (2003).
55. D. Egorov, T. Lahaye, W. Schöllkopf, B. Friedrich, and J. M. Doyle  
*Buffer-gas cooling of atomic and molecular beams*  
*Phys. Rev. A* **66**, 043401 (2002).
56. R. Delhaille, C. Champenois, M. Büchner, L. Jozefowski, T. Lahaye, R. Mathevet, A. Miffre, C. Rizzo, C. Robillard, G. Tréneç, and J. Vigué  
*Some theoretical and experimental aspects of three-gratings Mach-Zehnder atom interferometers*  
*C. R. Acad. Sci. Paris* **2 IV**, 587 (2001).

## B. Books

1. A. Browaeys, T. Lahaye, T. Porto, C.S. Adams, M. Weidemüller, and L.F. Cugliandolo, editors  
*Current trends in atomic physics*  
Lecture notes of the Les Houches physics summer school session CVII, Oxford University Press (May 2019).
2. D. Guéry-Odelin and T. Lahaye  
*Classical mechanics illustrated by modern physics, 42 problems with solutions*  
English translation of 1., Imperial College Press (December 2010).
3. D. Guéry-Odelin and T. Lahaye  
*La mécanique classique illustrée par la physique contemporaine, 42 exercices and problèmes corrigés*  
Foreword by Jean Dalibard. Éditions Ellipses (September 2008).

## C. Book chapters

1. A. Browaeys and T. Lahaye  
*Interacting Cold Rydberg Atoms: a Toy Many-Body System,*  
*In Niels Bohr 1913–2013, Séminaire Poincaré* **XVII**, 125 (2013).



2. D. Guéry-Odelin and T. Lahaye  
*Basics on Bose-Einstein condensation*  
In K. L. Chuan *et al.*, "Ultracold gases and quantum information", Proceedings of Les Houches in Singapore 2009 summer school, 70 pages, Oxford University Press (2011).
3. T. Lahaye, J. Metz, T. Koch, B. Fröhlich, A. Griesmaier and T. Pfau  
*A purely dipolar quantum gas*  
In ATOMIC PHYSICS 21, proceedings of ICAP 2008, arXiv:0808.3876.
4. C. Menotti, M. Lewenstein, T. Lahaye and T. Pfau,  
*Dipolar interaction in ultra-cold atomic gases*  
Chapter of the volume "Dynamics and Thermodynamics of systems with long range interactions: theory and experiments", A. Campa, A. Giansanti, G. Morigi, F. Sylos Labini Eds., AIP Conference proceedings **970** (2008).

## Conferences, workshops, seminars

1. International online conference *Quantum 2022*, 22-23 October 2022, WYSS, China: invited talk *Quantum simulation of Ising and XY spin models with Rydberg atom arrays*.
2. Conference JMC 2022, Lyon, France, 23-26 August 2022: invited talk *Studying XY spin models with arrays of single Rydberg atoms*.
3. Seminar *Quantum computing for the energy industry*, EDF Labs, Palaiseau, France, 31 May 2022: invited talk *Recent progress on the Rydberg array platform*.
4. Online webinar *Quantum Simulations and Computations with Cold Atoms-2022* organized by IISER Pune, India, 26-28 January 2022. Invited talk *Quantum simulation of spin Hamiltonians in arrays of Rydberg atoms* ([video](#)).
5. Online conference *Quantum Simulation of Novel Phenomena with Atoms and Molecules* organized by IAS Hong-Kong, 13-16 December 2021. Invited talk *Quantum simulation of spin models in tunable arrays of Rydberg atoms*.
6. Online workshop between Université Paris Saclay and University of Queensland, 24 November 2021. Invited talk *Quantum simulation of spin models with Rydberg atom arrays*.
7. Online workshop on Cryogenic Ion Trapping, 19 October 2021. Invited talk *Single atoms with 6000 s trapping times in optical tweezer arrays at 4 K*.
8. 17e Journées de la Matière Condensée, 24-27 August 2021, online. Invited talk *Realizing artificial topological matter in arrays of Rydberg atoms*.
9. APS 2021 March meeting, held online, 15-19 March 2021: invited talk *Exploring topological matter in arrays of single Rydberg atoms*.
10. *Virtual AMO Seminar*, 29 January 2021: [Quantum simulation in arrays of single Rydberg atoms](#).
11. GDR IQFA XI, planned in Grenoble, France, and held online, 2-4 December 2020: invited talk *Quantum simulation in arrays of single Rydberg atoms*.
12. Weekly seminar of LPTMS, Université Paris-Saclay, 17 November 2020.
13. QTech 2020 international conference, planned in Barcelona, Spain and held online, 2-4 November 2020: invited talk *Quantum simulation in arrays of single Rydberg atoms*.
14. 7th Workshop *Long-range interactions in quantum systems*, planned in Bad Honnef, Germany and held online, 21-24 September 2020: invited talk *Many-body physics with arrays of single Rydberg atoms*.

15. Munich Conference on Quantum Science and Technology, 6-8 July 2020, planned in Munich, Germany and held online: invited talk *Quantum simulation using arrays of single Rydberg atoms* ([video](#)).
16. SIRTEQ annual meeting, 11 October 2019, Palaiseau, France, invited talk *Towards cryogenic arrays of single Rydberg atoms*.
17. Pasquans 1st year meeting, 26 September 2019, Vienna, Austria: talk *Quantum simulation with Rydberg tweezers arrays*.
18. Workshop “Continuous-time quantum computing and simulation: perspectives and challenges”, 1-3 October 2019, Kavli Royal Society Centre, UK: invited talk *Quantum many-body physics in arrays of single Rydberg atoms*.
19. International workshop ENIQMA 2018, 19-21 November 2018, Lyon, France: invited talk *Studying topological matter using arrays of single Rydberg atoms*.
20. International workshop DOQS 2018, 16-19 October 2018, Glasgow, Scotland: invited talk *Studying quantum spin models in arrays of single Rydberg atoms*.
21. DAMOP 2018, 26-30 May 2018, Fort Lauderdale (FL), USA: invited talk *Quantum simulation of spin systems with arrays of single Rydberg atoms*.
22. Colloquium of the local section of Société Française de Physique, 26 January 2018, Toulouse, France: *Many-body physics with arrays of single Rydberg atoms*.
23. Colloquium of the SPEC at CEA, 20 December 2017, l’Orme des Merisiers, France: *Many-body physics with arrays of single Rydberg atoms*.
24. Conference *Atom 2017 – GiRyd*, 27-30 November 2017, Dresden, Germany: invited talk *Quantum simulation of spin Hamiltonians in tunable arrays of single Rydberg atoms*.
25. Workshop *Long-range interactions in quantum systems*, Bad Honnef, Germany, 23-25 October 2017: invited talk *Quantum simulation of spin Hamiltonians using arrays of single Rydberg atoms*.
26. SIRTEQ workshop on Quantum Technologies, Palaiseau, France, 14-15 September 2017: talk *Arrays of single atoms for the quantum simulation of spin Hamiltonians*.
27. International conference EGAS 49, Durham, UK, 17-21 July 2017: invited talk *Quantum simulation of spin Hamiltonians using 2d arrays of single Rydberg atoms*.
28. International conference CLEO-EQEC 2017, Munich, Germany, 25-29 June 2017: invited talk *Quantum simulation of spin Hamiltonians using 2d arrays of single Rydberg atoms*.
29. Workshop *Frontiers of interacting systems of Rydberg atoms*, Harvard University, Cambridge (MA), USA, 1-2 June 2017: invited talk *Quantum simulation of spin Hamiltonians in arrays of single Rydberg atoms: recent results, work in progress, and new tools*.
30. Seminar for first-year students at ENS Paris, 21 February 2017: *Quantum simulation in two-dimensional arrays of single Rydberg atoms*.
31. Kick-off meeting of IQUPS, Saclay, France, 20 January 2017: *Quantum engineering and quantum simulation in tunable 2D arrays of single Rydberg atoms*.
32. Seminar at ICFO, Barcelona, Spain, 25–26 October 2016: *Realizing spin Hamiltonians in tunable 2D arrays of single Rydberg atoms*.
33. Seminar at the Max-Planck-Institut für Physik Komplexer Systeme, Dresden, Germany, 12–13 October 2016: *Realizing spin Hamiltonians in tunable 2D arrays of single Rydberg atoms*.

34. Workshop of the SFB FoQuS, Innsbruck, Austria, 6–7 October 2016: invited talk *Realizing spin Hamiltonians in tunable 2D arrays of single Rydberg atoms*.
35. Final workshop of the SIQS EU network, Venice, Italy, 14–18 March 2016: invited talk (as external speaker) *Realizing quantum Ising models in tunable 2D arrays of single Rydberg atoms*.
36. Predoctoral School on ultracold atoms, Les Houches, France, 14–25 September 2015: three lectures on *Cold Rydberg atoms*.
37. IARPA’s workshop on *Multi-Qubit Coherent Operations*, New-York City, NY, USA, 3–6 February 2015: invited talk *Quantum engineering in arrays of single Rydberg atoms*.
38. Workshop *Second International Workshop on Ultracold Rydberg Physics* Recife, Brazil, 5–8 October 2014: invited talk *Small systems of interacting Rydberg atoms*.
39. Workshop *Long-range interactions in quantum systems*, Palaiseau, France, 23–26 September 2014: invited talk *Resonant dipole-dipole interactions in systems of single Rydberg atoms*.
40. Workshop of the ITN Coherence, Granada, Spain, 10–12 September 2014: invited talk *Small systems of interacting Rydberg atoms*.
41. Workshop *Networks of Rydberg atoms*, Oxford, UK, 9–10 January 2014: invited talk *Rydberg blockade experiments in small arrays of single atoms*.
42. Invited talk in the company *ImagineOptic*, Orsay, France, 5 December 2013: *Arrays of microtraps for single-atom trapping*.
43. Workshop *Façonner la lumière*, ENS Ulm, Paris, France, 7 November 2013: invited talk *Arrays of microtraps for quantum information processing using the Rydberg blockade*.
44. QuPa workshop, Institut Henri Poincaré, Paris, France, 19 September 2013: invited talk *Rydberg atoms for quantum information processing*.
45. ICQT 2013, Moscow, Russia, 20–24 July 2013: poster *Direct measurement of the van der Waals interaction between two Rydberg atoms*.
46. DAMOP 2013, Quebec City, Canada, 3–7 June 2013: invited talk (‘Hot Topics session’) *Direct measurement of the van der Waals interaction between two Rydberg atoms*.
47. Invited talk at the seminar of the students of the Solid-state physics Master 2 program, LPS, Orsay, 28 November 2012: *Entangling Neutral Atoms using the Rydberg Blockade*.
48. First workshop of the GDR *Information Quantique, Fondements et Applications*, 23–25 March 2011, Nice, France: poster *Mesoscopic ensembles of polar bosons in triple-well potentials*.
49. Conference *Atom Lasers*, 4–9 April 2010, Les Houches, France: invited talk *Towards CW atom lasers by evaporation of guided beams: a review*.
50. Workshop *Dipolar quantum gases*, 30 September–2 October 2009, Stuttgart, Germany: invited talk *Mesoscopic dipolar BECs in triple well potentials*.
51. Conference *Bose-Einstein Condensation 2009*, 5–11 September 2009, San Feliu de Guixols, Spain: poster *All-optical guided atom lasers*.
52. Workshop *Control of quantum correlations in tailored matter: Common perspectives of mesoscopic systems and quantum gases*, 3–6 December 2008, Reims, Germany: invited talk *Experiments with dipolar BECs*.

53. Workshop *Dipolar gases*, 25 June 2008, Villetaneuse, France: invited talk *Recent experiments with a dipolar BEC*.
54. Conference *Theory of Quantum Gases and Quantum Coherence*, 3–7 June 2008, Grenoble, France: invited talk *Experiments with dipolar BECs*.
55. Conference *Nonlinear phenomena in quantum degenerate gases*, 1–5 April 2008, Toledo, Spain: invited talk *Nonlinear dynamics of a dipolar BEC*.
56. Joint International Conference IFRAF–CO.CO.MAT *Control of quantum correlations in tailored matter: Common perspectives of mesoscopic systems and quantum gases*, 3–7 October 2007, Reims, Germany. Invited talk *Strong dipolar interactions in a BEC*.
57. Summer school *Novel Quantum Phases and Non-equilibrium Phenomena in Cold Atom Gases*, 27 August–7 September 2007, International Centre for Theoretical Physics, Trieste, Italy: invited talk *Experiments with dipolar quantum gases*.
58. Annual DPG meeting, 19–23 March 2007, Düsseldorf, Germany. Talk *Strong dipolar effects in a Chromium BEC close to a Feshbach resonance*.
59. Conference *Quo vadis BEC?*, 27–29 October 2006, Berlin, Germany. Poster *Chromium BEC: a dipolar quantum gas*.
60. 38<sup>th</sup> EGAS Conference (European Group on Atomic Systems) 7–10 June 2006, Ischia, Italy. Contributed talk *Evaporative cooling of a magnetically guided atomic beam*.
61. First IFRAF Workshop (Institut Francilien de Recherche sur les Atomes Froids), IHP, Paris, France, 4 May 2006: invited talk *Evaporative cooling of a magnetically guided atomic beam: the prospects of using a conveyor belt for atoms*.
62. VIIth Workshop on Quantum Optics and Foundations of Quantum Mechanics, Bilbao, Spain, 14 December 2005: invited talk *Evaporative cooling of a magnetically guided atomic beam: towards a cw coherent source for atom optics*.
63. Group seminar in Prof. Tilman Pfau's group, Stuttgart, Germany, 26 October 2005: *Evaporative cooling of a magnetically guided atomic beam*.
64. Group seminar in Prof. Markus Oberthaler's group, Heidelberg, Germany, 24 October 2005: *Evaporative cooling of a magnetically guided atomic beam*.
65. Group seminar in Prof. Rudi Grimm's group, Innsbruck, Austria, 22 September 2005: *Evaporative cooling of a magnetically guided atomic beam: towards a cw atom laser*.
66. Mesoscopic Phenomena in Ultracold Matter: From Single Atoms to Coherent Ensembles, 11–15 October 2004, Dresden, Germany. Poster *Realization of a magnetically guided beam in the collisional regime*.
67. Young Atom Opticians Conference, 3–8 June 2003, Amsterdam, the Netherlands. Poster *Magnetically guided beams: a first step towards a cw atom laser*.
68. Atomic Physics Gordon Conference, 17–22 June 2001, Williamstown, MA, USA. Poster *Buffer-gas cooling of a rubidium atomic beam*.