Curriculum Vitae

Prof. Hugues de Riedmatten
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ICFO-The Institute of Photonic Sciences
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Summary

I am ICREA professor and head of the Quantum Photonics group at ICFO in Barcelona, Spain. My group´s research focuses on building experimental hardware for quantum networks and quantum repeaters, including quantum memories for light, quantum light sources, quantum network nodes and quantum frequency conversion. I obtained my Ph.D. in Physics in 2003 from the University of Geneva, Switzerland. Between 2004 and 2006, I was a postdoctoral scholar at the California Institute of Technology. I then came back to Geneva to work as a senior scientist until 2010, when I joined ICFO to start a new research group. I contributed to key milestones in quantum communication technology, including the first demonstrations of long-distance quantum teleportation, of solid-state quantum memories, of quantum repeater links using cold atoms and solid-state quantum memories and of quantum communication between disparate quantum nodes. I published more than 100 articles in peer-reviewed journals. I was the recipient of a European Research Council Starting Grant. I currently hold a frontier research grant from the US based Moore foundation and I am part of the executive team of the European Quantum Internet Alliance program. I was the recipient of the Barcelona City Prize 2017 for my work on hybrid quantum networks. Since 2023, I have been appointed as associate editor for the journal Optica.

Current position

2010-Present ICREA tenured Professor at ICFO-the Institute of Photonic Sciences, Barcelona. Leader of the "Quantum Photonics" group (currently 7 PhD students and 8 postdocs). Experimental group started from scratch in September 2010, with full scientific and financial autonomy.

Publications

I published more than 100 publications (> 10 as first author, >40 as last author) in peer-reviewed journals, including 7 in Nature, 1 in Science, 1 in Science Advances, 2 in Nature Physics, 7 in Nature Communications, 1 in Physical Review X, 3 in Optica and 20 in Physical Review Letters. My papers are cited more than 10600 (16400) times, h-index 50 (58), source WoS (Google Scholar). 29 papers are cited more than 100 times.
I have also been invited to write a News & Views article for Nature Photonics in 2010 and a Viewpoint in Physics in 2013. Together with 3 co-authors, I have written a review about "quantum repeaters based on atomic ensembles and linear optics" that has been published in Review of Modern Physics. I also wrote with two co-authors an article on photonic quantum memories in Physics Today.

Previous positions

2006-2010 Senior Scientist in the group of Applied Physics, University of Geneva (Prof. Nicolas Gisin). Co-group leader of photonic quantum storage activities based on solid-state atomic ensembles

2004-2006 Post-doctoral Scholar, Quantum Optics Group, California Institute of Technology, with Prof. Jeff Kimble. Research area: Light-Matter interface with atomic ensembles and single photons, entanglement between remote atomic ensembles, experiments towards quantum networks and repeaters

2003-2004 Post-doc at the Group of Applied Physics, University of Geneva, with Prof Nicolas Gisin. Research area: Long distance quantum communication in optical fibers

2003 Visiting Scientist at the Swiss Federal Institute of Technology, Lausanne. Work on single photon sources at telecom wavelengths, using quantum dots, with Prof. Andrea Fiore

1999-2003 Research Assistant in the Group of Applied Physics, University of Geneva, Switzerland, with Prof. Nicolas Gisin**.** Research areas: long distance quantum communication, high dimensional entanglement and efficient photon pair sources

Education

1999-2003 PhD in Physics (experimental quantum optics), Group of Applied Physics, University of Geneva, Switzerland, with Prof. Nicolas Gisin**.**
Title: *Photonic entanglement in optical fibers: from long distance quantum teleportation to high dimensional Hilbert spaces*

1994-1999 MSc in physics, Swiss Federal Institute of Technology, Lausanne, Switzerland (EPFL). Master thesis in nanophysics, with Prof Jean-Philippe Ansermet.
Title: *Study of relaxation phenomena in magnetic nanostructures using NMR*

1991-1994 Bachelor of Science in mechanical engineering, Engineering school of Valais, Sion Switzerland. Specialization in material sciences

Supervision

2010-2023 Supervision of 20 postdoctoral researchers (8 currently in the group)
Thesis advisor for 22 PhD students (15 have graduated)
Thesis advisor for 7 Master students

2006-2010 Supervision of 6 PhD and 2 master students, GAP, University of Geneva

2004-2006 Supervision of two PhD students, Quantum Optics Group, Caltech

Teaching

2012-2018 "Advanced Quantum Optics with Applications", Master in Photonics, Barcelona

2006-2010 "Applied optics seminar" (applications of optics in quantum information science) for 4th year physics students, University of Geneva

2000-2003 Teaching assistant for general physics courses, University of Geneva

Other Professional assignments

Since 2003 Regular Referee for peer-reviewed journals (Nature, Nature Physics, Nature Photonics, Nature Communication, Nature Materials, Physical Review Letters, New Journal of Physics, Physical Review A, Optics Express, Physics Letters A)

Since 2008 External evaluator for various funding agencies including FET-OPEN (EU, 2010), ANR (France, 2012, 2014, 2015, 2018), Emergence Ville de Paris (France, 2011), Vienna Science and Technology Fund (Austria, 2012), Austrian Academy of Sciences (2013), Chinese Academy of Sciences (2014), ERC (StG 2017, CoG 2023), The Novo Nordisk foundation, Quantum Delta NL.

Since 2008 Member of the scientific committee for the conferences CLEO-QELS 2008, 2016-2018 FS1 subcommittee (Quantum Optics of Atoms, Molecules, and Solids), ICIQP 2018, CEWQO 2018, ICE5 2019, CLEO Europe EQEC 2019-2023, QCrypt 2019

Since 2018 Work package leader (Quantum Repeaters) and member of the executive team in the European Quantum Flagship project "Quantum Internet Alliance" (QIA)

Since 2018	Member of the Strategic Research Agenda Working group on Quantum Communication, European Quantum Flagship
2008-2023	Examiner for 39 PhD theses, 3 habilitation theses (France), and several master theses
Since 2023	Associate Editor at Optica

Fellowhips and awards

2018	**Gordon and Betty Moore Foundation** personal grant
2018	**Barcelona City Prize** 2017 for Experimental sciences and technology
2018	Vanguardia Science award, 2nd position.
2011-2016	**ERC Starting Grant**
2010	Permanent senior fellowship from ICREA-The Catalan Institute for Research and Advanced Studied
2004-2005	Fellowship for prospective researcher from the Swiss National Science Foundation

Funding

Since September 2010, I attracted more than 10 million Euros in external funding through competitive projects from EU, Spain and the US, as well as from fellowships for postdoctoral researchers (Beatriu de Pinos, Catalunya, Marie Curie, ICFO-MPQ fellowships, Juan de la Cierva, Junior Caixa Leaders) and PhD students (FPI, Spain). Funded projects include: ERC starting grant (QuLIMA, 2011-2016, 1496 k€), a Marie Curie Initial-Training Network (CIPRIS 228 k€), two EU FET-Open project (NanoQTech, 378 k€, DAALI, 400 k€), two European Quantum Technologies Flagship ramp up phase projects 2018-2022, Square, 400 k€ and QIA, 700 k€), a quantum Flagship SGA proposal (QIA, 2.4 M€), a Gordon and Betty Moore Frontier Research grant (1.1 M $) as well as several Spanish projects (Plan complementario de comunicaciones cuanticas, 1.5 M€, Lineas Estrategicas Q-Network, 350 k€ and three « plan nacional » projects 210 k€, 205 k€ and 246 k€).

Organisation of scientific workshops

2011	Organizer of the informal Workshop on Quantum Information Processing in Rare-earth doped solids, Barcelona, Spain (http://www.qpsa.icfo.es/QIPREDS)
2015	Chair of organizing committee, Quantum Light-Matter Interactions in Solid State Systems (QLIMS 2015), Barcelona, Spain (http://www.qpsa.icfo.es/qlims)
2018	Local Organizing Committee, International Conference of Atomic Physics (ICAP2018), Barcelona, Spain
2020	Chair of the second international conference on Quantum Technologies (QTECH 2020)
Since 2022	Co-Program Chair of the Quantum 2.0 conference organized by Optica (formerly OSA)

Languages

French	Native	Spanish	Excellent
English	Fluent	German	Good knowledge
Catalan	Basic knowledge		

Main Scientific achievements

1. First demonstration of long-distance quantum teleportation (Geneva), Nature **421**, 509 (2003), PRL **92**, 047904 (2004)

2. First demonstration of elementary quantum networks (Caltech), Nature, **438,** 828 (2005), Nature Phys. **2**, 844 (2006), Science **316**, 1316 (2007)

3. First demonstration of solid-state quantum memories (Geneva) Nature **456**, 773 (2008), Nature Commun. **1**, 12 (2010), PRL. **104**, 080502 (2010) (Telecom memory)

4. First demonstration of entanglement between a photon at telecommunication wavelength and a collective atomic excitation stored in a solid (Geneva, ICFO), Nature **469**, 508 (2011)

5. First demonstration of quantum storage of photonic polarization qubits in a solid (ICFO), PRL **108**, 190504 (2012), highlighted in APS Physics

6. First quantum storage of a single photon in a Pr^{3+} doped crystal, thanks to the development of an ultra-narrow photon pair source (ICFO), PRL **110**, 220502 (2013), (Highlighted by a viewpoint in Physics), PRL **112**, 040504 (2014)

7. First demonstration of an integrated frequency conversion interface connecting cold atom based quantum memories to telecommunication wavelength (ICFO), Nature Commun. **5**, 3376 (2014), Optica **3**, 1019 (2016)

8. First demonstrations of solid-state spin-wave quantum memories (ICFO), PRL (2015), PRL **118**, 210502 (2017), PRX **7**, 021028 (2017) (Highlighted by a viewpoint in Physics). Crucial step for the use of solid-state quantum memories in scalable quantum networks.

9. First demonstration of storage of a correlated single photon on a highly excited Rydberg state (ICFO), Nature Commun. **8**, 14072 (2017), Nature Commun. **7**, 13556 (2016), PRL **117**, 113001 (2016). First single photon filtering of non-classical states Phys. Rev. Lett. 132, 053001 (2024).

10. First demonstration of photonic quantum state transfer between disparate quantum nodes (ICFO), Nature **551**, 485 (2017)

11. First demonstrations of entanglement between photons and solid-state spin-wave memories ICFO, Phys. Rev. Lett. 123, 030501 (2019), Phys. Rev. Lett. 127, 210502 (2021)

12. First demonstration of telecom heralded entanglement between multimode quantum memories, a quantum repeater link extendable to longer distances (ICFO), Nature 594, 37 (2021)

13. First detection of a single rare-earth ion in a nanoparticle (ICFO), Optica **10**, 1339 (2023)

14. Light-matter entanglement distribution in the Barcelona installed fiber network, Optica Quantum 1, 94 (2023)

Recognition and Outreach to general public

1. I have been awarded a **Starting Grant from the European Research Council** in 2011, for my project QuLIMA- Advanced Ensemble Based Quantum Light Matter Interfaces. I have also been selected by the US **Gordon and Betty Moore Foundation** for a **personal grant** funding my research on hybrid quantum nodes. Our paper "Quantum Storage of Photonic Entanglement in a crystal" (Nature 2011) has been highlighted by a **News and Views article in Nature**. Our paper "Ultra-narrowband Photon Pair Sources compatible with Solid-State Quantum Memories and Telecommunication Networks" (PRL2013) has been selected for a **ViewPoint in Physics,** a magazine of the American Physical Society

"spotlighting exceptional research". Our papers "Quantum Correlations between Single Telecom Photons and a Multimode On-Demand Solid-State Quantum Memory" (PRX 2017) and "Solid-State Source of Nonclassical Photon Pairs with Embedded Multimode Quantum Memory" (PRL2017) have also been selected for a Viewpoint in Physics, (https://physics.aps.org/articles/v10/55). Our paper "Quantum Storage of Photonic Polarization Qubits in a Solid" (PRL 2012) was also been highlighted in Physics. Finally, our paper "Telecom-heralded entanglement distribution between, remote multimode quantum memories. Nature (2021) was selected for the cover of Nature

In terms of bringing our research to the general public, our work was featured in several online, radio and TV reports, as well an in newspaper articles and of course on social media. We have an X account with more that 900 followers, where we describe our research and the life of the research group (@QuantumPSA):

- Our work on telecom heralded entanglement between remote solid-state quantum memories received a lot of attention from the press in Spain and abroad. It was covered in many Spanish newspaper, including in the cover of El Pais, La Vanguardia, Ara, and was featured in several Radio programs. I gave an 45 minutes interview on Radio Nacional de España Exterior, with coverage in Spain and Latin America
- Our work on photonic quantum state transfer between disparate quantum memories was selected for the Barcelona city prize 2017 in experimental sciences and technology. It was also selected for the Vanguardia science award 2017 (2^{nd} position in popular vote), highlighting the best scientific works done in Spain. This gave my research lot of visibility in the media, e.g. with an interview in the newspaper La Vanguardia
- Our work on photonic quantum state transfer between different type of quantum memories (Nature 2017) attracted significant attention, both online (e.g. Vice Motherboard) and in newspaper articles (El Periodico, ARA).
- In December 2016, I was featured in a prime-time news TV report of the Swiss channel RTS, focused on Swiss scientist abroad.
- Our group participated to the Big Bell Test, a worldwide quantum experiment powered by human randomness (thebigbelltest.org). On November 30 2016, more than 100´000 people worldwide contributed to give random numbers for testing quantum physics in 11 labs worldwide. This experiment attracted huge attention worldwide from the media and from the general public
- In 2016, the work of the group was featured in an "In Depth" piece about ICFO by the web magazine NanoTech Web (http://nanotechweb.org/cws/article/indepth/66951)
- Our work on Quantum storage of Photonic entanglement in a crystal (Nature 2011) has received a considerable attention from the press, with articles in (among others) in Scientific American, The New Scientist, Le Temps and Der Spiegel. Our work on quantum storage of photonic polarization qubits (PRL2012) was highlighted in Physics World.

I also gave an invited popular talk at the University for senior citizen, Geneva, *Quantum correlations: from fundamental science to applications* (November 10 2009). I am regularly invited to comment as an expert the works of others, e.g. in Physics World, ScienceNow, Physics Today or in the science blog from the newspaper Le Monde. I have also been invited to write a ViewPoint article in Physics.

Publication list (December 2023)

I published more than 100 publications (> 10 as first author, >40 as last author) in peer-reviewed journals, including **7 in Nature, 1 in Science, 1 in Science Advances, 2 in Nature Physics, 7 in Nature Communications, 1 in Physical Review X, 4 in Optica and 19 in Physical Review Letters**. My papers are cited more than 10600 (16400) times, h-index 50 (58), source WoS (Google Scholar). I have also been invited to write a News&Views article for Nature Photonics in 2010 and a Viewpoint in Physics in 2013. Together with 3 co-authors, I have written a review about "quantum repeaters based on atomic ensembles and linear optics" that has been published in Review of Modern Physics. I also wrote with two co-authors an article on photonic quantum memories in Physics Today.

Patent

Dario Lago-Rivera, Samuele Grandi, and Hugues de Riedmatten.
The Institute of Photonic Sciences (ICFO)
Quantum Phase Compensation. In the process of being
patented, EP 22 382 138.0 (Filling date: February 18, 2022)

Selected Papers

1. Jan Lowinski, Lukas Heller, Félix Hoffet, Auxiliadora Padrón-Brito, Klara Theophilo, **Hugues de Riedmatten**, *Strongly non-linear interaction between non-classical light and a blockaded Rydberg atomic ensemble*, Phys. Rev. Lett. 132, 053001 (2024)

2. Chetan Deshmukh, Eduardo Beattie, Bernardo Casabone, Samuele Grandi, Diana Serrano, Alban Ferrier, Philippe Goldner, David Hunger, **Hugues de Riedmatten**, Detection of single ions in a nanoparticle coupled to a fiber cavity, Optica **10**, 1339 (2023)

3. Dario Lago, Jelena Rakonjac, Samuele Grandi and **H de Riedmatten**, *Multiplexed quantum teleportation from a photonic telecom qubit to a solid-state qubit*, Nature Commun. 14, 1889 (2023)

4. B. Casabone, C. Deshmukh, S. Liu, D. Serrano, A. Ferrier, T. Hümmer, P. Goldner, D. Hunger and **H.de Riedmatten**, *Dynamic control of Purcell enhanced emission of erbium ions in nanoparticles*, Nature Commun. 12, 3570 (2021)

5. Dario Lago-Rivera, Samuele Grandi, Jelena V. Rakonjac, Alessandro Seri and **Hugues de Riedmatten**, Telecom-heralded entanglement distribution between, remote multimode quantum memories. Nature 594, 37 (2021)

6. Lukas Heller, Pau Farrera, Georg Heinze, and **Hugues de Riedmatten**, Cold-Atom Temporally Multiplexed Quantum Memory with Cavity-Enhanced Noise Suppression, Phys. Rev. Lett. 124, 210504 (2020)

7. Alessandro Seri, Dario Lago-Rivera, Andreas Lenhard, Giacomo Corrielli, Roberto Osellame, Margherita Mazzera, and **Hugues de Riedmatten**, Quantum Storage of Frequency-Multiplexed Heralded Single Photons, Phys. Rev. Lett. 123, 080502 (2019)

8. N. Maring, P. Farrera, K. Kutluer, M. Mazzera, G. Heinze and **H. de Riedmatten**, Photonic Quantum State Transfer between a cold atomic gas and a crystal, Nature **551**, 485 (2017)

9. A. Seri, A. Lenhard, D. Rieländer, M. Gündoğan, P. M. Ledingham, M. Mazzera, and **H. de Riedmatten**, *Quantum Correlations between Single Telecom Photons and a Multimode On-Demand*

Solid-State Quantum Memory, Phys. Rev. X 7, 021028 (2017), selected as Editors Suggestion and as a Viewpoint in Physics (J.Nunn)

10. E. Distante, P. Farrera, A. Padrón-Brito, D.Paredes-Barato, G. Heinze & **H. de Riedmatten**, *Storing single photons emitted by a quantum memory on a highly excited Rydberg state*, Nature Commun. 8, 14072 (2017)

11. Pau Farrera, Georg Heinze, Boris Albrecht, Melvyn Ho, Matías Chávez, Colin Teo, Nicolas Sangouard & **Hugues de Riedmatten**, *Generation of single photons with highly tunable wave shape from a cold atomic ensemble*, Nature Commun. 7, 13556 (2016)

12. B. Albrecht, P. Farrera, X. Fernandez –Gonzalvo, M. Cristiani and **H. de Riedmatten**, *A Waveguide Frequency Converter Connecting Rubidium Based Quantum Memories to the Telecom C-Band*, Nature Commun **5**, 3376 (2014)

13. J. Fekete, D. Rieländer, M. Cristiani and **H. de Riedmatten**, *Ultranarrow-band photon-pair source compatible with solid state quantum memories and telecommunication networks*, Phys. Rev. Lett. **110**, 220502 (2013), selected as Editors Suggestion and as a viewpoint in Physics (P.Hemmer, Physics **6**, 62 (2013))

14. M. Gündogan, P.M. Ledingham, A. Almasi, M. Cristiani and **H. de Riedmatten**, *Quantum Storage of Photonic Polarization Qubits in a Solid,*, Phys. Rev. Lett. 108, 190504 (2012), highlighted in APS Physics.

15. C. Clausen, I. Usmani, F. Bussières, N. Sangouard, M. Afzelius, **H de Riedmatten** and N. Gisin, *Quantum Storage of Photonic entanglement in a crystal*, Nature **469**, 508 (2011), see also accompanying News and Views by J. J. Longdell.

16. **H. de Riedmatten***, M.Afzelius*, M.Staudt, C.Simon and N.Gisin, *A solid state light matter interface at the single photon level*, Nature **456**, 773 (2008) (*co first-authors)

17. C. Simon, **H. de Riedmatten**, M. Afzelius, N. Sangouard, H. Zbinden, and N. Gisin, *Quantum Repeaters with Photon Pair Sources and Multimode Memories*, Phys. Rev. Lett. ***98**, 190503 (2007)*

18. C.-W. Chou, J. Laurat, H. Deng, K. S. Choi**, H. de Riedmatten,** D. Felinto, H. J.Kimble *Functional Quantum Nodes for Entanglement Distribution over Scalable Quantum Networks* Science **316**, 1316 (2007), published in Science Express on April 5 2007

19. C.W.Chou, **H. de Riedmatten**, D.Felinto, S.V. Polyakov, S.J. van Enk and H.J.Kimble, M*easurement induced entanglement for atomic excitation stored in remote atomic ensemble*, Nature, **438,** 828-832 (2005)

20. I. Marcikic*, **H. de Riedmatten***, W. Tittel, H. Zbinden, and N. Gisin, *Long distance teleportation of qubits at telecom wavelength*, Nature **421**,509 (2003) (*co-first authors)

Preprints

1. Stefano Duranti, Sören Wengerowsky, Leo Feldmann, Alessandro Seri, Bernardo Casabone, **Hugues de Riedmatten**, Efficient cavity-assisted storage of photonic qubits in a solid-state quantum memory, arXiv:2307.03509

2. Authors: Adam Kinos, David Hunger, Roman Kolesov, Klaus Mølmer, **Hugues de Riedmatten**, Philippe Goldner, Alexandre Tallaire, Loic Morvan, Perrine Berger, Sacha Welinski, Khaled Karrai, Lars Rippe, Stefan Kröll, Andreas Walther, *Roadmap for Rare-earth Quantum Computing*, arXiv:2103.15743

Published papers (peer reviewed)

1. Jan Lowinski, Lukas Heller, Félix Hoffet, Auxiliadora Padrón-Brito, Klara Theophilo, **Hugues de Riedmatten**, *Strongly non-linear interaction between non-classical light and a blockaded Rydberg atomic ensemble*, Phys. Rev. Lett. 132, 053001 (2024), arXiv:2309.08257

2. Jelena V. Rakonjac, Samuele Grandi, Sören Wengerowsky, Dario Lago-Rivera, Félicien Appas, **Hugues de Riedmatten**, *Transmission of light-matter entanglement over a metropolitan network*, Optica Quantum 1, 94 (2023)

3. Chetan Deshmukh, Eduardo Beattie, Bernardo Casabone, Samuele Grandi, Diana Serrano, Alban Ferrier, Philippe Goldner, David Hunger, **Hugues de Riedmatten**, Detection of single ions in a nanoparticle coupled to a fiber cavity, Optica **10**, 1339 (2023)

4. Zong-Quan Zhou, Chao Liu, Chuan-Feng Li, Guang-Can Guo, Daniel Oblak, Mi Lei, Andrei Faraon, Margherita Mazzera, Hugues de Riedmatten, *Photonic Integrated Quantum Memory in Rare-Earth Doped Solids*, Laser & Photonics Reviews 17, 2300257 (2023)

5. Mohammed K. Alqedra, Chetan Deshmukh, Shuping Liu, Diana Serrano, Sebastian P. Horvath, Safi Rafie-Zinedine, Abdullah Abdelatief, Lars Rippe, Stefan Kröll, Bernardo Casabone, Alban Ferrier, Alexandre Tallaire, Philippe Goldner, **Hugues de Riedmatten**, Andreas Walther, *Optical coherence properties of Kramers' rare-earth ions at the nanoscale for quantum applications*, Phys. Rev. B 108, 075107 (2023)

6. Dario Lago, Jelena Rakonjac, Samuele Grandi and **H de Riedmatten**, *Multiplexed quantum teleportation from a photonic telecom qubit to a solid-state qubit*, Nature Commun. 14, 1889 (2023)

7. Lukas Heller, Jan Lowinski, Klara Theophilo, Auxiliadora Padrón-Brito, **Hugues de Riedmatten**, *Raman Storage of Quasideterministic Single Photons Generated by Rydberg Collective Excitations in a Low-Noise Quantum Memory*, Phys. Rev. Applied 18, 024036 (2022)

8. J. V. Rakonjac, G. Corrielli, D. Lago-Rivera, A. Seri, M. Mazzera, S. Grandi, R. Osellame, and **H. de Riedmatten**, *Storage and analysis of light-matter entanglement in a fiber-integrated System*, Sci. Adv. 8, eabn3919 (2022)

9. Antonio Ortu, Jelena V Rakonjac, Adrian Holzäpfel, Alessandro Seri, Samuele Grandi, Margherita Mazzera, **Hugues de Riedmatten** and Mikael Afzelius, *Multimode capacity of atomic-frequency comb quantum memories*, Quantum Sci. Technol. 7, 035024 (2022)

10. J. V. Rakonjac, D. Lago-Rivera, A. Seri, M. Mazzera, S. Grandi, and **H. de Riedmatten**, *Entanglement between a Telecom Photon and an On-Demand Multimode Solid-State Quantum Memory*, Phys. Rev. Lett. 127, 210502 (2021)

11. Auxiliadora Padrón-Brito, Jan Lowinski, Pau Farrera, Klara Theophilo, and **Hugues de Riedmatten**, *Probing the indistinguishability of single photons generated by Rydberg atomic ensembles*, Phys. Rev. Research 3, 033287 (2021)

12. A. Padrón-Brito, R. Tricarico, P. Farrera, E. Distante, K. Theophilo, D. Chang and **H. de Riedmatten**, *Dynamics of the quantum light retrieved from Rydberg polaritons*, New. J. Phys. **23** 063009 (2021)

13. B. Casabone, C. Deshmukh, S. Liu, D. Serrano, A. Ferrier, T. Hümmer, P. Goldner, D. Hunger and **H.de Riedmatten**, *Dynamic control of Purcell enhanced emission of erbium ions in nanoparticles*,

Nature Commun. 12, 3570 (2021)

14. Dario Lago-Rivera, Samuele Grandi, Jelena V. Rakonjac, Alessandro Seri and **Hugues de Riedmatten**, Telecom-heralded entanglement distribution between, remote multimode quantum memories. Nature 594, 37 (2021)

15. Daniel Cano, Alban Ferrier, Karuppasamy Soundarapandian, Antoine Reserbat-Plantey, Marion Scarafagio, Alexandre Tallaire, Antoine Seyeux, Philippe Marcus, **Hugues de Riedmatten**, Philippe Goldner, Frank H. L. Koppens and Klaas-Jan Tielrooij, *Fast electrical modulation of strong near-field interactions between erbium emitters and graphene*, Nature Communications 11, 4094 (2020)

16. Lukas Heller, Pau Farrera, Georg Heinze, and **Hugues de Riedmatten**, Cold-Atom Temporally Multiplexed Quantum Memory with Cavity-Enhanced Noise Suppression, Phys. Rev. Lett. 124, 210504 (2020)

17. D. Serrano, C. Deshmukh, S. Liu, A. Tallaire, A. Ferrier, **H. de Riedmatten**, and P. Goldner, Coherent optical and spin spectroscopy of nanoscale Pr:Y2O3, Phys. Rev. B 100, 144304 (2019)

18. Alessandro Seri, Dario Lago-Rivera, Andreas Lenhard, Giacomo Corrielli, Roberto Osellame, Margherita Mazzera, and **Hugues de Riedmatten**, Quantum Storage of Frequency-Multiplexed Heralded Single Photons, Phys. Rev. Lett. 123, 080502 (2019)

19. Kutlu Kutluer, Emanuele Distante, Bernardo Casabone, Stefano Duranti, Margherita Mazzera, and **Hugues de Riedmatten**, Time Entanglement between a Photon and a Spin Wave in a Multimode Solid-State Quantum Memory, Phys. Rev. Lett. 123, 030501 (2019).

20. M. Ho, C. Teo, **H. de Riedmatten** and N. Sangouard ' *Optimal photon generation from spontaneous processes in cold atoms*' New J. Phys 20, 123018 (2018)

21. B. Casabone, J. Benedikter, T. Huemmer, F. Oehl, K Lima de Oliveira, T.W. Haensch, A. Ferrier, P. Goldner, **H. de Riedmatten** and D. Hunger 'Cavity-enhanced spectroscopy of a few-ion ensemble in Eu3+:Y2O3', *New Journal Of Physics*, 20, 095006 (2018)

22. A. Seri, G. Corrielli, D. Lago-Rivera, A. Lenhard, **H. de Riedmatten**, R. Osellame, and M. Mazzera, 'Laser-written integrated platform for quantum storage of heralded single photons', *Optica*, 5, 8, 934 (2018)

23. C. Abellan *et al*, The Big Bell Test collaboration, 'Challenging local realism with human choices', *Nature*, 557, 7704, 212 (2018).

24. N. Maring, D. Lago-Rivera, A. Lenhard, G. Heinze and **H. de Riedmatten**, 'Quantum frequency conversion of memory-compatible single photons from 606 nm to the telecom C-band', *Optica*, 5, 507 (2018).

25. P. Farrera, G. Heinze G and **H. de Riedmatten** ´*Entanglement between a Photonic Time-Bin Qubit and a Collective Atomic Spin Excitation* ´, Phys. Rev. Lett. **120**, 100501 (2018)

26. Daniel Rieländer, Andreas Lenhard, Osvaldo Jimenez, Alejandro Máttar, Daniel Cavalcanti, Margherita Mazzera, Antonio Acín and **Hugues de Riedmatten**, *Frequency-Bin Entanglement of Ultra-Narrow Band Non-Degenerate Photon Pairs*, arXiv:1707.02837, Quantum Sci. Technol., 3. 014007 (2018).

27. Nicolas Maring, Pau Farrera, Kutlu Kutluer, Margherita Mazzera, Georg Heinze and **Hugues de Riedmatten**, Photonic Quantum State Transfer between a cold atomic gas and a crystal, Nature **551**, 485 (2017)

28. Kutlu Kutluer, Margherita Mazzera, and **Hugues de Riedmatten**, *Solid-State Source of Nonclassical Photon Pairs with Embedded Multimode Quantum Memory,* Phys. Rev. Lett. 118, 210502 (2017), selected as Editors Suggestion and as a Viewpoint in Physics (J.Nunn)

29. Alessandro Seri, Andreas Lenhard, Daniel Rieländer, Mustafa Gündoğan, Patrick M. Ledingham, Margherita Mazzera, and **Hugues de Riedmatten**, *Quantum Correlations between Single Telecom Photons and a Multimode On-Demand Solid-State Quantum Memory,* Phys. Rev. X 7, 021028 (2017), selected as Editors Suggestion and as a Viewpoint in Physics (J.Nunn)

30. Emanuele Distante, Pau Farrera, Auxiliadora Padrón-Brito, David Paredes-Barato, Georg Heinze & **Hugues de Riedmatten**, *Storing single photons emitted by a quantum memory on a highly excited Rydberg state,* Nature Communications 8, 14072 (2017)

31. Daniel Rieländer, Andreas Lenhard, Margherita Mazzera, **Hugues de Riedmatten**, *Cavity enhanced telecom heralded single photons for spin-wave solid state quantum memories*, New J. Phys. 18 123013 (2016)

32. Pau Farrera, Georg Heinze, Boris Albrecht, Melvyn Ho, Matías Chávez, Colin Teo, Nicolas Sangouard & **Hugues de Riedmatten**, *Generation of single photons with highly tunable wave shape from a cold atomic ensemble*, Nature Communications 7, 13556 (2016)

33. Pau Farrera, Nicolas Maring, Boris Albrecht, Georg Heinze, and **Hugues de Riedmatten**, *Nonclassical correlations between a C-band telecom photon and a stored spin-wave*
Optica. **3**, 1019 (2016)

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C.W. Chou, S.V. Polyakov, D. Felinto, **H. de Riedmatten**, S.J. van Enk, H.J. Kimble, *Long Distance Quantum Communication with Atomic Ensembles*, Quantum Information with continuous variables of atoms and light, Eds.: N. Cerf, G. Leuchs, E. Polzik (2007),

Hugues de Riedmatten and Mikael Afzelius, *Quantum Light Storage in Solid State Atomic Ensembles*, "Engineering the Atom-Photon Interaction" published by Springer in 2015, edited by A. Predojevic and M. W. Mitchell

International Conferences:

Selected invited talks:

I have given over 80 talks, including in national and international conferences, and as invited seminars in various universities. Below is a selection of the most important **invited** talks in international conferences.

1. *Quantum memories for Quantum repeaters*, Keynote talk at the INSQT workshop on Space Quantum Internet, Berlin, Germany, August 30th 2023

2. *Prospects for a quantum repeater*, Keynote talk at Inside Quantum Technology Europe, The Hague, NL, March 14th 2023

3. *Quantum Networking with rare-earth based quantum nodes*, invited talk at Quantum 2.0 Conference, Boston, MA, USA, June 13th 2022

4. *Entangling remote Quantum Repeater Nodes*, invited talk at the APS March meeting, Chicago, March 14th 2022 (talk given online)

5. *Quantum Communication: Recent progress on quantum repeater nodes,* Plenary talk at the 2nd European Quantum Technologies Virtual Conference (EQTC), 30 Nov, 2021

6. *Quantum Nodes for Quantum Repeaters*, Quantum Science Seminar, online, Invited talk, 14 Jan, 2021

7. *Photonic Quantum Memories and Interfaces*, Invited Focus Talk at the first DPG fall meeting, September 25th 2019, Freiburg, Germany

8. *Linking hybrid quantum nodes with single photons",* invited talk at the symposium "Hybrid Approaches to Quantum-Information Processing", Copenhaguen, Denmark, September 18-19 2018

9. *Quantum Communication between disparate quantum nodes,* keynote talk at the conference The Quantum Internet; Charting the critical path, June 21-23, 2018, Toronto, Canada

10. *Photonic Quantum State transfer between disparate quantum nodes,* Quantum Networks – from building blocks to applications, February 6th 2018, Bad Honnef, Germany

11. *Solid-state spin-wave quantum memories for single photons*, Photonics West, January 28th-February 2nd 2017, San-Francisco, USA

12. *Quantum Correlation between single photons and spin wave in a solid*, QCMC 2016, Singapore, July 7th 2016

13. *Quantum Repeaters,* Tutorial talk at QCrypt 2015, Tokyo, Japan, 28.09 -02.10 2015

14. *Connecting quantum memories to the telecom network***,** Frontiers in Optics 2014, Tucson (AZ), October 22nd 2014

15. *Waveguide Quantum Frequency Conversion of Heralded Single Photons emitted by Rb Quantum Memories to Telecom Wavelengths*, Physics of Quantum Electronics (PQE2014), Snowbird, Utah, January 8th 2014

16. *Ensemble based quantum memories for light*, **plenary** talk given at the 10th meeting of the Spanish optical society X-RNO, Zaragoza, Spain, September 6th 2012

17. *Solid State Quantum Light Matter Interface for Photonic Polarization Qubits*, Photonics North 2012, Montreal, Canada, June 7th 2012

18. *Optical Quantum memories*, **tutorial** given at the first colloquia of the French Groupe de Recherche-Quantum information, foundations and applications (GDR-IQFA), Nice, France , March 24th 2011

19. *Solid state quantum memories for quantum repeaters*, CLEO/QELS 2010 , San Jose, CA, USA, 19th of May 2010

20. *A solid state light matter interface at the single photon level*, 39th Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP 08) of APS; College State, PA, USA, May 30, 2008

21. *Towards multimode quantum memories with atomic ensembles in the solid state,* International Conference on Quantum Information, Rochester, NY, USA, June 15 2007

Invited Seminars

1. **Hugues de Riedmatten,** *Quantum Nodes for Quantum repeaters*, Invited seminar given at KTH, Stockholm, Sweden, September 26th 2023

2. **Hugues de Riedmatten**, *Quantum Nodes for Quantum repeaters*, Invited Colloquium at Max Planck Institute for Quantum Optics (MPQ), Garching, Germany, February 14th 2023

3. **Hugues de Riedmatten**, *Linking Quantum Nodes for Quantum Repeaters, invited seminar at* Quantum Research Center Abu Dhabi, online, 30 Aug, 2021

4. **Hugues de Riedmatten**, *Quantum Communication between Disparate Quantum Network Nodes*, invited seminar at Niels Bohr Institute, Copenhaguen, Denmark, May 31st 2018

5. **Hugues de Riedmatten,** *Spin-Wave Quantum Memories for Single Photon Storage and Generation*, invited seminar at the University of Cambridge, May 15t 2017, Cambridge, UK

6. **Hugues de Riedmatten**, *Narrow-Band Quantum Light Sources for Quantum Memories*, invited seminar at the Max-Planck Institute for the Science of Light, February, 17th 2017, Erlangen, Germany

7. **Hugues de Riedmatten**, Invited seminar at the University of Basel, May 5th 2015

8. **H de Riedmatten**, *Quantum memories based on atomic ensembles: from laser cooled gases to doped solids*, invited Seminar at Laboratoire Aimé Cotton, University of Paris Sud, Orsay France, June 11 2013, invited by Thierry Chanelière.

9. **H de Riedmatten**, *Recent progress in quantum optics with atomic ensembles at ICFO*, seminar presented at the University of Geneva, April 4th 2012, Geneva, Switzerland. Invited by Mikael Afzelius

10. **H. de Riedmatten**, *Quantum Information Storage in Rare-earth doped solids*, seminar given at the Federal University of Pernambuco, Recife, Brazil, February 17th 2011, invited by Daniel Felinto

11. **H de Riedmatten**, *Quantum memories with solid state atomic ensembles*, seminar given at the University of Nice, France, 30th of June 2010, Invited by Sébastien Tanzilli

12. **H. de Riedmatten,** *Quantum memories based on solid state atomic ensembles***,** seminar given at the Institute for Quantum Information, California Institute of Technology, USA, May 25 2010, invited by Jeff Kimble

13. **H. de Riedmatten,** *Ensemble based Quantum Memories for Quantum Networks***,** seminar presented at the Institut for Photonic Sciences (ICFO), Barcelona, Spain, 13th of July 2009, Invited by Antonio Acin.

14. **H. de Riedmatten,** *Quantum Memories for Quantum Networks***,** seminar presented at the Vienna University of Technology, Vienna, Austria, 19th of June 2009, Invited by Jörg Schmiedmayer

15. **H. de Riedmatten**, *Solid state light matter interfaces*, seminar presented at the Laboratoire des phénomènes et matériaux quantiques (MPQ), University of Paris 7, France, 18th of September 2008, invited by Nicolas Sangouard

16. **H. de Riedmatten**, *Photonic entanglement in optical fibers: from long distance quantum teleportation to high dimensional Hilbert space*, seminar presented at the University of California Santa-Barbara, USA, 12th of January 2004, invited by Dirk Bouwmeester

17. **H. de Riedmatten,** *Photonic entanglement in optical fibers: from long distance quantum teleportation to high dimensional Hilbert space*, seminar presented at the Institut de Ciènces Fotòniques (ICFO), Barcelona, Spain, 9th of October 2003, invited by Lluis Torner

Talks in international conferences.

Below is a full list of talks given in international conferences

1. **Hugues de Riedmatten**, *Quantum Networking with rare-earth based quantum nodes,* invited talk at the European Quantum Technology Conference 2023, Hannover, Oct 20th 2023.

2. **Hugues de Riedmatten**, *Quantum memories for Quantum repeaters*, Keynote talk at the INSQT workshop on Space Quantum Internet, Berlin, Germany, August 30th 2023

3. **Hugues de Riedmatten**, *Quantum networking with solid-state based quantum repeater nodes,* invited talk at Quantum Matter 2023, Madrid, May 25th 2023.

4. ***Hugues de Riedmatten**, Quantum Networking with rare-earth-based quantum nodes,* invited talk at Bristol Quantum Information Technology workshop, Bristol, UK, April 27th 2023

5. **Hugues de Riedmatten**, *Prospects for a quantum repeater,* Keynote talk at Inside Quantum Technology Europe, The Hague, NL, March 14th 2023

6. **Hugues de Riedmatten,** *Quantum Internet: towards continental distances***, invited** talk and panelist at Puzzle X, Barcelona, 15.11.2022

7. **Hugues de Riedmatten**, Quantum memories in rare-earth doped solids, Invited talk at the Thales Quantum Memory workshop, 08.11.2022, Paris, France

8. **Hugues de Riedmatten,** *Quantum Networking with rare-earth based quantum nodes,* Invited talk at the Quantum 2.0 Conference, Boston, MA, USA, June 13th 2022

9. **Hugues de Riedmatten,** *Quantum Networking with rare-earth based quantum nodes,* Invited talk at the Heraeus Seminar in Photonic Quantum Technologies, Bad Honnef, Germany, March 18th 2022

10. **Hugues de Riedmatten**, *Entangling remote Quantum Repeater Nodes,* invited talk at the APS March meeting, Chicago, March 14th 2022 (talk given online)

11. **Hugues de Riedmatten**, *Towards Quantum Repeaters,* invited talk at IQT-Europe, The Hague, Febrary 22nd, 2022 (talk given online)

12. **Hugues de Riedmatten**, *Quantum Communication: Recent progress on quantum repeater nodes,* Plenary talk at the 2nd European Quantum Technologies Virtual Conference (EQTC), 30 Nov, 2021.

13. **Hugues de Riedmatten**, *Entangling solid-state quantum repeater nodes,* invited talk at Quantum 2021, Bilbao , 24 Nov, 2021.

14. **Hugues de Riedmatten**, *Linking quantum repeater nodes,* Invited talk at the International Conference on Quantum Communication, Paris (ICQOM 2021) , 20 Oct, 2021

15. **Hugues de Riedmatten**, *Entangling Solid-State Quantum Repeater Nodes,* Keynote talk at the Italian Quantum Information Conference, online (IQIS2021), 15 Oct, 2021

16. **Hugues de Riedmatten**, *Linking Quantum Nodes for Quantum Repeaters,* invited talk *at* Light-Matter Interfaces for Quantum Enhanced Technologies (LIMQUET 2021), Oxford , 22 Sep, 2021 (talk given online)

17. **Hugues de Riedmatten**, *Entanglement between multimode solid-state quantum memories* , invited talk at Photonics North, online, 1 Jun, 2021

18. **Hugues de Riedmatten**, *Linking Quantum Nodes for Quantum Repeaters*, invited talk at the ICFO-IMPRS workshop, online, 26 Mar, 2021

19. **Hugues de Riedmatten,** *Quantum Nodes for Quantum Repeaters*, Quantum Science Seminar, online, Invited talk, 14 Jan, 2021

20. **Hugues de Riedmatten,** *Multiplexed quantum memories for quantum repeaters* invited talk at the QLinkX consortium meeting**,** 25 May, 2020 **,** online

21. **H de Riedmatten,** *Quantum Repeaters*, Invited talk at Inside Quantum Technology Europe**,** The Future of Quantum Computing, Quantum Networking and Quantum Sensors, October 29-30, 2019, The Hague, NL

22. **H. de Riedmatten,** *Photonic Quantum Memories and Interfaces*, Invited Focus Talk at the first DPG fall meeting, September 25th 2019, Freiburg, Germany

23. **H. de Riedmatten,** *Towards Quantum Networks with Rare-earth ions in the solid-state,* Invited talk at the SQUARE summer school, July 10th 2019, Kalrsruhe, Germany

22. **H. de Riedmatten,** *Integrated Multiplexed Photonic Quantum Memories,* invited talk at the Central European Workshop in Quantum Optics (CEWQO 2019), June 5th 2019, Paderborn, Germany.

23. **Hugues de Riedmatten,** *Multiplexed Spin Photon Interfaces in Solid State Quantum Memories,* invited talk at the conference Quantum Information and Measurements (QIM2019), April 5th 2019, Rome, Italy

24. **Hugues de Riedmatten,** *Quantum Memories for Quantum Repeaters,* Invited tutorial talk at the ICFO-IMPRS workshop, March 22nd 2019, Barcelona, Spain

24. **Hugues de Riedmatten,** *Linking hybrid quantum nodes with single photons,* invited talk at the symposium "Hybrid Approaches to Quantum-Information Processing", Copenhaguen, Denmark, September 18-19 2018

25. **Hugues de Riedmatten,** *Photonic Quantum State transfer between disparate quantum nodes,* invited talk at the conference "Photon 2018", Birmingham, UK, September 4-6 2018

26. **Hugues de Riedmatten,** *Quantum Communication between disparate quantum nodes*, **keynote** talk at the conference The Quantum Internet; Charting the critical path, June 21-23, 2018, Toronto, Canada

27. **Hugues de Riedmatten,** *Quantum State transfer between disparate quantum nodes*, invited talk at the conference Quantum Optics 2018, March 1st 2018, Obergurgl, Austria

28. Nicolas Maring, Pau Farrera, Kutlu Kutluer, Margherita Mazzera, Georg Heinze and **H de Riedmatten**, *Photonic Quantum State transfer between disparate quantum nodes*, **invited** talk at the conference Quantum Networks – from building blocks to applications, February 6th 2018, Bad Honnef, Germany

29. **Hugues de Riedmatten**, *Solid-state spin-wave quantum memories for quantum repeaters*, **invited** talk at the Quantum Information Workshop 2017, Hong-Kong, July 9th 2017

30. **Hugues de Riedmatten,** *Creating Single Spin-waves in Rare-Earth doped Crystals,* invited talk at the Optomagnonics Workshop, June 27 2017, Max Planck Institute for the Science of Light, Erlangen, Germany

31. **Hugues de Riedmatten**, *Solid-State Quantum Light-Matter Interfaces with Laser-Written Waveguides,* **invited talk** at the Workshop on Quantum Light-Matter Interactions in Low dimensions, May 4-7, Castelldefels, Spain

32. **Hugues de Riedmatten**, *Solid-state spin-wave quantum memories for single photons,* **Invited** talk at Photonics West, January 28th-February 2nd 2017, San-Francisco, USA

33. **Hugues de Riedmatten,** *Quantum Correlation between single photons and spin wave in a solid***.** Invited Talk at QCMC 2016, Singapore, July 7th 2016

34. **Hugues de Riedmatten**, *Photonic Solid State Spin-wave Quantum Memories*, **invited** talk SFB FoQus, Vienna, Austria, April 7th 2016

35. **Hugues de Riedmatten,** *Quantum Frequency Conversion for Quantum Memories***, invited** talk at the conference on Spectral and Spatial engineering of Quantum Light (SSEQL2016), Warsaw, Poland April 1st 2016

36. **Hugues de Riedmatten**, *Photonic Quantum memories for Quantum Information Networks*, Invited talk at the 20th annual Symposium of the IEEE Photonics Benelux Chapter, Brussels, February 9th 2016

37. **Hugues de Riedmatten**, Quantum Repeaters, Tutorial talk at QCrypt 2015, Tokyo, Japan, 28.09 -02.10 2015

38. **Hugues de Riedmatten**, *Interfacing quantum memories to the telecommunication network*, Invited talk at Frontiers in Optics 2014, Tucson, AZ, USA, October 22 2014.

39. B. Albrecht, P.Farrera, X. Fernandez Gonzalvo, M.Cristiani and **H de Riedmatten**, *Waveguide Quantum Frequency Conversion of Heralded Single Photons emitted by Rubidium Quantum Memories to Telecom Wavelengths*, invited talk given at the 44th Winter Colloquium on the Physics of Quantum Electronics (PQE2014), Snowbird, Utah, January 8th 2014

40. **H. de Riedmatten**, *Quantum communication with solid state atomic ensembles,* invited talk at the Asia-Pacific Conference and Workshop on Quantum Information Science 2013, Seoul, Korea, December 17 2013

41. D. Rieländer, K. Kutluer, M. Gündoğan, J. Fekete, P. M. Ledingham, M. Mazzera, M. Cristiani and **H. de Riedmatten**, *Quantum storage of ultra-narrow band heralded single photons in a solid state atomic ensemble,* invited talk at the Informal Workshop on Atomic Ensemble, Paris, November 4 2013

42. D. Rieländer, M. Gündoğan, K. Kutluer, J. Fekete, P.M. Ledingham, M. Mazzera, M. Cristiani, and **H. de Riedmatten**, *Quantum storage of ultra-narrow band heralded single photons in a doped solid,* invited talk at LPHYS 2013, Prague, Czech Republic, July 15 2013

43. B. Albrecht, X. Fernandez, P. Farrera, M. Cristiani, **H. de Riedmatten**, *Waveguide quantum frequency conversion of single photons emitted by atomic quantum memories to telecommunication wavelengths,* invited talk at LPHYS 2013, Prague, Czech Republic, July 16 2013

44. **H de Riedmatten**, *Quantum light source compatible with solid state quantum memories*, invited talk given at Quantum Optics VI, Piriapolis, Uruguay, November 15th 2012

45. **H. de Riedmatten,** *Ensemble based quantum memories for light*, invited **plenary** talk given at the 10th meeting of the Spanish optical society X-RNO, Zaragoza, Spain, September 6th 2012

46. **H. de Riedmatten,** *Photon pair sources compatible with solid state quantum memories,* talk given at the Quantum Memory Workshop, Calgary, Canada, July 25th 2012

47. **H. de Riedmatten**, *A solid state quantum light matter interface for polarization qubits*, invited talk given a LPHYS 2012, Calgary, Canada, July 23rd 2012

48. **H. de Riedmatten**, *Quantum light-matter interfaces with atomic ensembles in the solid state*, invited talk presented at Quantum Interface Fest, Invitational Workshop on Quantum Technology with Atomic Ensembles, ICFO, Barcelona, Spain, June 28 2012

49. **H. de Riedmatten,** *Solid State Quantum Light Matter Interface for Photonic Polarization Qubits*, invited talk given at Photonics North 2012, Montreal, Canada, June 7th 2012

50. **H. de Riedmatten**, *Quantum storage of polarization qubits in a solid*. invited talk given at the Greatest Inspiration Surely Is Nonlocality 60th Workshop, Val d'Illiez, Switzerland, May 31st 2012

51. **H. de Riedmatten**, *Towards long lived solid state quantum memory for single photon,* Kick off meeting of the CHIST-ERA project QScale, Paris, France, October 10th 2011

52. **H de Riedmatten**, *Optical Quantum memories*, **invited** tutorial given at the first colloquia of the French Groupe de Recherche- Quantum information, foundations and applications (GDR-IQFA), Nice, France , March 24th 2011

53. **H de Riedmatten**, *Quantum storage of photonic entanglement in a crystal*, talk presented at the 2nd international workshop on Fundamentals of Light-Matter interaction, Recife, Brazil, February 14th 2011

54. **H de Riedmatten**, *Quantum Storage of Photonic Entanglement in a solid state atomic ensemble*, **invited** talk presented at Ensemble-Fest, Invitational Workshop on Quantum Technology with Atomic Ensembles, ICFO, Barcelona, Spain, January 14th 2011

55. **H. de Riedmatten**, Ensemble based photonic quantum memories, **invited** tutorial given at the ICFO- Max Plack Institute of quantum optics workshop on "New Trends in Quantum Information and Quantum Optics", St-Benet, Spain, December 14th 2010

56. **H. de Riedmatten**, *Quantum storage of photonic entanglement in a crystal*, talk presented at the EMALI 2010 conference, Barcelona, 18th of September 2010,

57. **H. de Riedmatten**, *Solid state quantum memories for quantum repeaters*, **invited** talk to be given at the Conference on Lasers and Electro-Optics and the Quantum Electronics and Laser Science Conference (CLEO/QELS 2010) , San Jose, CA, USA, 19th of May 2010

58. **H. de Riedmatten**, *Narrow band quantum light sources and coherent optical memories using guided wave technology*, **invited** talk given at the Heraeus Seminar on Quantum communication based on integrated optics, Bad Honnef, Germany, March 22-25 2010.

59. **H. de Riedmatten**, *Solid state quantum memories for quantum repeaters*, **invited** talk at the annual meeting of the spanish Consolider Ingenio 2010 project : QOIT, Quantum Optics and Information Technologies, Valencia, Spain, February 04, 2010

60. **H. de Riedmatten**, B.Lauritzen, J. Minář, M.Azelius, C.Simon and N.Gisin, *Solid state quantum memories for photons at telecommunication wavelengths*, **invited** talk at the 18th workshop of Laser Physics (LPHYS09), Barcelona, Spain, July 17, 2009

61. **H. de Riedmatten**, B. Lauritzen, J. Minář, I. Usmani, C. Clausen, M. Afzelius, C.Simon, N. Sangouard, N. Gisin, *Photon Echo Based Quantum Memories*, talk given at the workshop Approaches to Quantum Memories, Oxford, UK May 14, 2009

62. **H. de Riedmatten**, I. Usmani, B. Lauritzen, J. Minář, C. Clausen, R. Locher, M. Afzelius, C.Simon, N. Sangouard, N. Gisin, *Solid State Quantum Memories for Quantum Repeaters*, talk given at the QSIT meeting, Arosa, Switzerland, January 22, 2009

63. **H. de Riedmatten**, *Quantum information: quantum teleportation, Bell inequalities and quantum memories*, **invited** talk given at the first transalpine conference on nanoscience and nanotechnologies (Transalp-Nano 08), Lyon, France, October 28 2008

64. **H. de Riedmatten**, B. Lauritzen, I. Usmani, M. Staudt, C. Ottaviani, C. Simon, M. Afzelius, and N. Gisin, *Solid state quantum memories for quantum repeaters*, **invited** talk at the 17th workshop of Laser Physics (LPHYS08), Trondheim, Norway, July 2, 2008

65. **H. de Riedmatten**, A solid *state light matter interface at the single photon level*, **invited** talk at the 39th Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP 08) of the American Physical Society; College State, PA, USA, May 30, 2008

66. **H. de Riedmatten,** B. Lauritzen, M. Staudt, J., Minář , S. Hastings-Simon, C. Ottaviani, C. Simon, M Afzelius and N. Gisin, *Quantum storage in solid state atomic ensembles*, **invited** talk at the meeting of the Swiss Physical Society, Geneva, March 27, Geneva, Switzerland

67. **H. de Riedmatten,** C. Simon, S. Hastings-Simon, M. Staudt, J. Minář, B. Lauritzen, N. Sangouard, M. Afzelius and N. Gisin, *Towards multimode quantum memories with atomic ensembles in the solid state*, **invited** talk presented at the International Conference on Quantum Information, Rochester, NY, USA, June 15 2007

68. **H. de Riedmatten**, C.W.Chou, D.Felinto, S. Polyakov, S.J. van Enk and H.J.Kimble, *Measurement induced entanglement for excitations stored in remote atomic ensembles*, **invited** talk presented at the Conference on Lasers and Electro-Optics and the Quantum Electronics and Laser Science Conference (CLEO/QELS 2006) , Long Beach, CA, USA, 22nd of May 2006

69. **H. de Riedmatten**, C.W.Chou, D.Felinto, S. Polyakov, S.J. van Enk and H.J. Kimble *Heralded entanglement between remote atomic ensembles*, exposé présenté au 37th Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP 06) of the American Physical Society; Knoxville, Tenessee, USA, May 18, 2006

70. **H. de Riedmatten**, D.Felinto, C.W.Chou, S. Polyakov and H.J.Kimble, Decoherence for a quantum memory in an ensemble of cold atoms, contributed talk presented at the conference Quantum Physics of Nature (2005) (QUPON 2005) and 6th European QIPC workshop, Vienna, Austria, 22nd of May 2005.

71. **H. de Riedmatten**, I.Marcikic, J.van Houwelingen, W.Tittel, H.Zbinden, and N.Gisin, *Entanglement swapping with time-bin entangled qubits at telecommunication wavelengths*, post-deadline talk presented at the Conference on Lasers and Electro-Optics and the International Quantum Electronics Conference (CLEO/IQEC 2004) , San-Fransisco, USA, 20th of May 2004

72. **H de Riedmatten**, I.Marcikic, W.Tittel, H.Zbinden and N.Gisin, *Tailoring photonic entanglement in high dimensional Hilbert spaces*, contributed talk presented at the 4th European Commission QIPC workshop, Oxford, UK, 15th of July 2003

73. **H. de Riedmatten**, I.Marcikic, W.Tittel, H.Zbinden, D.Collins and N.Gisin, *Long distance quantum teleportation in a quantum relay configuration*, post-deadline talk presented at the European Conference on Lasers and Electro-Optics and the European Quantum Electronics Conference (CLEO/Europe—EQEC 2003) , Munich (Germany), 26th of June 2003

74. **H. de Riedmatten**, I. Marcikic, H. Zbinden and N.Gisin, *Creating high dimensional entanglement using mode-locked lasers*, contributed talk presented at the 6th international conference on Quantum Communication, Measurement and Computing (QCMC02), Boston, USA 26th of July 2002

+ Several talks presented in the framework of European projects in internal meetings as well as in review meetings, and several posters presented in international conferences.

Outreach

H. de Riedmatten, *Quantum correlations: from fundamental science to applications*,
Invited popular talk given at the University for senior citizen, Geneva, November 10 2009

Conference proceedings

1. Distante, E., Farrera, P.; Padron-Brito, A.; et al., *Storage and retrieval of a single photon emitted by a Quantum Memory on a highly excited Rydberg state*, Conference on Lasers and Electro-Optics Europe / European Quantum Electronics Conference (CLEO/Europe-EQEC) , Munich, Germany , June 25-29, 2017

2. Kutluer, K.; Mazzera, M.; **de Riedmatten, Hugues**, *A Solid-State Source for Non-classical Photon Pairs with Controllable Delay*, CLEO/Europe-EQEC, Munich, Germany, June 25-29, 2017

3. Rielander, D.; Lenhard, A.; Jiminez, O.; et al., *Frequency-Bin Entanglement of Narrowband Photon Pairs*, CLEO/Europe-EQEC, Munich, Germany, June 25-29, 2017

4. Seri, A.; Lenhard, A.; Rielander, D.; et al., *Quantum Correlations Between Single Telecom Photons and a Multimode On-Demand Solid-State Quantum Memory*, CLEO/Europe-EQEC, Munich, Germany, June 25-29, 2017

5. Mazzera, M.; Corrielli, Giacomo; Seri, Alessandro; et al., *An Integrated Optical Memory Based on Laser Written Waveguides*, Conference on Lasers and Electro-Optics (CLEO), San Jose, CA Date: June 05-10, 2016

6. Bussières, F.; Clausen, C.; Usmani, I.; et al., *Quantum memories with rare-earth-ion doped crystals*, 10th Conference on Lasers and Electro-Optics Pacific Rim (CLEO-PR), Kyoto, JAPAN June 30-JUL 04, 2013

7. Rielaender, D.; Fekete, J.; Cristiani, M.; et al., *Ultra-narrowband photon pair source for solid state quantum memories based on widely non-degenerate cavity-enhanced downconversion*, CLEO/Europe-IQEC, Munich, Germany, May 12-16, 2013

8. **de Riedmatten**, H.; Usmani, I.; Lauritzen, B.; et al., *Solid state quantum memories for quantum repeaters*, CLEO-QELS, San Jose, CA, MAY 16-21, 2010

9. K.S. Choi, J. Laurat, H. Deng, C.W Chou; **H. de Riedmatten**, D. Felinto and H.J.Kimble, *Generation and Distribution of Heralded Entanglement between Atomic Ensembles for Scalable Quantum Networks*, CLEO-QELS 2008 page: 3510

10. J. Laurat, C.W Chou; H. Deng.; K.S. Choi, **H. de Riedmatten**, D. Felinto and H.J.Kimble, *Quantum networking with atomic ensembles in the single excitation regime*, CLEO/Europe - IQEC 2007, Page: 992

11. **H. de Riedmatten**, M. Halder, J.A.W van Houwelingen, S. Tanzilli, A. Beveratos, W. Tittel, H. Zbinden, and N Gisin, *Long distance entanglement swapping and perspectives for a real quantum relay*, European Quantum Electronics Conference, Munich, Germany 12-17 June 2005 (IEEE Cat. No. 05TH8796), Page: 316

12. **H.de Riedmatten,** I.Marcikic, H. Zbinden and N. Gisin, *Creating High dimensional entanglement using mode-locked lasers*, proceedings of 6th International Conference on Quantum Communication, Measurement and Computing (QCMC02), edited by J.H.Shapiro and O.Hirota, Rinton Press (2003)

13. N.Gisin, I.Marcikic**, H.de Riedmatten**, W.Tittel and N.Gisin, *Quantum communication with time-bin entangled photons: Long distance quantum teleportation and quantum repeaters*, proceedings of 6th International Conference on Quantum Communication, Measurement and Computing (QCMC02), edited by J.H.Shapiro and O.Hirota, Rinton Press (2003)

14. I.Marcikic**, H.de Riedmatten**, W.Tittel, V.Scarani, A.Acin, S.Tanzilli, H.Zbinden and N.Gisin, *Studies of femtosecond time-bin entangled qubits for quantum communications*, Fortschr. Phys. **51**, 428 (2003), Proceedings of the Conference Quantum Interferometry IV, Trieste, Italy, 11-18 March 2002

15. Daniel B. Ostrowsky, Pascal A. Baldi, Marc P. De Micheli, S. Tanzilli, **H. De Riedmatten**, W. Tittel, Hugo Zbinden, and Nicolas Gisin, *Introduction to guided-wave quantum optics (GWQO): science, technology, and magic*, Proc. SPIE Int. Soc. Opt. Eng. **4417**, 12 (2001)

Monographs

Hugues de Riedmatten, *Photonic entanglement in optical fibers : from long distance quantum teleportation to high-dimensional Hilbert spaces*, PhD thesis (n° 3480), Group of Applied Physics, University of Geneva (2003)
Hugues de Riedmatten, *Study of relaxation phenomena in magnetic nanostructures using NMR*, Master thesis, Institut of experimental physics, Swiss federal Institute of Technology, Lausanne (EPFL) (1999)