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Deliverable Description

This report summarizes dissemination activities accomplished by the NanOQTech consortium during the three-year period: from October 1st, 2016 to September 30th, 2019. The impact of the different actions in the targeted audiences is discussed based on indicators results. Dissemination objectives for the immediate period following the project's end are also exposed.

Current status of disseminations

The current status of all dissemination actions planned for NanOQTech in “D4.6: Dissemination and Exploitation Plan”, is given in Table 1:

Table 1: Current status of dissemination actions. All numbers are estimated from the different indicators considered for each action and were updated for the last time before submission of this report. Further details per action are given in the following section.

Action	Leading partner	Targeted audience	Current status
Publication of results in peer-reviewed journals	All	Scientific community	15 publications 98 citations
Website	CNRS-CP	Scientific community, industrials, institutional actors, general public	47 news publications 1924 visits from 01/08/2017 (starting date of analysis)
Newsletter	CNRS-CP	Scientific community, industrials, institutional actors, general public	4 newsletters published 1 in preparation
Events	CNRS-CP	Scientific community, industrials, institutional actors, general public	13 events organized 7 events attended 85 conferences attended
Social media	CNRS-CP	scientific community, industrials, institutional actors, general public	5 social media accounts. 72 publications in total
Leaflet	CNRS-CP	Scientific community, industrials, institutional actors, general public	~ 50 copies distributed
Logo	CNRS-CP	Scientific community, industrials, institutional actors, general public	Used > 100 times

Detailed description per action

Publication of scientific results in peer-reviewed journals

Up to the present NanOQTech has given rise to **15 publications** in peer reviewed journals. Details and statistics are given in Table 2. *Open access* versions of the manuscripts, as well as the corresponding data sets (when applicable) can be found in zenodo.org.

Table 2: List of publications by the consortium members with their associated impact metrics.

Title	Partners	Journal	Impact factor (2018)	Citations
Theory of subradiant states of a one-dimensional two-level atom chain (2019).	AU	<i>Phys. Rev. Lett.</i>	9.227	8
Rapid cooling of a strain-coupled oscillator by an optical phase-shift measurement (2019).	CNRS-IN CNRS-SY AU	<i>Phys. Rev. A</i>	2.907	0
Surface-plasmon launching by polariton superradiance (2019).	AU	<i>ACS Photonics</i>	7.143	1
Ultra thin Eu and Er-doped Y2O3 films with optimized optical properties for quantum technologies (2019).	CNRS-CP ICFO-NOE	<i>J. Phys. Chem. C</i>	4.309	0
Cavity-enhanced spectroscopy of a few ensemble in Eu ³⁺ : Y ₂ O ₃ (2018).	KIT CNRS-CP ICFO-QP	<i>New J. Phys.</i>	3.773	11
Dicke phase transition in a disordered emitter-graphene-plasmon system (2018).	AU	<i>Phys. Rev. A</i>	2.907	1
Multistate and multihypothesis discrimination with open quantum systems (2018).	AU	<i>Phys. Rev. A</i>	2.907	3
Monte-Carlo simulations of superradiant lasing (2018).	AU	<i>New J. Phys.</i>	3.773	4
Controlled size reduction of rare earth doped nanoparticles for optical quantum technologies (2018).	CNRS-CP	<i>RCS Advances</i>	3.049	1

All-optical control of long-lived nuclear spins rare-earth doped nanoparticles (2018)	CNRS-CP	<i>Nat. Commun.</i>	11.880	13
Recent Advances in Rare Earth Doped Inorganic Materials for Quantum Computing (2018).	CNRS-CP	<i>Z. Anorg. Allg. Chem.</i>	1.337	12
Dispersive coupling between light and a rare-earth-ion-doped mechanical resonator (2016)	CNRS-IN CNRS-SY AU	<i>Phys. Rev. A</i>	2.907	7
Optical line width broadening mechanisms at the 10 kHz level in Eu^{3+} : Y_2O_3 nanoparticles (2017).	CNRS-CP	<i>Nano Letters</i>	12.279	18
Nuclear spin coherence properties of $^{151}\text{Eu}^{3+}$ and $^{153}\text{Eu}^{3+}$ in a Y_2O_3 transparent ceramic (2017).	CNRS-CP	<i>J. Phys: Condens. Matter.</i>	2.711	9
Dispersive heterodyne probing method for laser frequency stabilization based on spectral hole burning in rare-earth doped crystals (2017).	CNRS-IN CNRS-SY CNRS-CP	<i>Opt. Expr.</i>	3.31	10

In addition, 5 articles are currently submitted or in print, listed below:

1. D. Serrano, C. Deshmukh, S. Liu, A. Ferrier, A. Tallaïre, P. Goldner, *Coherent optical and spin spectroscopy of nanoscale Pr^{3+} : Y_2O_3* , arXiv:1909.02260v1 (2019), accepted in Phys. Rev. B.
2. J. Benedikter, T. Moosmayer, M. Mader, T. Hümmer, D. Hunger, *Transverse-mode coupling effects in scanning cavity microscopy*, arXiv:1909.01210v1 (2019) submitted to New J. Phys.
3. K. Debnath, Y. Zhang, K. Mølmer, *Collective dynamics of inhomogeneously broadened emitters coupled to an optical cavity with narrow linewidth*, arXiv:1904.04877v1 (2019)
4. K. Debnath, A. Holm Kiilerich, A. Benseny, K. Mølmer, *Coherent spectral hole burning and qubit isolation by stimulated Raman adiabatic passage*, arXiv:1903.11929v1 (2019)
5. S. Welinski, A. Tiranov, M. Businger, A. Ferrier, M. Afzelius, and Philippe Goldner, *Coherence Time Extension by Large Scale Optical Spin Polarization in a Rare-Earth Doped Crystal*, submitted to Nature Commun. (2019)

Project website

The project's website, www.nanoqtech.eu has been the main communication platform for NanOQTech's activities. It is periodically updated with news from published papers, events, open positions, outreaching activities and other consortium activities like visits

between partners. So far, there are 57 news entries. Links to the open access manuscripts, accepted deliverables, registration forms for the newsletter and events organized by the consortium are provided in the website as well as direct links to the social media.

Visitor analytics are displayed in Figure 1, as extracted from the website host analytics service.

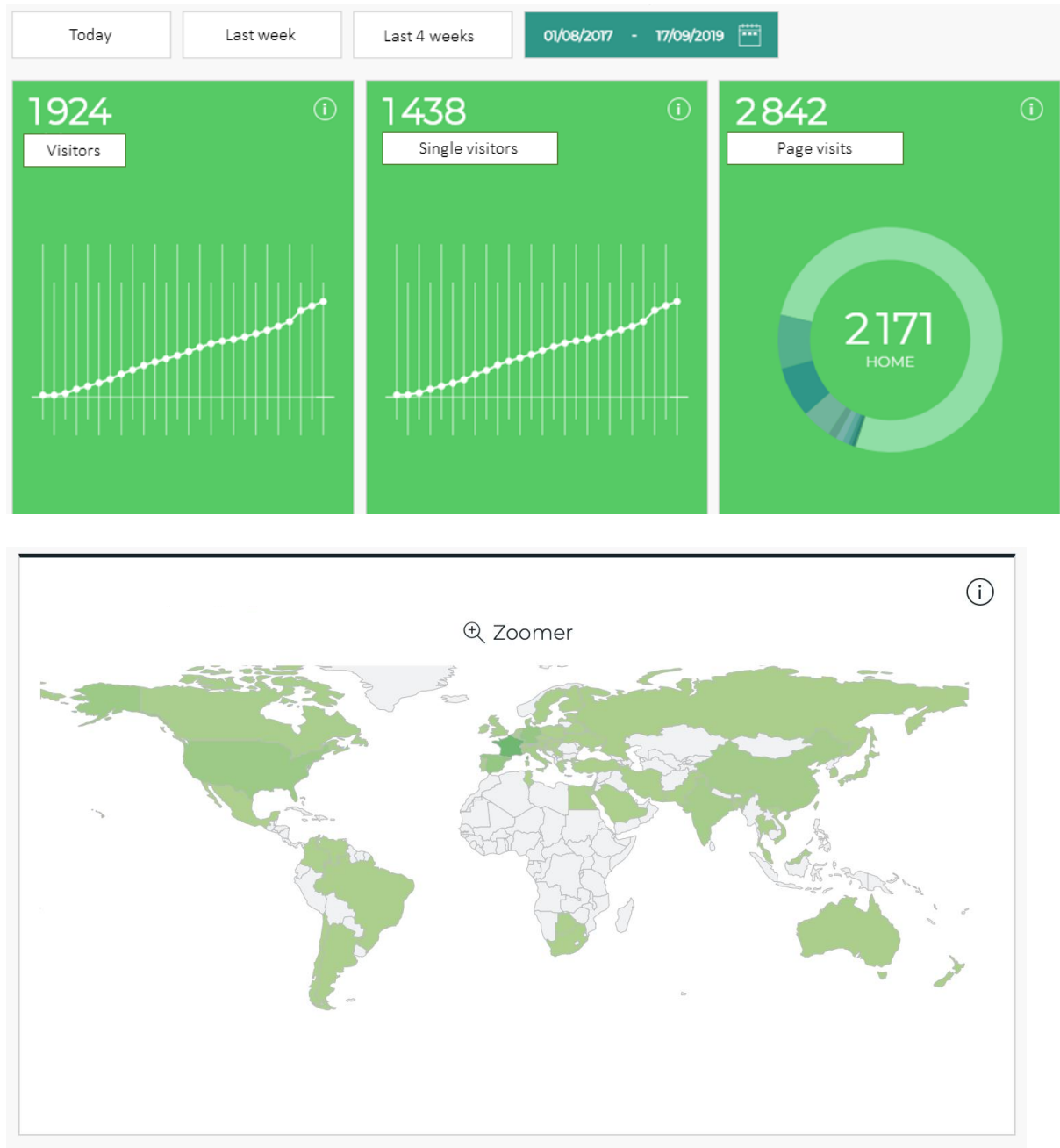


Figure 1: Visitor analytics from August 1, 2017 to September 15, 2019. The starting date corresponds to month 11 of the project, when analytics became available.

Based on these indicators, the project's website performance is rather satisfying. The number of visitors increased linearly by about 58 new visitors per month, and we register visitors coming from all continents, specially developed countries. We plan to keep the

website active as long as there will be project-related activities and results to be disseminated.

Newsletter

Up to date, we have published a total of 4 newsletters. Dates, contents and statistics are listed as follows:

- **Edition I:** June 2017 – 359 recipients, 462 views, 62 clicks.
 - NanoQTech presentation
 - Quantum technologies: from research laboratories to everyday life
 - Life of the project
 - Public events
 - Latest publications
- **Edition II:** March 2018 – 349 recipients, 476 views, 2000 clicks.
 - The quantum supremacy race
 - The European effort through the FET Flagship on quantum technologies
 - NanoQTech's actors: Pr. Hugues de Riedmatten, ICFO Barcelona (ICFO-QP)
 - Public events: Science Fair 2017
 - Latest publications
- **Edition III:** October 2018 – 333 recipients, 477 views, 541 clicks.
 - Playing quantum is now possible
 - New project: Scalable quantum nodes with rare-earth ions (SQUARE)
 - NanoQTech's actors: Dr. Shuping Liu, postdoctoral researcher at IRCP Paris (CNRS-CP)
 - Events: Science Fair 2018 & EOSAM 2018
 - Latest publications
- **Edition IV:** May 2019 – 326 recipients, 274 views, 39 clicks.
 - Quantum sensing and how it shall change the world
 - A Ph. D. thesis explained in 180 seconds
 - NanoQTech's actors: Dr. Klaas-Jan Tielrooij, ERC starting grant laureate, ICN2 Barcelona (formerly at ICFO-NOE)
 - Events: national French day of scientific training in chemistry
 - Latest publications

Analytics for the newsletter are shown in **Figure 2**. We observe a decreasing trend in the number of subscriptions and views. Edition II appeared as the most successful up to the present. The reason for the decrease remains however unclear to us. We cannot yet conclude if this is due to the contents in each edition and the interest that they rise, or rather to a general decreasing interest in the newsletter. Future plans for this action include a fifth edition which will be released shortly after the project's end. Continuation after the mentioned fifth edition is in principle not planned, unless observing a radical change in the interest trend.



Figure 3: Newsletter analytics. Date abbreviations are given in French as this is the original language of the host server. Data from June 2nd correspond to a test, the first edition was sent on July 3rd 2017.

Events

Public events organized during the three-year period are summarized in **Table 3**:

Table 3: List of public events.

Event	Dates	Location/ Partner	Description
Summer school	May 2-4, 2017	Paris (CNRS-CP)	Custom-designed training and exchange meeting centered on NanOQTech's topics.
Public conference	May 3, 2017	Paris (CNRS-CP/AU)	Presented by K. Moelmer (AU) under the title "The quantum computer" > 300 attendees, one of the largest audience for a general public talk at Chimie ParisTech graduate school.
Science fair	Oct 2016, 2017 and 2018	Paris (CNRS-CP)	The NanOQTech project had a stand at the local science fair, organized every year in October at Chimie Paristech.
"Kvantefysikken – atomernes vilde verden"	Oct 9, 2018	Aarhus (AU)	Public lecture in Danish at the Lakeside Theatre, Aarhus University, with live streaming to public showings in movie theatres and community centers in Denmark.
Teacher training on chemistry and spectroscopy	March 20, 2019	Paris (CNRS-CP)	Training for French middle school and high school teachers was organized with focus on NanOQTech's experiments.
Workshop and lab tour for adult education course	May 4, 2019	Karlsruhe (KIT)	Presentation on quantum technologies and lab tour for class of Adult Education Center VHS Raststatt.
Teacher training on Quantum Technologies	June 26, 2019	Karlsruhe (KIT)	Training for teachers with three scientific talks on quantum technologies plus extended lab tour.
Quantum Futur Academy	Aug 26, 2019	Karlsruhe (KIT)	Organization of a one-day program with three scientific and three industry talks on quantum technology plus lab tour.
Industrial Workshop	Sept 13, 2019	Barcelona (KEY)	The industrial workshop hosted several talks, a round table discussion, and a demo station.
"Quantum physics and quantum computers"	Jan 10, 2019	Aarhus (AU)	Outreach talk at Fudan University, Shanghai, China.

Quantum Movement (Bloom Festival)	May 16, 2019	Søndermarken (AU)	Copenhagen Public talk and performance with dancers Isabella Carroll and Samuel Rees from The Royal Ballet and cello soloist Kim Bak Dinitzen from The Royal Danish Orchestra.
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Events' attendance:

In terms of scientific communications, NanOQTech partners have presented 2 plenary, 50 invited and 16 contributed talks, 8 seminars/lectures as well as 12 posters in national and international conferences, workshops and seminars (see Annex I).

NanOQTech has also been present in the following outreaching events, meetings and trainings:

- EOSAM conference, European Projects special session, Delft, Oct. 2018.
- Annual international workshops on rare earth ions doped crystals for quantum technologies, Karlsruhe, 2017 & Geneva, 2018.
- Lund Laser Center Strategy day, Lund, 2018.
- Exploitation and transfer technology training, Paris, Jan. 2019.
- Forum 2019 : Valorisation FET & ERC of projets, Paris, June 2019.
- Lindau Nobel laureate Meeting, Lindau, July 2019.
- Lund Night of Culture, Lund, Sep. 2019.

Social media

We have created “NanOQTech” accounts on different social media, including the widely used Twitter, Facebook or Youtube, and more specific ones as Linkedin or Researchgate. The performance of the project's accounts in each media is given in Table 4:

Table 4: Social media indicators up to present.

Social media	Targeted audience	Current status
Twitter	General public	44 publications 117 followers
Facebook	General public	3 publications 7 followers
Youtube	General public	2 publications 161 views
Linkedin	Scientific community, Industrials, Institutional actors,	19 publications 32 members
Researchgate	Scientific community	11 followers 104 views

We conclude that with our current strategy, the highest impact is achieved with Twitter. Youtube appears as a very powerful platform for video contents, which we have probably not exploited enough, but which we believe can have important potential for the future. In this sense, both Twitter and Youtube accounts will remain open and active after the project's end. The Facebook account will be closed due to its low success rate. More specific social media like LinkedIn and Researchgate showed moderate performance. Despite, the groups will be left open after the project's end.

Leaflet

About 50 copies of the NanOQTech leaflet were distributed by partners during their attendance to scientific, outreach and industrial activities. The most effective impact seem to have been achieved when the leaflet was distributed during outreaching trainings as those listed in Table 3. Currently, new impressions of the leaflet are not planned, therefore, this media will be most likely stopped at the end of the project.

Logo

The NanOQTech logo was created at the very beginning of the project. It has been widely used by all scientific partners and we consider that it has fully succeeded in providing the project with a visual identity.

Open access

Up to the present, we have uploaded 14 research manuscripts, 8 datasets, 6 presentations and 5 posters into the repository zenodo.org which hosts the NanOQTech community. Among these 33 entries, 30 are now available in full open access and the 3 left remain temporarily embargoed. The open access strategy pursued during the project three-year period will be continued after month 36.

Dissemination after the project

An updated roadmap is shown in **Table 5**.

Table 5: Roadmap update for dissemination actions.

	NanOQTech contract			Post NanOQTech contract				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Publications								
Conferences								
Website								
Newsletter								
Events								
Social Media								
Leaflet								
Logo								

Modifications with respect to the original plan (D4.6: Dissemination and Exploitation Plan) have been motivated by the success rate observed for each action during the three-years period. As an example of modified actions, leaflet and newsletter are now planned to be stopped shortly after the project's end. In contrast, dissemination of NanOQTech's scientific results by conferences attendance is extended to a longer period than initially planned based on the increasing number of papers which are yet to be published.

Conclusions

The ensemble of dissemination actions planned in "D4.6: Dissemination and Exploitation plan", have been carried out during the project. Among those targeted to general public, the website and some of the social media are concluded to be the most successful, therefore will be continued after the project's end. Dissemination of scientific results towards specialized communities is still in progress due to the accumulation of scientific results towards the project's final months. Additional conference attendance and peer-reviewed publications are therefore expected for the few years to come.

Annex I: Talk and Poster presentations by the partners during the three years period – October 1st, 2017 – September 30th, 2019

Nr	Title	Type	Partners	Conference
1	Towards cavity enhanced single-rare-earth-ion detection	Contributed	KIT	DPG-Frühjahrstagung (DPG Spring Meeting), Mainz, Germany, 6 – 10 March 2017
2	Towards cavity enhanced single-rare-earth-ion detection	Contributed	ICFO-QP	Single Photons Single Spins (SPSS) Meeting, Troyes, France, 29 – 1 September 2017
3	Towards cavity enhanced single-rare-earth-ion detection	Invited	KIT	PQE Conference 2017, Snowbird, USA, January 2017
4	Towards cavity enhanced single-rare-earth-ion detection	Invited	KIT	Seminar of Institute of Applied Physics, University of Bonn, Germany, 2017
5	Towards cavity enhanced single-rare-earth-ion detection	Invited	KIT	Seminar, QUTech, TU Delft, The Netherlands, 2017
6	Towards cavity enhanced single-rare-earth-ion detection	Invited	KIT	CEWQO Conference 2017, Lyngby, Denmark, 2017
7	Towards cavity enhanced single-rare-earth-ion detection	Invited	KIT	Quantum Information Workshop, Hong Kong, China, 2017
8	Strain-coupled hybrid quantum systems with rare-earth doped crystals	Invited	CNRS-IN	Quantum Engineering Science and Technologies Symposium, November 2016, Singapore. <i>in the presence of Pr. Paul Indelicato (French Ministry for Education and Research) animating a discussion on the Quantum Engineering EU-flagship.</i>
9	Optomechanics with rare-earth doped crystals	Invited	CNRS-IN	Foundations and Applications of Nanomechanics, Trieste, Italy, September 2017.
10	Strain-coupled hybrid quantum systems with rare-earth doped crystals	Invited	CNRS-IN	Nanyang Technological University (NTU), Physics department, Singapore, August 2017
11	Strain-coupled hybrid quantum systems with rare-earth doped crystals	Invited	CNRS-IN	National University of Singapore (NUS), Centre for Quantum Technologies, Singapore, August 2017
12	High Precision Phase and Frequency Measurements in Rare Earth Doped Crystals at Cryogenic Temperatures for Probing Nanoresonators Behavior	Poster	CNRS-SY, CNRS-IN	European Frequency and Time Forum, Besançon, France, July 2017
13	Quantum applications and spin off discoveries in rare earth crystals	Invited	ULUND	Initiative seminar on Quantum Technology, Chalmers, Göteborg, Sweden, December 2016
14	Quantum information, quantum optics and laser	Plenary	ULUND	PQE-2017, Snowbird, USA, January 2017.

	frequency stabilization based on rare earth doped crystals			
15	Towards bulk crystal coherence times in $\text{Eu}^{3+}:\text{Y}_2\text{O}_3$ nanocrystals	Poster	CNRS-CP	Workshop on quantum information: fundamentals and applications, Paris, 2016
16	Rare Earth Doped Nanostructures: Quantum Leaps for Optical Technologies	Plenary	CNRS-CP	International Conference on Luminescence 2017, João Pessoa, Brazil, August 2017
17	Étude des propriétés de cohérence de nanoparticules de $\text{Eu}^{3+}:\text{Y}_2\text{O}_3$	Poster	CNRS-CP	French Workshop on crystals for optics, Paris, France, Sept. 2017
18	ALD deposition of Er and Eu-doped yttrium oxide thin films for quantum technologies	Poster	CNRS-CP	French Workshop on crystals for optics, Paris, France, Sept. 2017
19	Narrow Optical and Spin Linewidths in Rare Earth Doped Micro- and Nano-Structures	Invited	CNRS-CP	PQE-2017, Snowbird, USA, January 2017.
20	Optical detection and control of spin coherences in rare earth doped crystals	Invited	CNRS-CP	International workshop on Impurity Spins for Quantum Information and Technologies, Okinawa, Japan, 2017
21	Quantum and nanooptics with optical microcavities	Invited	KIT	Karlsruhe Days of Optics and Photonics, 7-8 November 17
22	Efficient light-matter interactions for solid state quantum emitters	Invited	KIT	University of Stuttgart, SFB Colloquium, 14 November 2017
23	Towards cavity-enhanced detection of single rare earth ions	Invited	KIT	Quantum Networks Workshop Bad Honnef, 5-7 July 2018
24	My Trajectory through academia	Invited	KIT	Karlsruhe School of Optics and Photonics – Graduation ceremony, 16 March 2018
25	Towards cavity-enhanced detection of single rare earth ions	Poster	KIT	DPG Spring conference Erlangen, 6 March 2018
26	Cavity enhancement of fluorescence for Single photon sources and spin photon interfaces	Invited	KIT	Science and Technology of Nanosystems Workshop, KIT Campus North, 26 April 2018
27	Cavity-enhanced spectroscopy of Eu^{3+}	Contributed	KIT	Rare Earth Ion Workshop, Geneva, 24-26 October 2018
28	Quantum and nanooptics with microcavities	Invited	KIT	Hannover, Seminar Talk, 8 May 2019
29	Efficient light-matter interfaces for quantum emitters	Invited	KIT	DTU, Lyngby, Seminar Talk, 12 June 2019
30	Quantum and nanooptics with optical microcavities	Invited	KIT	ETH Zürich, Seminar Talk, 7 August 2019
31	The Quantum Flagship, the Wallenberg Centre for Quantum Technology and a few projects in the	Invited	ULUND	Workshop on emerging Quantum Technologies, Lund, November 2018

	Quantum information Group			
32	Prospects for making quantum computer hardware in rare earth ion doped crystals	Contributed	ULUND	Hybrid approaches to quantum-information processing, Copenhagen, September 2018
33	Purcell Enhancement of Rare earth ions Doped in Nano-crystals	Contributed	ULUND	Northern Optics & Photonics, Lund, September 2018
34	Quantum information and slow light effects in rare earth ion doped crystals	Lecture	ULUND	Summer school, Aspenäs, June 2018
35	Introduction to rare-earth ion quantum computing	Lecture	ULUND	Square summer school, Karlsruhe, July 2019
36	The Quantum Flagship, the Wallenberg Centre for Quantum Technology and a few projects in the Quantum information Group	Invited	ULUND	Workshop on emerging Quantum Technologies, Lund, November 2018
37	Ultra-Thin Eu doped Y2O3 Films with optimized Optical Properties for Quantum Technologies	Contributed	CNRS-CP	20th International Conference on Dynamical Processes in Excited States of Solids, Christchurch , New Zealand, 2019
38	Er and Eu-doped yttrium oxide thin films elaborated by ALD for quantum technologies	Poster	CNRS-CP	Journée Nationale des cristaux pour l'optique, Paris 2017
39	Optical coherence lifetimes in Europium and Praseodymium doped nanoparticles (NPs)	Contributed	CNRS-CP	XIII RE IONS WORKSHOP (REIW'18) / GENEVA, 24-26 October 2018
40	Coherent optical storage in Rare Earth doped nanoparticles	Contributed	CNRS-CP	IONS Barcelona 2019, 26-29 June 2019
41	Long lived nuclear spins in rare-earth doped nanoparticles	Contributed	CNRS-CP	Conference : Información Cuántica España (ICE 5), Barcelona, Spain, 28-31 May 2019
42	Rare-earth doped nanoparticles with millisecond-long spin coherence lifetime	Contributed	CNRS-CP	DPG Spring Meeting 2018, Berlin, 11-16 March 2018
43	Rare-earth doped nanoparticles with millisecond-long spin coherence lifetime	Invited	CNRS-CP	LPHYS'18, Nottingham, United Kingdom, 16-20 July 2018.
44	Gravure chimique de nanoparticules dopées terres rares pour les technologies quantiques	Poster	CNRS-CP	Optique Toulouse 2018, Toulouse, 6-8 July 2018
45	Contrôle optique de spin nucléaires à longue durée de vie de cohérence dans des nanoparticules dopées terres rares	Poster	CNRS-CP	Optique Toulouse 2018, Toulouse, 6-8 July 2018

46	Towards Optically Controlled Qubits in Rare Earth Doped Nanoparticles	Poster	CNRS-CP	ICoQs 2018, Paris, 26-30 November 2018
47	Optical quality thin film deposition techniques	Invited	CNRS-CP	French Workshop on crystals for optics, Paris, France, Sept. 2017
48	ALD deposition of Er and Eu doped Yttrium oxide thin films for quantum technologies	Contributed	CNRS-CP	RAFALD, Réseau des Acteurs Français de l'ALD, Montpellier 2017
49	Rare earth doped nanostructures for optical quantum technologies	Poster	CNRS-CP	SIRTEQ workshop, Réseau Francilien pour les Technologies Quantiques, Palaiseau 2017
50	ALD deposition of Eu ³⁺ doped yttrium oxide thin films for quantum technologies	Contributed	CNRS-CP	RAFALD, Réseau des Acteurs Français de l'ALD, Lyon, 2018
51	Eu ³⁺ or Er ³⁺ doped Y ₂ O ₃ thin films grown by ALD with optimized properties for quantum technologies	Contributed	CNRS-CP	EUROCVI international conference, Luxembourg, June 2019
52	Towards detection of single erbium ions in fiber based microcavities	Invited	ICFO-QP	XIII RARE EARTH IONS WORKSHOP (REIW'18), Geneva, October 2018
53	Multiplexed Solid State Quantum Memories, conference,	Invited	ICFO-QP	Photonics North, , Québec, Canada, 21 May 2019
54	Towards detecting a single erbium ion in the solid-state	Poster	ICFO-QP	ICFO-IMPRS workshop, Barcelona, Spain, 22 March 2019,
55	Towards detecting a single erbium ion in the solid-state	Poster	ICFO-QP	Conference : Información Cuántica España (ICE 5), Barcelona, Spain, 28-31 May 2019
56	A Rydberg amplifier for cavity QED	Invited	AU	The International Workshop on strongly interacting, open many-body systems with the emphasis on the Rydberg atoms physics, 30.9-3.10.2018
57	Field versus Photons: Quantum Optics at the Speed of Light	Invited	AU	Quantum Technologies in Finland, Eerikkilä, Finland, 28-29 March 2019.
58	Heat engines and batteries: two stories with lessons from quantum optics	Invited	AU	Workshop on New Directions in Quantum Information Nordita, Stockholm, 9-13 April 2019.
59	Quantum measurement and sensing in many-body systems	Invited	AU	Workshop on Compound (Atomic) Quantum Systems Lorenz Center, Leiden, Netherlands, 20-24 May 2019
60	From quantum optics to bits and pieces (4 lectures) Summer school	4 Lectures	AU	"Nanotechnology meets Quantum Information" Summer school San Sebastian, 22-26 July 2019.
61	From Quantum Optics to Bits and Pieces	Invited	AU	CIFAR Quantum Cavities Workshop, Jouvence, Quebec Province, Canada, 9-12 June 2019.
62	Input-Output Theory with Quantum Pulses	Invited	AU	Impurity Spins for Quantum Information and Technologies 2019

				Bar Ilan University, Israel, 8-11 September 2019
63	Long Lived Optical and Spin Coherences in Rare Earth Doped Nanostructures	Invited	CNRS-CP	International Conference on Hole Burning and Single Molecule Spectroscopy, Suzdal, Russia, 6-12 August 2018
64	Towards Optically Controlled Quantum Bits in Rare Earth Doped Nanoparticles	Invited	CNRS-CP	International Conference on Optical, Phonics and Opto-Electronics Materials, Maresias, Brazil, 26-31 August 2018
65	New Rare Earth Doped Crystals for Optical Quantum Technologies	Invited	CNRS-CP	International Symposium on Rare Earth Resource Utilization, Changchun, China, 13-16 September 2018
66	Rare Earth Doped Crystals for Microwave-Optical Quantum Interfaces	Invited	CNRS-CP	GFMAT 2019, Toronto, Canada, July 22-26, 2019
67	Rare Earth Doped Nanoparticles for Quantum Technologies	Invited	CNRS-CP	DWC symposium, Otago University, New-Zealand, 28 January - 1 February, 2019
68	Rare Earth Doped Crystals for Quantum Technologies	Invited	CNRS-CP	Workshop 'defects', Ecole Normale Supérieure, Paris, 10 April 2019
69	Optically Detected Spin Resonance in Rare Earth Doped Crystals for Quantum Technologies	Invited	CNRS-CP	EPR-75 Conference, Kazan, Russia, 23-27 September 2019
70	Rare Earth Doped Nanostructures: Quantum Leaps for Optical Technologies	Invited	CNRS-CP	Seminar at UAM, Madrid, 13 November 2017
71	Long-lived optical and spin quantum states in rare earth doped nano- and micro-structures	Invited	CNRS-CP	Seminar at TUM, Munich, December 2017
72	Rare Earth Doped Crystals for Quantum Technologies	Invited	CNRS-CP	Seminar at LMU, Munich, 14 December 2017
73	Rare Earth Doped Crystals for Quantum Memories	Invited	CNRS-CP	Seminar at USP, São Paulo, Brasil, 29 September 2019
74	Towards Optically Controlled Qubits in Rare Earth Doped Nanoparticles	Invited	CNRS-CP	Seminar at Caltech, Pasadena, USA, 21 May 2018
75	Towards Optically Controlled Qubits in Rare Earth Doped Nanoparticles	Invited	CNRS-CP	Seminar at UCSB, Santa-Barbara, USA, 22 May 2018
76	Towards Optically Controlled Qubits in Rare Earth Doped Nanoparticles	Invited	CNRS-CP	Seminar at Max Planck Institute for the Science of Light, Erlangen, Germany, 27 April 2018
77	Towards Optically Controlled Qubits in Rare Earth Doped Nanoparticles	Invited	CNRS-CP	Seminar at the University of Canterbury, Christchurch, New-Zealand, 24 January 2019
78	Rare Earth Doped Crystals for Quantum Technologies	Invited	CNRS-CP	Seminar at Princeton University, USA, 26 July 2019
79	Rare Earth Doped Crystals for Quantum Technologies	Invited	CNRS-CP	Seminar at University of Saarland, Germany, 6 June 2019

80	All-Optical Control of Long-lived Spin Coherences in Rare Earth Doped Nanoparticles	Contributed	CNRS-CP	CLEO, San Jose, USA, 13-18 May 2018
81	Optical Coherence Time Control by Large Scale Optical Spin Polarization in $171\text{Yb}:\text{Y}_2\text{SiO}_5$	Contributed	CNRS-CP	DPC 2019, Christchurch, New-Zealand, 26-30 August 2019
82	Strain-coupled optomechanics with rare-earth doped crystals" Annual International Conference on Rare-earth Doped Crystals	Invited	CNRS-IN	XIII RARE EARTH IONS WORKSHOP (REIW'18), Geneva, October 2018
83	Quantum Optomechanics with rare-earth doped crystals	Contributed	CNRS-IN	Journées de la matière condensée (JMC), Grenoble, August 2018.
84	Towards strain-coupled optomechanics with rare-earth doped crystals	Seminar	CNRS-IN	ICFO, Barcelona, 20 June 2019
85	Strain-coupled optomechanics with rare-earth doped crystals	Seminar	CNRS-IN	ICN2, Barcelona, 21 June 2019