Hanns-Christoph Nägerl

(Status April 1st 2026)

Address	Institute for Experimental Physics, University of Innsbruck, Technikerstraße 25/4, 6020 Innsbruck, Austria
Nationality	German, born in Göttingen, Germany
Family	Married to Silvia Johanna Elfriede Nägerl, three children (Maria Izabel *2007, Rosalie Josephine *2013, Eleonora Celeste *2015)
E-Mail	christoph.naegerl@uibk.ac.at
Web	quantummatter.at
Orcid	orcid.org/0000-0002-7789-4431

Scientific Education

1987-89/1990-94	Study of mathematics and physics at the University of Göttingen, Germany
1989/90	Study of mathematics and physics at the University of California at San Diego (UCSD), USA
1994 – 1998	Doctoral student in physics at the University of Göttingen (1994/1995) and at the University of Innsbruck, Austria (1996-1998), graduation Sept. 1998 with supervisor Prof. R. Blatt on “Ion Strings for Quantum Computation”

Career History

1990 – 1994	Research and teaching assistant at the University of Göttingen
1995 – 1998	“Vertragsassistent” at the University of Innsbruck
1998 – 2000	Postdoctoral researcher, California Institute of Technology (Caltech), USA
2000 – 2006	“Universitätsassistent” (Assistant Professor) at the University of Innsbruck
June 2006	Habilitation in “Experimentalphysik” on the topic ”From Atomic to Molecular Quantum Gases” at the University of Innsbruck
1. Oct. 2006	Associate Professor (a. Univ. Prof.) at the University of Innsbruck
Since 1. Oct. 2011	Full Professor at the University of Innsbruck
2017 – 2021	Head of the Innsbruck Physics Research Center
Since 1. Mar. 2023	Head of the Institute for Experimental Physics, University of Innsbruck.

Research interests

Fundamentals of quantum science and its applications to quantum technologies; quantum state engineering, quantum gases and quantum fluids, many-body quantum physics, non-equilibrium quantum phenomena, quantum simulation and quantum computation, quantum transport, ultracold molecules, dipolar quantum gases, low-dimensional quantum systems, quantum state control, quantum chaos and thermalization, quantum simulation of solid-state systems.

Career-related Activities

Referee for various scientific journals and funding organizations (e.g. Phys. Rev., Phys. Rev. Lett., Nature, Science, Nature Physics, DOE, NSF, DFG, ANR, ERC, ARC, EPSRC,…)

local co-organizer of YAO2005
local co-organizer of “World Year of Physics” 2005
local organizer of ICAP2006 and ICAP2006 Summer School
co-chair of the ESF conference “Quantum Optics 2008” in Obergurgl
local co-organizer of ÖPG/SPG/ÖGAA conference 2009 in Innsbruck
chair of “Quantum Optics 2010” in Obergurgl (2010)
co-chair of “Frontiers in Matter-Wave Optics”, Greece 2010
chair of ESF-Conference “FOMO2011” in Obergurgl (2011)
co-chair of “International Workshop on Ultracold Molecules”, South Africa 2011
co-chair and local organizer of “Quantum Optics 2012” in Obergurgl (2012)
co-chair of ESF-Conference “Cold and Ultracold Molecules” in Obergurgl (2012)
co-chair of the workshop “Cold and Ultracold Molecules” in Grenada, Spain (2013)
co-chair and local organizer of “Quantum Optics 2014” in Obergurgl (2014)

co-chair of the “Stellenbosch Workshop on Quantum Many-Body Systems Far from Equilibrium” in Stellenbosch, South Africa (2015)
chair of “Quantum Optics 2016” in Obergurgl (2016)
co-chair of “Quantum Optics 2018” in Obergurgl (2018)
co-chair of “Quantum Optics 2020” in Obergurgl (2020)
co-chair of the workshop “Quantum 2021: Dynamics and local control of impurities in complex quantum environments” at the Institut Pascal at the University Paris-Saclay” (2021)
chair of the ÖPG-SPG 2021 conference in Innsbruck (2021)
chair of “Quantum Optics 2022” in Obergurgl (2022)
co-chair of “Quantum Optics 2024” in Obergurgl (2024)
chair of QuSiED Obergurgl 2025 in Obergurgl (2025)
local organizer of ECAMP 2025 in Innsbruck (2025)
co-chair of “Quantum Optics 2026” in Obergurgl (2026)

Important Collaborations

Consortia: The group was part of the Innsbruck-Vienna consortium SFB FoQuS (2009-2018) funded by the Austrian Science Fund FWF. It was also part of the FWF-DFG Forschergruppe “From Few to Many-Body Physics with Dipolar Quantum Gases” (2016-2019 and 2019-2022) and the FWF’s doctoral school (DK) ALM (2016-2019 and 2020-2025). It was part of the QuantERA-consortium QuSiED (2022-2025) and of the QuantA-Consortium (Oct.2023-Feb.2026).

Individual collaborations: The group is collaborating with various groups all over the world, e.g., from France, Switzerland, Netherlands, China, Italy, Spain, Germany, Belgium, and Great Britain. For this, see the list with the recent publications.

Fellowships and Awards

1998	Millikan-Prize-Fellowship from the California Institute of Technology (Caltech)
2003	START-Prize from the Austrian Federal Ministry for Education, Science and Culture (BMBWK)
2010	Rudolf-Kaiser Preis 2010 der Rudolf-Kaiser Stiftung
2011	ERC-Consolidator grant by the European Research Council
2011	Forschungspreis der Stiftung Südtiroler Sparkasse
2017	Wittgenstein-Prize 2017
2018	ERC Advanced Grant 2018 (start Jan. 2019)
2018	Australian Laureate Fellowship 2018, declined
2025	ERC Advanced Grant 2025 (start Sept. 2025)

Memberships

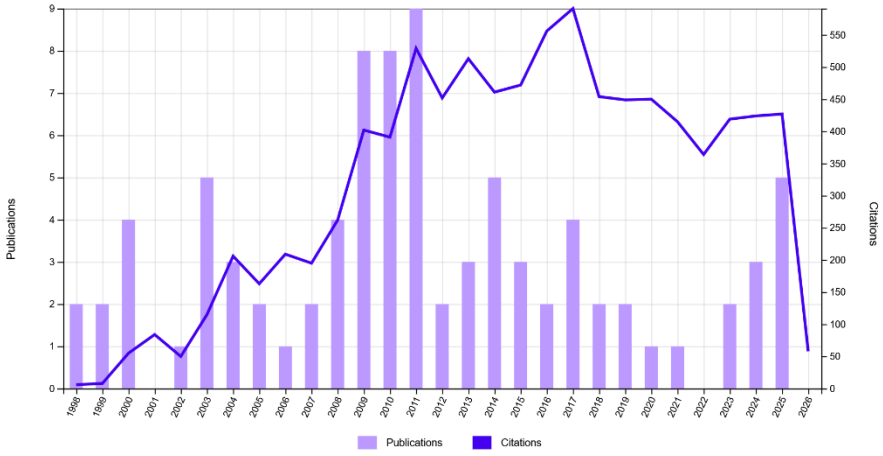
since 1995	German Physical Society
since 2006	Austrian Physical Society
2008-2016	Founding member and delegate of the „Junge Kurie“ (JK) of the Austrian Academy of Sciences (Österreichische Akademie der Wissenschaften, ÖAW)
since 2010	Member of the Wolfgang-Pauli Institute, Vienna
2019-2023	Member of the Board of the Europäisches Forum Alpbach

Output (see also http://www.researcherid.com/rid/E-7329-2010)

Number of **publications** in **refereed journals**: More than **75**.

h-index: 47, more than **9200 citations** according to the Web of Science, WoS, and more than **15000** according to Google Scholar, with a Google Scholar h-index of **55**.

Invited talks at conferences, workshops, colloquia, seminars: more than **200**.



Number of publications (bars) and citations (line) from 1998 to 2025. Source: WoS on April. 1st 2026.

Major Outreach Activities

2005: World Year of Physics, co-organizer of the physics events in Innsbruck.

2014: 10-Years IQOQI, head organizer of the physics show with dozens of exhibits.

2018: FWF 50-years-celebration in Vienna (2018).

2019: "Fest der Wissenschaften" on the occasion of the University of Innsbruck's 350-year celebration: Lead organizer of the physics events in April and June 2019.

Past Student Supervision

(With thesis title and graduation date. Students co-supervised with my colleague R. Grimm are not listed (8 PhD-students, 4 diploma students). Bachelor students that have not worked in the laboratory are also not listed.)

Peter Unterwaditzer, diploma student, "Aufbau eines vollständigen Diodenlasersystems zur Laserkühlung und Detektion von gespeicherten Cs-Atomen" (in German), April 2005.

Anton Flir, diploma student, "Implementierung und Untersuchung von Raman-Seitenbandkühlung zur Erzeugung eines ultrakalten Cäsiumgases" (in German), December 2006.&

Johann G. Danzl, diploma student, "Towards Optical Spectroscopy of Ultracold & Cesium Molecules". Feb. 2007.

Gabriel Rojas-Kopeinig, diploma student, "A Tunable Bose-Einstein Condensate in a Three-dimensional Optical Lattice Potential", June 2007.

Manfred J. Mark, diploma student, "Wechselwirkungseffekte eines Cäsium-BEC in eindimensionalen Gittern" (in German), November 2007.

Mattias Gustavsson, doctoral student, "A quantum gas with tunable interactions in an optical lattice", Dec. 2008.

Johann G. Danzl, doctoral student, "Rovibronic Ground-State Molecules near Quantum Degeneracy", March 2010.

Elmar Haller, doctoral student, "A one-dimensional quantum gas with tunable interactions", July 2010, **recipient of the APS-DAMOP thesis prize 2011**

Almar Lercher (formerly Lange), doctoral student, "Doppel-Spezies Bose-Einstein-Kondensat von Rubidium und Cäsium Atomen in räumlich getrennten optischen Fallen" (in German), Sept. 2010.

Lukas Reichsöllner, diploma student, „Ein frequenzverdoppeltes Lasersystem bei 532 nm für bichromatische optische Gitter" (in German), December 2010.

Andreas Klinger, master student, "Optical Frequency Comb for Ultracold Ground-State Molecules", March 2011.

Oliver Krieglsteiner, diploma student (together with O. Dulieu, Orsay, France), "Hyperfine Structure of Cs_2 Molecules in Electronically Excited States", Nov. 2011.

Mohammed Rabie, diploma student, „Messung der lokalen Drei-Körper-Korrelationsfunktion des eindimensionalen Bosegases“ (in German), Nov. 2011.

Manfred J. Mark, doctoral student, “Experiments with Tunable Quantum Gases in Optical Lattices”, Jan. 2012.

Raffael Rameshan, diploma student, “Aufbau einer High-Finesse-Cavity zur Stabilisierung eines Diodenlasers“ (in German), Feb. 2012.

Benjamin Rutschmann, master student, „Hochstabiler Hoch-Finesse-Resonator zur Erzeugung von Grundzustandsmolekülen“ (in German), Sept. 2012.

Michael Gröbner, master student, „Aufbau und Charakterisierung eines Lasersystems zum Kühlen und Fangen von Kaliumatomen“ (in German), Feb. 2013.

Markus Debatin, doctoral student, “Ultracold RbCs Ground-State Molecules”, graduation June 2013.

Carl Hippler, diploma student (external, from TU München), “Ein selbstgebauter Ytterbium-Faserverstärker mit 25W Ausgangsleistung bei 1064nm zur Realisierung eines optischen Gitters für ultrakalte RbCs-Moleküle” (in German), graduation August 2013.

Verena Pramhaas, master student, “Construction and Implementation of a Phase-Stable Laser System for STIRAP in Ultracold RbCs Molecules”, graduation July 2014.

Maximilian Segl, master student, “Stable and narrow-linewidth diode-laser system for STIRAP”, graduation Nov. 2015.

Florian Meinert, doctoral student, April 2012 to June 2016, “Quantum dynamics in strongly correlated one-dimensional Bose gases”, graduation June 2nd 2016, recipient of the **DPG-SAMOP thesis prize 2017**, the **IQOQI thesis prize 2017**, and the Lichtenstein-Preis 2018.

Gregor Anich, master student from May 2015 to Sept. 2016, “Tunable optical lattices”, graduation Sept. 5th 2016.

Miroslaw Marszalek, master student, from March 2014 until March 2015, “Assembly and testing of an objective lens designed for imaging ultracold quantum gases“, graduation April 24th 2017.

Benjamin Ziernhöld, master student from Nov. 2013 until Feb. 2015, “Realizing 2D Magneto-Optical Traps as High-Flux Sources of Cold Potassium and Cesium Atoms”, graduation June 13th 2017.

Michael Gröbner, doctoral student, from March 2013 to Oct. 2017, “A quantum gas apparatus for ultracold mixtures of K and Cs”, graduation on Oct. 30th 2017.

Nina Farner, master student, from Oct. 2015 to April 2017, “Aufbau und Charakterisierung eines Diodenlasers & Phasenstabilisierung eines Übergitters“ (in German), graduation Nov. 15th 2017.

Peter Oles, master student, from Sept. 2015 to Oct. 2016, “Interference-filter-stabilized ECDL in cat-eye configuration”, graduation Nov. 29th 2017.

Lukas Reichsöllner, doctoral student, Feb. 2011 to Jan. 2017, “A general quantum-engineering technique for efficient production of ultracold dipolar molecules”, graduation March 15th 2018.

Katharina Lauber, doctoral student, Feb. 2011 to Oct. 2016, “Ultracold Homonuclear Cesium Molecules: Efficient Production, Collisional Properties and Stability Measurements”, graduation August 17th 2018.

Andreas Schindewolf, doctoral student, July 2013 to Dec. 2018, “Quantum Engineering of a Low-Entropy Sample of RbCs Molecules in an Optical Lattice”, graduation December 21st 2018.

Elisabeth Thaler, master student, Oct. 2016 to Oct. 2017, “Aufbau und Charakterisierung eines Lasersystems zum räumlichen Trennen von Cäsium und Rubidium Atomen“ (in German), graduation Jan. 16th 2019.

Philipp Weinmann, doctoral student, May 2012 to Dec. 2017, “Towards Quantum Gas Microscopy of Cesium and Potassium in Optical Lattices”, graduation Jan. 17th 2020.

Johannes Willi, master student, Oct. 2017 to Aug. 2020, “Designing and Building a Titanium-Sapphire Laser”, graduation Aug. 20th 2020.

Xaver Pietsch, bachelor student, Feb. 2021 to June 2021, „LevT-Rev’d: Neues Leben für einen alten Apparat“ (in German), graduation July 2021.

Govind Unnikrishnan, doctoral student, July 2016 to April 2022, “Cooling, Transport and Mixing of Ultracold K and Cs”, graduation May 2022, with a six-months research stay at UC Berkeley from Apr. 2019 to Oct. 2019.

Florian Reiter, master student, Oct. 12th 2020, “Raman Sideband Spectroscopy and Optical Pumping for Imaging Purposes of ^{39}K in an Optical Lattice”, graduation Oct. 24th 2023.

Satwik Ramanjanappa, master student, July 2022 to July 2023, graduation Sept. 2023.

Deborah Capecchi, doctoral student, Dec. 2016 to Sept. 2023, “Toward dipolar physics with ultracold molecules: Mixing of atomic species under confinement”, graduation May 24th 2024.

Clara Bokobza, visiting ENS master student, May 12th to August 29th 2025.

Erik Richter-Alten, master student, thesis work from Oct. 1st 2021 until Feb. 2023, “Stabilizing a laser system for cooling and trapping of Ytterbium atoms”, graduation on Sept. 11th 2025.

Beatrix Mayr, master student, Oct. 2015 – Oct. 2016, “Aufbau und Charakterisierung von Diodenlasersystemen für Quantengasexperimente“ (in German), graduation on Nov. 17th 2025.

Milena Horvath, doctoral student, April 2017 – Dec. 2025, “Non-equilibrium dynamics of one-dimensional strongly correlated bosons”, graduation on Dec. 16th 2025.

Past Postdoc Supervision (with an indication which subsequent path has been taken, if known)

Steven Knoop, 2007 – 2009, first into university science and then into industry.

Russell Hart, 2008 – 2010, first into university science and then into industry.

Elmar Haller, Oct. 2010 – Dec. 2011 (see also list of supervised students), into university science in Glasgow.

Johann G. Danzl, May 2010 – Jan. 2012 (see also list of supervised students), into university science as professor at ISTA in Klosterneuburg near Vienna, Austria.

Manfred J. Mark, postdoc, April 2012 – Oct. 2014 (see also list of supervised students), into university science in Innsbruck as senior scientist in the group of Professor F. Ferlaino, see ultracold.at.

Tetsu Takekoshi, postdoc, July 2009 – Feb. 2015, into industry.

Florian Meinert, postdoc, July 2016 – Aug. 2016 (see also list of supervised students), into science.

Emil Kirilov, postdoc, Aug. 2012 – Sep. 2016,), into university science in Innsbruck as senior scientist in the group of Professor R. Grimm, see ultracold.at.

Michael Gröbner, postdoc, Nov. 1st 2017 – Apr. 30th 2019 (see also list of supervised students), into industry.

Andreas Schindewolf, postdoc, Jan. 1st 2019 – June 30th 2019 (see also list of supervised students), into university science at MPQ Garching and then TU Vienna.

Bodhaditya Santra, postdoc, June1st 2018 – Dec. 2019, into university science as professor.

Arpita Das, postdoc, May 1st 2021 – April 2023, into university science as postdoctoral researcher in Durham, England.

Dechao Zhang, postdoc, Nov. 2nd 2020 – Oct. 31st 2023, as postdoc into university science.

Zekai Chen, postdoc, Oct. 1st 2022 – Oct. 2024, as postdoc into university science.

Dizhou Xie, postdoc, July 1st 2022 – Oct. 2024, as postdoc into university science.

Ongoing Postdoc and Student Supervision

Camilo Cantillano, doctoral student, since Feb. 18th 2018

Manuele Landini, senior scientist, since Jan. 1st 2019, on a permanent position

Charly Beulenkamp, doctoral student, since July 1st 2019

Sudipta Dhar, doctoral student, since Nov. 2019

Krzysztof Zamarski, doctoral student, since Aug. 10th 2020

Yanliang Guo, postdoc, since Feb. 1st 2021

Xaver Pietsch, initially project student, since July 2021 (with bachelor thesis work from Feb. to June 2021), then master student since Oct. 2023

Reza Mosala, doctoral student, since March 2022

Karthick Ramanathan, doctoral student since Oct. 1st 2022

Yi Zeng, postdoc, since September 2024

Emilio Enrique Aguilera Valdés, first prospective doctoral student, starting Nov. 5th 2024, then doctoral student since May 1st 2025

Louisa Krbashian, doctoral student since May 1st 2025

Xudong Yu, postdoc, since March 2025

Shien Wan, visiting bachelor student from Peking University, since Sept. 2nd 2025

Igor Zhuravlev, doctoral student since

Milena Horvath, postdoc, since Jan. 2026 (see also the former PhD students)

Evgenyi Gadylshin, prospective PhD student as intern student, since Jan. 2026

Pending Graduations

Saloni Chourasiya, master student, thesis work from Juli 1st 2023 to Oct. 2024.

Other long-term team members (3 months or more, no degree from the Univ. of Innsbruck)

Silva Mežinska, doctoral student, thesis work terminated prematurely, July 2014 – June 2017.

Hao Fan, doctoral student, thesis work terminated prematurely, Sept. 2016 – Oct. 2016.

Faraj Bakhshinezhad, internship student, Feb. 2017 – July 2017.

Gregor Anich, doctoral student, thesis work terminated prematurely, Sept. 2016 – Nov. 2018.

Sheraz Choudhari, internship student, May 2nd 2018 – May 2019.

Erich Dobler, doctoral student, thesis work terminated prematurely, March 2017 – July 2019.

Elric Frigerio, French ENS internship student as part of his master degree, April 15th 2019 – Aug. 2019.

Younes Ashouri, internship student with master degree, Aug. 6th 2018 – Aug. 2019.

Anzhou Wang, internship student from Tsinghua University, Beijing, July – Sept. 2019, and Jan. 2020 – March 2020, then to the US as graduate student.

Anamika Nair, internship student with master degree, Nov. 20th 2018 – Nov. 2019.

Thanmay Menon, student from India working on an external bachelor thesis, May 1st 2019 – Dec. 2019.

Jiahao Lyu, project student from China, July 2021 – Dec. 2021, then to the US as graduate student.

Satwik Ramanjanappa, project student from India, with bachelor thesis work in our group July 2021 – Feb. 2022 (see also above and below).

David Perez, French ENS internship student as part of his master degree, March 28th 2022 – July 2022

Dipanjan Das, student from India from the Indian Institute of Science (IICS), Bengaluru, working on an external bachelor thesis, May 5th 2022 – Dec. 2022.

Saloni Chourasiya, student from India from the Indian Institute of Science (IISC), Bengaluru, working on an external bachelor thesis, May 5th 2022 – Dec. 2022.

Clement Bazelis, French ENS student, April 15th 2024 – Aug. 9th 2024

Satwik Ramanjanappa, beginning PhD student, thesis work terminated prematurely, Oct. 2023 to Sept. 2024 (see also above).

Zekui Wang, visiting PhD student from Shanxi University, Oct. 2024 – Sept. 29th 2025

Clara Bokobza, French ENS student, May 12th 2025 – Aug. 29th 2025

Mingrui Yang, visiting bachelor student from Tsinghua University, Aug. 5th 2025 – Feb. 2026

Yijing Zhang, visiting master student from the Xi'an Jiaotong University, March 2025 – Feb. 2026

Publication list

A) Top 11 most important publications (personal selection, in reverse time order)

11. *Observation of many-body dynamical localization*
Y. Guo, S. Dhar, A. Yang, Z. Chen, H. Yao, M. Horvath, L. Ying, M. Landini, H.-C. Nägerl,
Science 389, 716 (2025)

10. *Observing anyonization of bosons in a quantum gas*
S. Dhar, B. Wang, M. Horvath, A. Vashisht, Y. Zeng, M. B. Zvonarev, N. Goldman, Y. Guo, M. Landini, H.-C. Nägerl,
Nature 642, 53 (2025)

9. *Bloch oscillations in the absence of a lattice*
F. Meinert, M. Knap, E. Kirilov, K. Lauber, M. B. Zvonarev, E. Demler, H.-C. Nägerl,
Science 356, 945 (2017)

8. *Observation of many-body dynamics in long-range tunneling after a quantum quench*
F. Meinert, M. J. Mark, E. Kirilov, K. Lauber, P. Weinmann, M. Gröbner, A. J. Daley, H.-C. Nägerl,
Science 344, 1259 (2014)

7. *Pinning quantum phase transition for a Luttinger liquid of strongly interacting bosons*
E. Haller, R. Hart, M.J. Mark, J.G. Danzl, L. Reichsöllner, M. Gustavsson, M. Dalmonte, G. Pupillo, H.-C. Nägerl,
Nature 466, 597 (2010)

6. *An ultracold high-density sample of rovibronic ground-state molecules in an optical lattice*
J.G. Danzl, M.J. Mark, E. Haller, M. Gustavsson, R. Hart, J. Aldegunde, J.M. Hutson, H.-C. Nägerl,
Nature Physics 6, 265 (2010)

5. *Realization of an Excited, Strongly Correlated Quantum Gas Phase*
E. Haller, M. Gustavsson, M.J. Mark, J.G. Danzl, R. Hart, G. Pupillo, H.-C. Nägerl,
Science 325, 1224 (2009)

4. *Quantum Gas of Deeply Bound Ground State Molecules*
J.G. Danzl, E. Haller, M. Gustavsson, M.J. Mark, R. Hart, N. Bouloufa, O. Dulieu, H. Ritsch, H.-C. Nägerl,
Science 321, 1062 (2008)

3. *Evidence for Efimov quantum states in an ultracold gas of caesium atoms*
T. Kraemer, M. Mark, P. Waldburger, J.G. Danzl, C. Chin, B. Engeser, A.D. Lange, K. Pilch, A. Jaakkola, H.-C. Nägerl, R. Grimm,
Nature 440, 315 (2006)

2. *Preparation of a Pure Molecular Quantum Gas*
J. Herbig, T. Kraemer, M. Mark, T. Weber, C. Chin, H.-C. Nägerl, R. Grimm,
Science 301, 1510 (2003)

1. *Bose-Einstein Condensation of Cesium*
T. Weber, J. Herbig, M. Mark, H.-C. Nägerl, R. Grimm,
Science 299, 232 (2003)

B) Top 10 most often cited publications (WoS-citation index, as of Aug. 2025)

1. *Evidence for Efimov quantum states in an ultracold gas of caesium atoms*
T. Kraemer, M. Mark, P. Waldburger, J. G. Danzl, C. Chin, B. Engeser, A. D. Lange, K. Pilch, A. Jaakkola, H.-C. Nägerl, R. Grimm,
Nature 440, 315 (2006) (911 citations)

2. *Realization of an Excited, Strongly Correlated Quantum Gas Phase*
E. Haller, M. Gustavsson, M.J. Mark, J.G. Danzl, R. Hart, G. Pupillo, H.-C. Nägerl,
Science 325, 1224 (2009) (452 citations)

3. *Ultracold Dense Samples of Dipolar RbCs Molecules in the Rovibrational and Hyperfine Ground State*
T. Takekoshi, L. Reichsöllner, A. Schindewolf, J. M. Hutson, C. R. Le Sueur, O. Dulieu, F. Ferlaino, R. Grimm, H.-C. Nägerl,
Phys. Rev. Lett. 113, 205301 (2014) (451 citations)

4. *Bose-Einstein Condensation of Cesium*
T. Weber, J. Herbig, M. Mark, H.-C. Nägerl, R. Grimm,
Science 299, 232 (2003) (436 citations)

5. *Quantum State Engineering on an Optical Transition and Decoherence in a Paul Trap*
C. Roos, T. Zeiger, H. Rohde, H.-C. Nägerl, J. Eschner, D. Leibfried, F. Schmidt-Kaler, R. Blatt,
Phys. Rev. Lett. 83, 4713 (1999) (359 citations)

6. *Preparation of a Pure Molecular Quantum Gas*
J. Herbig, T. Kraemer, M. Mark, T. Weber, C. Chin, H.-C. Nägerl, R. Grimm,
Science 301, 1510 (2003) (354 citations)

7. *Quantum Gas of Deeply Bound Ground State Molecules*
J. G. Danzl, E. Haller, M. Gustavsson, M. J. Mark, R. Hart, N. Bouloufa, O. Dulieu, H. Ritsch, H.-C. Nägerl,
Science 321, 1062 (2008) (330 citations)

9. *An ultracold high-density sample of rovibronic ground-state molecules in an optical lattice*
J. G. Danzl, M. J. Mark, E. Haller, M. Gustavsson, R. Hart, J. Aldegunde, J. M. Hutson, H.-C. Nägerl,
Nature Physics 6, 265 (2010) (292 citations)

8. *State-Insensitive Cooling and Trapping of Single Atoms in an Optical Cavity*
J. McKeever, J. R. Buck, A. D. Boozer, A. Kuzmich, H.-C. Nägerl, D. M. Stamper-Kurn, H. J. Kimble,
Phys. Rev. Lett. 90, 133602 (2003) (285 citations)

10. *Observation of an Efimov-like trimer resonance in ultracold atom-dimer scattering*
S. Knoop, F. Ferlaino, M. Mark, M. Berninger, H. Schöbel, H.-C. Nägerl, R. Grimm,
Nature Physics 5, 227 (2009) (220 citations)

C) Publications close to submission (with preliminary title and preliminary author list)

90. *Observing the emergence of a velocity hierarchy in strongly interacting bosons*
Xudong Yu, Wenhan Chen, Igor Zhuravlev, Yi Zeng, Sudipta Dhar, Milena Horvath, Thierry Giamarchi, Laurent Sanchez-Palencia, Manuele Landini, Hanns-Christoph Nägerl, and Yanliang Guo

89. *Coherence of a Mott insulator in the pinning regime*
X. Yu, S. Dhar, Y. Guo, M. Landini, H.-C. Nägerl, plus theory colleagues

88. *Interaction-enabled metal-insulator phase transition in a driven quantum gas*
Camilo Cantillano, Karthick Ramanathan, Zekai Chen, Ang Yang, Emilio Aguilera-Valdes, Lei Ying, Manuele Landini, Hanns-Christoph Nägerl and Yanliang Guo,

D) All refereed (or for refereeing submitted) publications (newest to oldest)

87. *Exotic critical states as fractional Fermi seas in the one-dimensional Bose gas*
Alvise Bastianello, Yi Zeng, Sudipta Dhar, Xudong Yu, Milena Horvath, Grigori E. Astrakharchik, Yanliang Guo, Hanns-Christoph Nägerl, and Manuele Landini,
preprint at: arxiv.org/abs/2602.17656

86. *Realization of fractional Fermi seas*
Yi Zeng, Alvise Bastianello, Sudipta Dhar, Zekui Wang, Xudong Yu, Milena Horvath, Grigori E. Astrakharchik, Yanliang Guo, Hanns-Christoph Nägerl, and Manuele Landini,
preprint at: arxiv.org/abs/2602.17657

85. *Observing dissipationless flow of an impurity through strongly repulsive quantum fluid*
Milena Horvath, Sudipta Dhar, Elisabeth Wybo, Dimitrios Trypogeorgos, Yanliang Guo, Mikhail Zvonarev, Michael Knap, Manuele Landini, and Hanns-Christoph Nägerl,
preprint at: arxiv.org/abs/2602.12320

84. *Formation of ultracold $^{39}K^{133}Cs$ Feshbach molecules*
C. Beulenkamp, K. P. Zamarski, R. C. Bird, C. R. Le Sueur J. M. Hutson, M. Landini, H.-C. Nägerl,
Physical Review A **112**, 062821 (2025), preprint at: arxiv.org/abs/2506.16520

83. *Spectroscopy and Ground-State Transfer of Ultracold Bosonic $^{39}K^{133}Cs$ Molecules*

K. P. Zamarski, C. Beulenkamp, Y. Zeng, M. Landini, H.-C. Nägerl,
Physical Review Letters 135, 203401 (2025), preprint at: arxiv.org/abs/2505.21207

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M. Hammes, D. Rychtarik, H.-C. Nägerl, R. Grimm,
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7. *Evaluation of heating effects on atoms trapped in an optical trap*
C.W. Gardiner, J. Ye, H.-C. Nägerl, H.J. Kimble,
Phys. Rev. A 61, 045801 (2000),
DOI:10.1103/PhysRevA.61.045801

6. *Ground state cooling, quantum state engineering and study of decoherence of ions in Paul traps*
F. Schmidt-Kaler, C. Roos, H.-C. Nägerl, H. Rohde, S. Gulde, A. Mundt, M. Lederbauer, G. Thalhammer, T. Zeiger, P. Barton, L. Hornekaer, G. Reymond, D. Leibfried, J. Eschner, R. Blatt,
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DOI: 10.1080/09500340008232182

5. *Investigating a qubit candidate: Spectroscopy on the S1/2 to D5/2 transition of a trapped calcium ion in a linear Paul trap*
H.-C. Nägerl, C. Roos, D. Leibfried, H. Rohde, G. Thalhammer, J. Eschner, F. Schmidt-Kaler, R. Blatt,
Phys. Rev. A 61, 023405 (2000),
DOI:10.1103/PhysRevA.61.023405

4. *Quantum State Engineering on an Optical Transition and Decoherence in a Paul Trap*
C. Roos, T. Zeiger, H. Rohde, H.-C. Nägerl, J. Eschner, D. Leibfried, F. Schmidt-Kaler, R. Blatt,
Phys. Rev. Lett. 83, 4713 (1999).
DOI:10.1103/PhysRevLett.83.4713

3. *Laser addressing of individual ions in a linear ion trap*
H.-C. Nägerl, D. Leibfried, H. Rohde, G. Thalhammer, J. Eschner, F. Schmidt-Kaler, R. Blatt,
Phys.Rev. A 60, 145 (1999).
DOI:10.1103/PhysRevA.60.145

2. *Coherent excitation of normal modes in a string of Ca+ ions*
H.-C. Nägerl, R. Blatt, F. Schmidt-Kaler, J. Eschner, D. Leibfried,
Optics Express 3, 89 (1998),
DOI:10.1364/OE.3.000089

1. *Ion strings for quantum gates*
H.-C. Nägerl, W. Bechter, J. Eschner, F. Schmidt-Kaler, R. Blatt,
Appl. Phys. B 66, 603 (1998),
DOI:10.1007/s003400050443

E) Further (non-refereed) publications

12. *Ultracold and dense samples of ground-state molecules in lattice potentials*
H.-C. Nägerl, M.J. Mark, E. Haller, M. Gustavsson, R. Hart, J.G. Danzl,
J. Phys.: Conf. Ser. **264** 012015 (2011)**; preprint at:** arXiv:1011.0179

11. *Production of a quantum gas of rovibronic ground-state molecules in an optical lattice*
J.G. Danzl, M.J. Mark, E. Haller, G. Gustavsson, R. Hart, H.-C. Nägerl,
Laser Spectroscopy 256 (2010)

10. *Collisions of optically trapped ultracold cesium Feshbach molecules*
F. Ferlaino, S Knoop, M. Berninger, M. Mark, H.-C. Nägerl, R. Grimm,
Special issue in memoriam Prof. Vladilen S. Letokhov
Laser Phys. 20, 23 (2010), arXiv:0904.0935

9. *Observation of an Efimov resonance in an ultracold mixture of atoms and weakly bound dimers*
S. Knoop, F. Ferlaino, M. Berninger, M. Mark, H.-C. Nägerl, R. Grimm,
Proceedings ICPEAC 2009 (Kalamazoo)
J. Phys.: Conf. Ser. 194, 012064 (2009), arXiv:0907.4510

8. *Collisions of optically trapped ultracold cesium Feshbach molecules*
F. Ferlaino, S. Knoop, M. Berninger, M. Mark, H.-C. Nägerl, R. Grimm,
Special issue in memoriam Prof. Vladilen S. Letokhov
Laser Phys. (2009), arXiv:0904.0935

7. *Crossover to 2D in a double-evanescent wave trap*
D. Rychtarik, B. Engeser, M. Hammes, H.-C. Nägerl, and R. Grimm,
in Quantum Gases in Low Dimensions, edt. by L. Pricoupenko, H. Perrin, and M. Olshanii
J. Phys. IV France 116, 241 (2004)

6. *Addressing and cooling of single ions in Paul traps*
H.-C. Nägerl, C. Roos, H. Rohde, D. Leibfried, J. Eschner, F. Schmidt-Kaler, and R. Blatt,
Proceedings of the Adriatico Conference on Quantum Interferometry III, Trieste, March 1999, Fortschr. Phys. 48, 623 (2000).

5. *Single Ions in Paul traps*
F. Schmidt-Kaler, C. Roos, H.-C. Nägerl, H. Rohde, S. Gulde, A. Mundt, T. Zeiger, G. Reymond, G. Thalhammer, D.Leibfried, J. Eschner, R. Blatt,
Proceedings of the 14th International Conference on Laser Spectroscopy (ICOLS99) June 7-11, 1999, World Scientific, Singapore, 1999.

4. *Single Ions in Paul traps*
H.-C. Nägerl, C. Roos, H. Rohde, D. Leibfried, J. Eschner, F. Schmidt-Kaler, R. Blatt,
in: **Decoherence: Theoretical, Experimental, and Conceptual Problems, eds. P. Blanchard, D. Giulini, C. Kiefer, and I. O. Stamateccu,** Springer, Berlin, 1999.

3. *Cavity QED-Experiments for Quantum Information: Trapped Ions and Atoms in Cavities*
F. Schmidt-Kaler, H.-C. Nägerl, D. Leibfried, R. Blatt, M. Brune, J.M. Raimond, S. Haroche,
in: The Physics of Quantum Information, Springer, Berlin, 2000.

2. *Linear Ion Traps for Quantum Computation*
H.-C. Nägerl, F. Schmidt-Kaler, J. Eschner, R. Blatt, W. Lange, H. Baldauf, H. Walther,
in: The Physics of Quantum Information, Springer, Berlin, 2000.

1. *Trapped ions for quantum gates and Cavity QED*
H.-C. Nägerl, C. Roos, W. Bechter, J. Eschner, F. Schmidt-Kaler, R. Blatt,
in: Proceedings of the 13.International Conference on Laser Spectroscopy (THICOLS), Hangzhou, China, 03.-07.06.97.

F) Popular articles

4. Gigantische Dreiteilchenbindung
H.-C. Nägerl
Physik Journal 13, 18 (2014).

3. Wenn drei sich binden
H.-C. Nägerl
Physik Journal 8, 18 (2009).

2. *Moleküle am absoluten Nullpunkt: Ultrakalte Moleküle erobern die Welt der Quantgase*
J. Hecker Denschlag, H.-C. Nägerl, R. Grimm
Physik Journal 3, 33 (2004).

1. *Quantenoptik: Bose-Einstein-Kondensation mit Cäsium*
T. Weber, J. Herbig, M. Mark, H.-C. Nägerl
Physik in unserer Zeit 34, 58 (2003)

List of invited talks
(talks delegated to members of the team(s) are not listed)

A) Conference and workshop participations - invited lectures only

1. Brazilian-German Wilhelm and Else Heraeus Seminar on “Challenges of Low-Dimensional Quantum Gases”, Sao Paulo, 23.3.2026, “Exotic quantum statistics in strongly interacting 1D Bose gases”.
2. International Conference on Ultracold Atoms, Molecules, Ions, and Their Manipulation by Light, Hongkong, 11.12.2025, “Dynamical Localization and the Quantum-Classical Boundary in Driven Interacting Gases”.
3. Haikou Winter School “Fundamentals and Frontiers of Ultracold Atoms and Molecules”, Haikou (China), 6.12.2025, “Bosons with tunable interactions: A rich platform for quantum many-body physics”.
4. Workshop “Ultracold Molecules“, Warsaw (Poland), 24.6.2025, “Ultracold ground-state KCs molecules”.
5. Workshop “Quantum physics in low dimensions”, Wuhan (China), 30.5.2025, “Localization and anyonization of one-dimensional bosons”.
6. Autumn Meeting of the Brazilian Physical Society, Belèm (Brazil), 21.5.2025, plenary talk, “Cold atoms: A wonderful platform for quantum physics”.
7. Workshop “Quantum thermalization in closed systems: From theory to experiments”, Munich/Garching, 6.5.2025, “Observation of many-body dynamical localization”.
8. Conference “Universal themes in Bose-Einstein Condensation”, Trento (Italy), 6.11.2024, “Observation of many-body dynamical localization”.
9. Conference “Novel Emergent Phenomena in Quantum Many-Body Dynamics”, Les Houches (France), 28.8.2024, “Observation of many-body dynamical localization”.
10. Conference ISCAP 2024, Shanghai, 29.6.2024, “Observation of many-body dynamical localization”.
11. Workshop “Quantum Transport with Ultracold Atoms” QTUA22, Dresden, 30.8.2022, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
12. Workshop DesOEQ/QSUM, Glasgow, 11.7.2022, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
13. ESI Workshop "Topology, Disorder, and Hydrodynamics in Non-equilibrium Quantum Matter" (SVS21), 3.12.2021, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
14. Online School and Discussion Meeting on Trapped Atoms, Molecules and Ions, ICTS India, talks on 10. and 11.5.2021, “Molecools”.
15. Conference DesOEQ-QSUM, Oxford, England, 19.9.2019, “Dynamics in strongly correlated Bose gases”.
16. BEC-Conference Sant Feliu, Spain, 10.9.2019, “Dynamics in strongly correlated Bose gases”.
17. Workshop “Correlations and Transport in One-Dimensional Structures”, Dresden, Germany 5.7.2019, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
18. Workshop CAMEL 2019, Nessebar, Bulgaria, 17.6.2019, “Quantum dynamics in strongly correlated Bose gases”.
19. Workshop “Compound (Atomic) Quantum Systems”, Leiden, Netherlands, 23.5.2019, “Impurity dynamics in 1D for strong interactions: Bloch oscillations in the absence of a lattice”.
20. DPG-Frühjahrstagung Regensburg, Germany, 4.4.2019, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
21. SFB-FOQUS final conference, Innsbruck, Austria, 7.2.2019, “Quantum control of ultracold molecular samples”.
22. Conference “Quantum Paths in Low Dimensions: Theory and Experiment”, Erwin-Schrödinger Institute, Vienna, Austria, 12.4.2018, “Impurity dynamics in 1D for strong interactions: Bloch oscillations in the absence of a lattice”.
23. Spring Meeting of the American Chemical Society (ACS) 2018, New Orleans, 18.3.2018, “Quantum control of ultracold molecular samples”.
24. Conference “Quantum Many-Body Systems far from Equilibrium”, Stellenbosch, South Africa, 14.3.2018, “Impurity dynamics in 1D: Bloch oscillations in the absence of a lattice”.
25. Conference Quantum Optics Obergurgl 2018, 2.3.2018, “Quantum control of ultracold molecular samples”.
26. Conference “Croucher Conference on Frontiers of Cold Atom Systems”, Hong Kong, 7.12.2017, “Quantum control of ultracold molecular samples”.

27. Workshop “Small and Medium Sized Cold Atom Systems” at the Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, 19.7.2017, “Bloch oscillations in the absence of a lattice”.
28. APS DAMOP, Sacramento, USA, 7.6.2017, “Bloch oscillations in the absence of a lattice”.
29. Workshop IsoQuant, Obergurgl, Austria, 21.2.2017, “Atomic quantum gas experiments: Transport and long-range physics” (evening talk).
30. Quantum Technologies Conference VII, Warsaw, Poland, 20.9.2016, “Bloch oscillations in the absence of a lattice” (keynote speaker).
31. Workshop on “Long-range Interactions in the Ultracold”, Ercolano/Naples, Italy, 7.9.2016, “Quantum engineering of a low-entropy gas of heteronuclear bosonic molecules in an optical lattice”.
32. Workshop on “Synthetic Topological Quantum Matter”, KITPC Beijing, China, 4.8.2016, “Floquet engineering of correlated tunneling in the Bose-Hubbard model with ultracold atoms”.
33. International Conference on Atomic Physics (ICAP) 2016, 28.7.2016, Seoul, Korea, “Correlation-induced Bloch oscillations in a translationally invariant one-dimensional Bose liquid”.
34. Workshop Camel 2016, Nessebar, Bulgaria, 29.6.2016, “Dipolar gases, modulated interactions, and impurity transport”.
35. STIRAP Conference Kaiserslautern, 22.9.2015, “STIRAP on molecules at nanokelvin temperatures”.
36. BEC-Conference San Feliu, 9.9.2015, San Feliu, “Dynamics of ultracold bosons under strong confinement’’.
37. Gordon Research Conference 2015 Atomic Physics, Newport, Rhode Island, USA, June 17th 2015, “Dynamics in one-dimensional chains of bosons”.
38. Winter School on “Non-Equilibrium Quantum Systems: Theory and Experimental Implementation”, Universitätszentrum Obergurgl, 7.-10. April 2015, “Dynamics in one-dimensional chains of bosons”.
39. DPG March Meeting 2015, March 24th, Heidelberg, Germany, “Ground-state molecules near quantum degeneracy: the nuts and bolts”.
40. Workshop “Physics at the Falls: Phase Transitions in Low Dimensions”, November 12th-14th 2014, University of Buffalo, NY, USA, “Dynamics in one-dimensional chains (and wires) of bosons”.
41. Conference “Frontiers of Matter-Wave Optics”, FOMO2014, October 6th-10th 2014, Chania, Crete, “Dynamics in one-dimensional chains (and wires) of bosons”.
42. Workshop “Quantum Critical Matter–from Atoms to Bulk”, August 18th-23rd 2014, Obergurgl, Austria, “Dynamics in one-dimensional chains of bosons”.
43. APS March Meeting 2014, March 3rd – 7th, 2014, Denver, USA, “Many-body quantum quench in an atomic one-dimensional Ising chain”.
44. Conference on “Ultrafast Dynamics of Correlated Materials”, October 14th-17th, 2013, Trieste, Italy, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
45. Workshop on “Long-range interactions in the ultracold”, September 3rd-5th, 2013, Stuttgart, Germany, “Ultracold samples of RbCs and Cs_2 ground-state molecules”.
46. Workshop on “Quantum Many Body Systems out of Equilibrium”, August 18th-23rd, 2013, Dresden, Germany, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
47. Workshop on “Low-D Quantum Condensed Matter 2013”, July 8th-12th, 2013, Amsterdam, Netherlands, “Strongly correlated gases and dynamics in 1D”.
48. Workshop on “Quantized Vortices in Superfluidity and Superconductivity and Related Problems”, July 1st-5th, 2013, at the Wolfgang Pauli Institute (WPI) Vienna, Austria, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
49. APS-DAMOP conference, June 3rd-8th, 2013, in Quebec, Canada, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
50. Workshop on “New magnetic field frontiers”, May 6th-10th, 2013, in Les Houches, France, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
51. Workshop on "Equilibration and Thermalization in Quantum Systems", April 15th-19th, 2013, in Stellenbosch, South Africa, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
52. Heraeus workshop on "Quantum many-body dynamics in open systems", April 3rd-5th, 2013, in Bad Honnef/Bonn, Germany, “Quench dynamics in strongly correlated Bose-Hubbard chains”.

53. Workshop on “Dynamical Correlations in Quantum Matter: From Few- to Many-Body Systems”, May 30th-June 1st, 2012, at ITAMP/ZOQ/CFEL, Hamburg, Germany, “An atomic Mott insulator with strong attractive interactions”.
54. Workshop on “New quantum states of matter in and out of equilibrium”, May 21st-25th, 2012, at the Galileo Galilei Institute for Theoretical Physics (GGI), Florence, Italy, “Atoms with tunable interactions in optical lattice confinement”.
55. Workshop on “Low-Dimensional Quantum Gases out of Equilibrium”, May 11-13, 2012, at the University of Minnesota, Minneapolis, USA, “A meta-stable Mott insulator with strong attractive interactions”.
56. Workshop on “Research Frontiers in Ultra-Cold Atoms and Molecules: Unequal Mass Mixtures and Dipolar Molecules”, April 23-25, 2012 at ITAMP, Harvard University, Cambridge, USA, “Generation of ultracold samples of ground-state RbCs molecules in an optical lattice”.
57. APS-March Meeting Boston, 1.3.2012, “An ultracold high-density sample of rovibronic ground-state molecules in an optical lattice”.
58. Diavolezza Workshop 2012 on “Cold Molecules”, Switzerland, Feb. 12.-18., 2012, “Generation of ultracold samples of ground-state RbCs”.
59. Aspen Center for Physics Winter Conference 2012: New Directions in Ultracold Atoms, Aspen, Colorado, USA, January 9 - 14, 2012, “Generation of ultracold samples of ground-state RbCs“.
60. Workshop “Phase Transformations and Novel Materials”, Obergurgl, Austria, 4. Nov. 2011, “Model Studies of Phase Transitions in Optical Lattices”.
61. Advanced Working Group on Nonequilibrium Phenomena in low-dimensional Cold Gases, Royal Holloway, University of London, 21.10.2011, “Strong local three-body correlations for bosons in 1D”.
62. Topical Group on “Fundamental Science with Ultracold Molecules” at ITAMP, Harvard University, 20.9.2011, “Towards quantum many-body physics with ultracold molecules”.
63. Conference on “Quantum Quenches and Strongly Correlated Physics”, Montauk, Long Island, USA, 7.9.2011, ”Strong correlations in ultracold gases”.
64. SFB-Workshop CoCoMat, Reisensburg, Germany, 29.11.2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
65. KITP-Conference ’’Frontiers of Ultracold Atoms and Molecules’’, Santa Barbara, USA, 14. Oct. 2010, ’’Strongly-interacting Quantum Gases in One-dimensional Geometry’’.
66. Conference ’’Correlations and Coherence at Different Scales’’, Ustron, Poland, 6. Sept. 2010, ’’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
67. MPIPKS-Conference ’’Quo Vadis BEC?’’, Dresden, Germany, 19. Aug. 2010, ’’Tunable quantum gases in low dimensions’’.
68. International Conference on Atomic Physics 2010 (ICAP2010), Cairns, Australia, 28. July 2010, ‘’Ultracold ground state molecules in an optical lattice’’.
69. MPIPKS-Conference on ‘’Few Body Dynamics in Atoms, Molecules and Planetary Systems’’, Dresden, Germany, 29. June 2010, ‘’Few-body systems in the context of ultracold gases’’.
70. Symposium Junge Akademie Berlin, 25. June 2010, ‘’Quantum engineering of many-body systems (the bottom up approach)’’.
71. APS DAMOP, Houston, Tx, USA, 29. May 2010, ‘’Ultracold ground state molecules in an optical lattice’’.
72. APS DAMOP, Houston, Tx, USA, 28. May 2010, “Efimov physics: what we can learn from cesium atoms”-
73. Fysica 2010, Utrecht, Netherlands, 23. April 2010, ‘’Ultracold atomic gases for the investigation of strongly-correlated 1D many-body systems’’.
74. Deutsche Physikalische Gesellschaft (DPG) Frühjahrstagung, 10.3.2010, Hannover, Hauptvortrag, ‘’Tunable quantum gases in optical lattice potentials’’.
75. BEC-Conference San Feliu, 8.9.2009, San Feliu, ‘’Strongly interacting bosons in 1D’’.
76. JILA CoCoMo-Workshop, JILA, Boulder, USA, 16.7.2009, ‘’A quantum gas of rovibronic ground-state molecules in an optical lattice’’.
77. ETH-Zürich Monte-Veritá Conference on Quantum Engineering, Switzerland, 19.6.2009, ‘’Atomic and Molecular Quantum Gases in Optical Lattices’’.

78. International Conference on Laser Spectroscopy (ICOLS), Hokkaido, Japan, 11.6.2009, ‘’A quantum gas of rovibronic ground state molecules in an optical lattice, plus: Strongly- interacting 1D gases’’.
79. MPIKS-Workshop on "Bloch oscillations and Landau-Zener tunnelling", 8.5.2009, Dresden, ‘’Tunable quantum gases in optical lattices’’.
80. Young Atom Opticians (YAO) Confererence, Vienna, 17.2.2009, Keynote Talk, ‘’The Magic of Tunable Bosonic Quantum Gases’’.
81. SFB final conference, Innsbruck, 30.1.2009, ‘’Few-body processes in quantum-gas systems…and some deviations‘’.
82. ESF-EuroQUASAR Kick-off Conference, Florence, Italy, 12.12.2008, ‘’Quantum Degenerate Gases for Precision Measurements’’.
83. Workshop: Strong Correlations in Multiflavor Ultracold Quantum Gases, München, Gemany, 2.10.2008, “Interference and Transport for Matter Waves with Tunable Interactions’’.
84. EuroQUAM Inauguration Conference, Barcelona, Spain, 8.4.2008, ‘’Matter wave interference with tunable interactions’’.
85. Interf08, Levico Therme, Italy, 4.4.2008, ‘’Matter wave interference with tunable interactions’’.
86. APS March Meeting, New Orleans, USA, 10.3.2008, ‘’Collisions of ultracold molecules’’.
87. QuDipMol Workshop, Freiburg, Germany, 12.11.2007, “Towards Ultracold RbCs molecules in an optical lattice”.
88. EFB20, Pisa, Italy, 12.9.2007, “Evidence for Efimov Quantum States in Experiments with Ultracold Cesium Gases”.
89. UBC Workshop “Ultracold Molecules”, 1.8.2007, Vancouver, “Dimer and Trimers near Threshold”.
90. ECAMP2005, Crete, Greece, 11.5.2007, “Evidence for Efimov Quantum states in Experiments with Ultracold Cesium Atoms”.
91. KITP, Santa Barbara, USA, 27.4.2007, “Evidence for Efimov Quantum states in Experiments with Ultracold Cesium Atoms”.
92. Bad Honnef, Germany, "Achievements and Perspectives of Cold Molecules", 2.11.2006, “Experiments with ultracold dimer molecules and evidence for Efimov trimer states”.
93. ICAP 2006, Innsbruck, Austria, 20.7.2006, “Experimental Evidence for Efimov Quantum States”
94. DAMOP 2006, Knoxville, TN, USA, 20.5.2006, “Experimental Evidence for Efimov Quantum States”.
95. Les Houches, France, Workshop on “Achievements and Perspectives of Cold Molecules”, 8.3.2006, “Experimental Evidence for Efimov Quantum States”.
96. BEC 2005, San Feliu, Spain, 12.9.2005, „Observation of Efimov resonance(s)”.
97. Shonan Village, Japan, ESF-JSPS Conference on “Quantum Information and Quantum Physics”, 17.3.2005, „Experiments with ultracold molecules and molecular quantum gases“.
98. ITAMP, Harvard University, Boston, USA, Workshop on „Quantum Degenerate Gases in Low-Dimensionality“, 4.10.2004, „A Two-Dimensional Bose-Einstein Condensate in an Optical Surface Trap“.
99. Tucson, USA, OSA-Conference “Frontiers in Optics”, 6.10.2003, “Ultracold Molecules from a Cs BEC”.
100. Volterra, Italy, Workshop on “Ultracold Molecules”, 26.9.2003, “Ultracold Molecules from a Cs BEC”.
101. EQEC 2003, München, Germany, 25.6.2003, “Bose-Einstein condensation of optically trapped cesium and more exciting news from our lab".
102. DPG-Frühjahrstagung, Hannover, Germany, Hauptvortrag, 25.3.2003, “Bose-Einstein-Kondensation von Cäsium”.
103. Quantum Optics 2003, Obergurgl, 28.2.2003, „Bose-Einstein condensation of optically trapped cesium“.
104. QELS Baltimore, USA, 11.5.2001 “Interactions of ultracold atoms in optical dipole traps”.
105. ESF Conference “Quantum Optics X”, Palma de Mallorca, Spain, Oct. 1999, “Cavity QED with trapped atoms”.

B) Invited colloquium and invited seminar talks

1. Shenzhen University of Science and Technology (SUSTech), 9.12.2025, Colloquium, “Bosons with tunable interactions: A rich platform for quantum many-body physics”.

2. University of Copenhagen, Niels Bohr Institute, 3.12.2025, Colloquium, “Cold atoms: A wonderful platform for quantum physics”.
3. TU Vienna, Atominstitut, 28.11.2025, Seminar, “Cold atoms: A wonderful platform for quantum physics”.
4. Beijing Academy of Quantum Information Sciences, 5.6.2025, Seminar, “Localization and anyonization of one-dimensional bosons”.
5. Renmin University, 4.6.2025, Colloquium, “Localization and anyonization of one-dimensional bosons”.
6. Peking University, 3.6.2025, Seminar, “Localization and anyonization of one-dimensional bosons”.
7. Universität Göttingen, 9.12.2024, Colloquium, “Cold atoms: A wonderful platform for quantum physics”.
8. Shanxi University, 1.7.2024, Seminar, “The wonder-full world of one-dimensional bosons”.
9. ECNU Shanghai, 26.6.2024, Colloquium, “The wonder-full world of one-dimensional bosons”.
10. Shanghai, 25.6.2024, Seminar, “The wonder-full world of one-dimensional bosons”.
11. Stanford University, 9.11.2023, Seminar, “The wonder-full world of one-dimensional bosons”.
12. University of California at Berkeley, 8.11.2023, Seminar, “The wonder-full world of one-dimensional bosons”.
13. University of Texas at Austin, 7.11.2023, Seminar, “The wonder-full world of one-dimensional bosons”.
14. TU Vienna, Austria, 30.3.2023, Seminar, “Quantum dynamics in 1D Bose systems”.
15. TU Vienna, Austria, 24.2.2023, Seminar, “Pinning quantum phase transition: old work and ongoing activities”.
16. Universität Ulm, Germany, 3.12.2019, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
17. Warsaw University, Poland, 6.6.2019, “Quantum dynamics in strongly correlated one-dimensional Bose gases”.
18. Université Paris-Sud, Palaiseau, 22.3.2019, “Impurity dynamics in 1D for strong interactions: Bloch oscillations in the absence of a lattice”.
19. Universität Basel, Basel, Switzerland, Chemistry Colloquium, 21.3.2019, “Quantum control of ultracold molecular samples”.
20. University of Queensland, Brisbane, 30. Oct. 2018, “Impurity dynamics in 1D for strong interactions: Bloch oscillations in the absence of a lattice”.
21. Institute of Science and Technology Austria (ISTA), Klosterneuburg, Austria, 23. May 2018, “Quantum control of ultracold molecular samples”.
22. University of Queensland, Brisbane, Australia, 10. Oct. 2017, “Quantum control of ultracold molecular samples”.
23. Stanford University, USA, 1. June 2017, “Bloch oscillations in the absence of a lattice”.
24. Imperial College London, UK, 12. May 2017, “Bloch oscillations in the absence of a lattice”.
25. Universite de Strasbourg, France, 20. January 2017, “Overview Innsbruck Activities: Dipolar quantum gases, ultracold molecular collisions, impurity transport, modulated interactions,…”
26. Universität Hamburg, Germany, 19. October 2016, “Bloch oscillations in the absence of a lattice”.
27. University of Trento, Italy, 8. April 2016, “Experiments with quantum-gas mixtures and tunable interactions: Dipolar gases, modulated interactions, and impurity transport”.
28. UQUAM Video-Seminar, Innsbruck/MPQ/Paris/Weizmann, 11. June 2015, „Atoms and Molecules in Lattice Potentials”.
29. MIT and Harvard University combined CUA-Seminar, Boston, USA, 5. May 2015, “Dynamics in one-dimensional chains of bosons”.
30. Universität Mainz, Germany, 4. Dec. 2014, “Dynamics in one-dimensional chains (and wires) of bosons”.
31. Universität Heidelberg, Germany, CQD-Kolloquium, 29. Oct. 2014, “Dynamics in one-dimensional chains (and wires) of bosons”.
32. Universität Hannover, Germany, RTG-Kolloquium, 23. Oct. 2014, “Dynamics in one-dimensional chains (and wires) of bosons”.
33. University of California at Berkeley, USA, 29. April 2014, “Dynamics in one-dimensional chains of bosons”.

34. University of Colorado, JILA, Boulder, USA, 23. April 2014, “Dynamics in one-dimensional chains of bosons”.
35. Universität Stuttgart, Germany, 20. Dec. 2013, “Quench dynamics in strongly correlated Bose-Hubbard chains”.
36. SISSA/ICTP Trieste, Italy, 18. Dec. 2012, “Ultracold atoms with tunable interactions in confined geometry”.
37. Technical University of Graz, Austria, 13. Dec. 2012, “Quantum engineering with ultracold atoms and molecules”.
38. University of Amsterdam, Netherlands, 3. Dec. 2012, “Tunable quantum gases in optical lattices”.
39. Max-Planck-Institute for Quantum Optics, München, Germany, 19. June 2012, “Molecools: Ultracold samples of ground-state molecules near quantum degeneracy” (colloquium talk)
40. University of Florence and LENS, Florence, Italy, 24. May 2012, “Molecools: Ultracold samples of ground-state molecules near quantum degeneracy”.
41. University of Nottingham, 2. May 2012, “Molecools: Ultracold samples of ground-state molecules near quantum degeneracy” (physics colloquium talk).
42. Universität Ulm, Germany, 16. April 2012, “Quantum engineering at nano-Kelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems” (physics colloquium talk).
43. Universität Göttingen, Germany, 31. Oct. 2011, “Quantum engineering at nano-Kelvin temperatures” (physics colloquium talk).
44. Harvard University, Boston, USA, 22. Sept. 2011, ‘’Molecools: Ultracold samples of ground-state molecules near quantum degeneracy” (joint Atomic ITAMP-Harvard Physics Colloquium Talk).
45. Universität Bonn, Germany, 5. July 2011, ‘’Strongly correlated one-dimensional quantum systems” (physics colloquium talk).
46. University of California at Los Angeles (UCLA), USA, 21. April 2011, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’ (physics colloquium talk).
47. Yale University, New Haven, USA, 18. April 2011, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’ (physics colloquium talk).
48. Stony Brook University, Stony Brook, USA, 15. April 2011, ‘’Strongly correlated one dimensional quantum systems”.
49. Stony Brook University, Stony Brook, USA, 14. April 2011, ‘’Molecools: Ultracold samples of ground-state molecules near quantum degeneracy”.
50. University of Conneticut, Storrs, USA, 12. April 2011, ‘’Molecools: Ultracold samples of ground-state molecules near quantum degeneracy”.
51. ETH Zürich, Schweiz, 15. März 2011, ‘’Molecools: Ultracold samples of ground-state molecules near quantum degeneracy” (colloquium talk “Physikalische Chemie”).
52. University of Hamburg, Institut für Laserphysik, Germany, 8. Dec. 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
53. Australian National University (ANU), Canberra, Australia, 22. July 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
54. Swinburne University, Melbourne, Australia, 20. July 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
55. Kolloquium Max-Planck-Institut für Quantenoptik (MPQ), Munich, Germany, 6. July 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
56. Universität Frankfurt, Physikkolloquium, 16. June 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
57. Harvard ITAMP AMOP Seminar, 12. May 2010, ‘’Ultracold quantum gases in optical lattice potentials: From molecules to strongly-interacting 1D systems’’.

58. Atomic physics colloquium, Cambridge University, Cambridge, United Kingdom, 3. May 2010, ‘’Tunable quantum gases in optical lattices: Ground state molecules and strongly-interacting 1D systems’’.
59. Atomic physics colloquium Utrecht, Utrecht University, Netherlands, 21. April 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
60. Seminar Physikalische Chemie Innsbruck, 15. April 2010, ‘’Quantum engineering at nanokelvin temperatures: Quantum phase transitions, strong correlations, and novel many-body systems’’.
61. Physics-Colloquium Kaiserslautern, 27.11.2009, ‘’Ultracold quantum gases in optical lattice potentials: From molecules and strongly-interacting 1D systems to super Bloch oscillations’’.
62. Colloquium Amsterdam, 27.10.2009, ‘’Ultracold quantum gases in optical lattice potentials: From molecules to strongly-interacting 1D systems’’.
63. Colloquium Prague, 21.9.2009, ‘’Atoms and molecules at zero temperature’’.
64. Seminar NIST, Boulder, USA, 14.7.2009, ‘’Tunable quantum gases in optical lattices: Ground state molecules and 1D systems’’.
65. Colloquium Trento, Italy, 12.1.2009, ‘’Experiments with ultracold atomic and molecular quantum gases’’.
66. Seminar Mainz, 20.11.2008, ‘’Experiments with ultracold atomic and molecular quantum gases’’.
67. SFB-Colloquium Ulm, 18.7.2008, ‘’Matter Wave Interference with Interactions and Quantum Gases of Deeply Bound Molecules’’.
68. Seminar Fritz-Haber Institut of the MPG, 20.6.2008, Berlin, ‘’Ultracold deeply bound molecules’’.
69. Colloquium Konstanz, 17.6.2008, ‘’Molecules at zero temperature’’.
70. Kolloquium Doktoranden-Kolleg Heidelberg, 8.2.2008, ‘’Matter wave interference with tunable interactions’’.
71. SFB-Kolloquium Innsbruck, 1.2.2008, ‘’Matter wave interference with tunable interactions’’.
72. University of Durham, England, Atomic Physics seminar talk, 5.12.2007, “Experiments with tunable quantum gases”.
73. LENS Florence, Italy, Seminar talk, 9.11.2007, “Experiments with tunable quantum gases”.
74. Universität Wien, Austria, 29.10.2007, Graduiertenkolleg Kolloquium, “Experiments with tunable quantum gases”.
75. UC Berkeley, USA, Atomic Physics Seminar, 30.4.2007, “Evidence for Efimov Quantum states in Experiments with Ultracold Cesium Atoms”.
76. Institute d’Optique, Orsay, France, 1.12.2006, Colloquium, “Evidence for Efimov Trimer States”.
77. ENS Paris, France, 30.11.2006, Physics Colloquium, “Evidence for Efimov Trimer States”.
78. Universität Ulm, Germany, Quantum Optics Colloquium, 3.11.2006, “Experiments with ultracold dimer molecules and evidence for Efimov trimer states”.
79. Universität Heidelberg, Germany, Quantum Optics Seminar, 5.7.2006, “Dimers and Trimers”.
80. SFB-Kolloquium, Innsbruck, Austria, 27.1.2006, “Experimental Evidence for Efimov Quantum States”.
81. ETH Zürich, Switzerland, Quantum Optics Seminar, 5.12.2005, “From Dimers to Trimers”.
82. TU Vienna, Institut für Photonik, Seminar talk, 5.11.2005, “Experiments with ultracold molecules and molecular quantum gases”.
83. Universität Jena, Institut für Angewandte Physik, Semiar talk, 15.10.2005, “Abstimmbare atomare und molekulare Quantengase”.
84. Universität Göttingen, Seminar talk at the Institute for Theoretical Physics, 11.5.2005, “Abstimmbare atomare und molekulare Quantengase”.
85. NIST, Boulder, USA, Seminar talk, 10.10.2003, “Ultracold Molcules from a Cs BEC”.
86. JILA, Boulder, USA, Seminar talk, 9.10.2003, “Ultracold Molcules from a Cs BEC”.
87. Universität Hamburg, Institut für Laserphysik, Seminar talk, 16.7.2003, “Molecular Matter Waves”.
88. Universität Heidelberg, Seminar talk, 21.5.2003, “Bose-Einstein Kondensation von Cäsium”.
89. Stanford, USA, Seminar talk, 2.12.2002, “A tunable Bose-Einstein Condensate with Cesium Atoms“.

90. Caltech, Pasadena USA, Quantum Optics Seminar, 18.11.2002, “A tunable Bose-Einstein Condensate with Cesium Atoms”.
91. Universität Stuttgart, Seminar talk, 14.11.2002, “A tunable Bose-Einstein Condensate with Cesium Atoms”.
92. Universität Giessen, Colloquium talk, 11.11.2002, “Atoms @ atto-eV energies: new developments in the ultracold”
93. Uni München, Seminar talk, 12.6.2001, “Experimente mit ultrakaltem Cs-Gas in Dipol-Fallen”.
94. Caltech, Pasadena USA, Quantum Optics Seminar, 14.5.2001, “Interactions of ultracold atoms in optical dipole traps”.
95. Los Alamos, USA, Seminar talk, 21.9.2000, “Cavity QED with trapped atoms”.
96. Universität Innsbruck, Quantum Optics Seminar, Feb. 2000, „Dipolfallen und Hohlraum-quantenelektrodynamik: Einzelne Atome in Wechselwirkung mit einzelnen Photonen“.
97. Los Alamos, USA, Seminar talk, 10.2.1999, “Ion strings for quantum gates”.
98. Caltech, Pasadena, USA, Quantum Optics Seminar, Sept.1997, “Ion strings in a linear ion trap”.

C) Invited public talks

1. St. Pölten, 11.12.2017, “Faszination Quantenphysik: Grundlagen und Anwendungen“ (in German), on the occasion on the „Industrie 4.0“ annual convention.
2. University of Innsbruck, 3.11.2017, “Faszination Physik: Von der Grundlagenforschung zur Anwendung” (in German), on the occasion of the second birthday of the university’s friends’ association “1669”.
3. Kaminkehrer-Innung, Achensee, 15.06.2018, “Faszination Quantenphysik: Von der Grundlagenforschung zur Anwendung“.
4. WiFi/WKÖ, Achensee, 29.06.2018, “Faszination Quantenphysik: Von der Grundlagenforschung zur Anwendung“.
5. WissensDurst-Festival Innsbruck, 8.5.2019, „Gepinnte Quantenteilchen: Wenn Wenig einen großen Unterschied macht“.

List of past and ongoing projects

(only those projects are listed for which H.-C. Nägerl is the sole resp. lead project leader)

1. “Tunable Quantum Matter for Precision Measurements”, BMWF-FWF-START-project, duration September 2003 to December 2009, budget 1.2 Mio Euros.
2. “Ultracold RbCs molecules in an optical lattice”, ESF-FWF-EuroQUAM-project, duration August 2007 to July 2010, budget 210.000 Euros.
3. “Tunable quantum gases of Cs atoms and molecules in optical lattices”, ESF-FWF-EuroQUASAR-project, duration August 2008 to July 2011, budget 200.000 Euros.
4. “Quantum gases of ground-state molecules”, FWF-project, duration August 2009 to July 2012, budget 380.000 Euros, project number I153-N16.
5. “Dipolar quantum gases”, FWF-SFB-project within SFB FOQUS, duration January 2009 to December 2012, budget about 320.000 Euros, project number F4006-N16.
6. “Microscopy of Tunable Many-Body Quantum Systems”, ERC Starting “Consolidator” Grant, duration January 2012 to December 2016, budget 1.48 Mio. Euros, project number 278417.
7. “Dipolar quantum gases”, FWF-SFB-project within SFB FOQUS, duration January 2013 to December 2015, budget about 400.000 Euros, project number F4006-N23.
8. “Control of ultracold quantum gases with shielded interactions”, FWF-ANR joint project, duration fall 2014 to fall 2017, budget about 213.000 Euros for the Innsbruck part, project number I1789-N20.
9. “Dipolar quantum gases”, FWF-SFB-project within SFB FOQUS, duration January 2016 to December 2018, budget about 420.000 Euros, project number F4006-N23.
10. “Dynamics of strongly correlated RbCs dipolar quantum gases“, project within a DFG-FWF Forschergruppe, duration Nov. 1st 2016 to Oct.31st 2019, budget about 327.000 Euros, project number I2789-N36
11. “Experiments with Potassium-Cesium Quantum Gas Mixtures”, FWF stand-alone project, duration Nov. 2016 to Oct. 2019, budget about 476.000 Euros, project number P29602-N36.

12. “Impurity dynamics in tunable one-dimensional quantum gases”, FWF-ANR joint project, duration Nov. 2016 to Oct. 2019, budget about 219.000 Euros for the Innsbruck part, project number I2922-N36.
13. Wittgenstein prize grant, March 1st 2018 to Aug. 31st 2024 (including 18 months extension), budget 1.5 Mio Euros, project number Z336-N36.
14. “Correlated Molecular Quantum Gases in Optical Lattices” (CoMoQuant), ERC advanced grant, Jan. 1st 2019 to Dec. 31st 2023, budget 2.37 Mio Euros, project number 789017.
15. “Dynamics of strongly correlated RbCs dipolar quantum gases“, project within a DFG-FWF Forschergruppe, duration Nov. 1st 2019 to Oct. 31st 2022, budget about 210.000 Euros, project number I4343-N36.
16. “Quantum simulation with engineered dissipation” (QuSiED), FWF-project within a QuantERA-II network, duration Nov. 1st 2022 to Oct. 31st 2025, budget about 280.000 Euros, project number I 6008-N.
17. QuantA, FWF-funded research consortium, since Oct. 2023-Mar. 2026, budget for our group about 400.000 Euros
18. Tiroler Wissenschaftsfonds (TWF), project number WF-F.50270/16-2025, April 1st 2024 to April 30th 2025, budget about 77.000 Euros.
19. ERC Advanced Grant “Coolio”, nominally about 2.5 Mio Euros, effectively about 2.0 Mio. Euros, since 1. Sept. 2025.