JULIA KEMPE

Curriculum Vitæ

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EMPLOYMENT

- 03/23 – : Silver Professor of Computer Science, Mathematics and Data Science, Courant Inst. and Center for Data Science, New York University
- 06/24 – : Meta FAIR Paris, Senior Researcher
- 09/18 – 08/23: Director, Center for Data Science, NYU, Member of the NYU Senior Leadership Team
- 09/18 – 03/23: Professor of Computer Science and Mathematics, Courant Institute, New York Univ.
- 2011 – 2019 : Quantitative Researcher (Principal) in Finance
- 10/10 – : CNRS Senior Researcher (Directeur de Recherche, tenured, roughly equiv. to Full Professor), affiliated with IRIF, Univ. of Paris 7, France, on leave
- 11/09 – 08/14: Associate Professor with tenure, School of Computer Science, Tel-Aviv University
- 04/07 – 10/09: Senior lecturer (Assistant Professor), School of Computer Science, Tel-Aviv University
- 10/01 – 10/10: CNRS-Researcher (tenured), affiliated with LRI, Computer Science Department, Université de Paris-Sud, France; CR2, promoted CR1 from 10/05
- 08/03 – 08/04: University of California, Berkeley (Postdoctoral Fellow)
- 09/02 – 12/02: Postdoctoral Scientist, MSRI, Berkeley
- 01/02 – 01/03: Postdoctoral Fellow, UC Berkeley, Computer Science Division and Dept. of Chemistry

EDUCATION

- 08/97 – 12/01: **University of California, Berkeley**
  Department of Mathematics, Ph.D., Advisors: Elwyn Berlekamp and K. Birgitta Whaley
  Thesis: "Universal Noiseless Quantum Computation: Theory and Applications"
  Awarded the *Bernard Friedman Memorial Prize in Applied Mathematics* and the *Morrey Award* in Mathematics
- 10/97 – 04/01: **Ecole Nationale Superieure TELECOM**
  Département Informatique et Réseaux, Ph.D. in Computer Science, Advisor: Gérard Cohen
  Thesis: "Quantum Computing: Random Walks and Entanglement"
  Highest distinction (*très honorable avec félicitations du jury*)
- 10/96 – 07/97: **Ecole Normale Supèrieure, Paris, France**
  Department of Physics, DEA (Masters) in Theoretical Physics, Advisor: Bernard Derrida
- 10/95 – 10/96: **Université de Paris 6, "Pièrre et Marie Curie", Paris, France**
  Department of Mathematics, DEA (Masters) in Algebra, Advisor: Marc Giusti
- 07/94 – 02/95: **University of Technology, Sydney, Australia**
  Department of Physics, Exchange student in the graduate program in Theoretical Physics
- 1992 – 95: **University of Vienna, Austria**
  Department of Mathematics, Undergraduate degree in Mathematics
  Department of Physics, Undergraduate degree in Physics

AWARDS AND HONORS

- 2023: *Julius Silver, Roslyn S. Silver, and Enid Silver Winslow Professorship*, NYU
- 2022: *Fellow of Asia-Pacific Artificial Intelligence Association*, elected
- 2018: *Academia Europaea*, elected member
- 2010: *Knight (Chevalier) in the National Order of Merit (Ordre de Merite)*, France
  Order of State awarded by the President of the French Republic
- 2010: *Femme en Or de la Recherche*, France
  awarded yearly to one woman in each of 9 areas like Sports, Media, Arts etc., one in Science
- 2009: *Raymond and Beverly Sackler Career Development Chair*, Tel Aviv University
  awarded for the year 2009, awarded yearly to two faculty in the Exact Sciences
- 2009: *Krill Prize for Excellence in Scientific Research*
  awarded yearly by the Wolf foundation to 6 Israeli young scientists across all sciences
- 2007: *Ranked first in Europe for ERC Starting Independent Research Grant*
  5-year grant given to about 250 researchers in Europe across all fields (~ 9500 applicants)
  chosen to represent ERC grantees at first ERC conference, Oct. 7, 2008 and in ERC brochure
- 2006: *Prix Irène Joliot-Curie de la jeune femme scientifique*
  (outstanding junior female researcher of the year, awarded by the French Ministry of Science to one female researcher chosen from all the sciences in all of France)
- 2006: *Alon Fellowship*, Higher Council for Academic Studies in Israel
  (prestigious grant given to a few leading new faculty recruits, awarded for 3 years 2007-10)
- 2006: *Médaille de Bronze du CNRS*
  (outstanding young researcher of the year, awarded to one junior researcher per science in all of France)
- 2004: *DAAD-ICSI Berkeley Fellowship* (not taken in favor of MSRI postdoc)
- 2002: *Bernard Friedman Memorial Prize*, Department of Mathematics, UC Berkeley
  (award for best thesis in applied science)
- 2001: *Lady Davies Fellowship* (not taken, hired by CNRS)
- 2001: Thesis with "*félicitations du jury*" (highest distinction), ENST, Paris
- 2000: *Charles B. Morrey, Jr. Prize*, Department of Mathematics, UC Berkeley
  (awarded to a graduate student for outstanding research)
- 1996 – 98: Fellow of the *Studienstiftung des Deutschen Volkes (German National Merit Foundation)*
  (awarded to approx. 0.5% of students across all fields)
- 1996 – 97: *Fellow of the French Government*, France
- 1995: *Chancellor's Award* for Undergraduate Work in Physics, University of Vienna, Austria
- 1994: *Chancellor's Award* for Undergraduate Work in Mathematics, University of Vienna, Austria
- 1991: First Prize, *Bundeswettbewerb für Mathematik* (national contest), West Germany
- 1990: First Place, *East German Mathematics Olympiade* (national contest), East Germany
  member of the international IMO team (could not compete due to relocation to Austria 1990 / dissolution of the East German State)
- 1986 – 92: Various first prizes in regional mathematics, physics and chemistry Olympiads
  Germany (1986-89) and Austria (1990-92)

GRANTS

- co-PI, Simons Foundation Collaborative Grant "The Physics of Learning and Neural Computation", 2025-29, $326K (co-PI's share)
- co-I (with Shirley Ho, Uros Seljak, Olivier Dore) on a NASA grant, 2024-26, $200K
- co-I (with Uros Seljak, Olivier Dore and Shirley Ho) on a NASA TCAN grant, 2024-27, $450K
- PI, NSF NRT "Future" (Training Grant for CDS PhD Program), 2019-2024, $3 Million
- co-PI (together with Oded Regev), Grant of the Wolfson Family Charitable Trust, 2009-2010, 125K British Pounds
- Principal Investigator (single), ERC Starting Independent Researcher grant, 2008-2012, 744K Euro
- Principal Investigator (single), Israeli Science Foundation grant, 2007-2011
- co-PI, QAP (Qubit Applications, Integrated Project of the European Union), 2005-2010
- Principal Investigator, Grant of the Ministry of Science, France, *"Information Security: Quantum Networks"*, LRI and INRIA, 2003-06
  - sponsored through this grant: Jeremie Roland (postdoc 2004-05)
    Thomas Camara (PhD-student 2003-06)
- co-PI (until 4/07), Grant of the Ministry of Science, France, *"Algorithms and Complexity: Quantum and Probabilistic"*, 2005-2008
- Partner in the following grants:
  - RESQ (Resources for Quantum Information, Integrated Project of the European Union, 2003-2005)
  - ACI Cryptologie ("Cryptographie Quantique", Grant of the French Ministry of Science, 2002-2005)
  - ACI Jeune Equipe (Grant of the French Ministry of Science, 2001-2003)

SERVICE

NYU-wide Service and Committees:

- Member of the NYU Budget Task Force (2019 - 2020)
- Member of the Faculty of Arts and Science Dean Search Committee (2019)
- Member of NYU High Performance Computing Faculty Advisory Board (2018 - 2023)
- Member of NYU Research Leadership (2018 -)
- Member of the Senior Leadership Team of President Andrew Hamilton (2018 - 2023)

Board Memberships:

- Erwin Schroedinger Institute, Vienna: Member of the Scientific Advisory Board (2022 -)
- AI4IDF Paris scientific advisory board (2022 -)
- NYU-Moi Data Science Training Program: Member of the Advisory Board (2021 - 23)
- Academic Data Science Alliance (ADSA): Member of the Advisory Board (2020 - 2022)
- Center for Advanced Imaging Innovation and Research (CAI2R), NYU Langone Medical School: Member of the Scientific Advisory Board (2020 - 2024)
- Institute for Computational and Experimental Research in Mathematics (ICERM): Member of the Board of Trustees (2019 - 2023)
- National Museum of Mathematics (MoMath), New York:
  - Member of the Advisory Council (2018 - May 10, 2023)
  - Chair of the Advisory Council (2021 - 2023)

Program and Steering Committees:

- 2012-2015: Member of the Steering Committee of QIP, the leading conference in quantum information
- Member of the Scientific Committee of QIPC'09 (International Conference on Quantum Information Processing and Communication, Rome, Italy)
- Member of the Program Committee of FODS'20, TQC'13, TPNC'12, CCC'12, AQIS'10, QIP'10, UC'09, QIP'09, AQIS'07, CiE'07, QIP'06
- Member (2005-2007) of the steering committee of the GDR *"Information et Communication Quantique"* (assembles several research groups in quantum information in France, one yearly workshop)

Conference, Workshop and Seminar Organization and Chairing:

- Co-organiser of ICLR'26 Workshop "New Frontiers in Associative Memories", 2026
- Co-organiser of ICLR'25 Workshop "New Frontiers in Associative Memories", 2025
- Co-organiser of IPAM workshop "Theory and Practice of Deep Learning", IPAM, UCLA, Oct. 2024
- Co-organiser of "Cosmic Connections: A ML X Astrophysics Symposium", Simons Foundation, New York, May 2023
- Co-organiser of "Machine Learning X Physics workshop", Flatiron Institute, New York, April 2019
- Organizer and chair of the topical session "Quantum Information", QMath'10, Hradec Kralove, Czech Republic, 2010
- Co-organiser of the Advanced School in Quantum Information Processing, Montreal, Canada, 2010

- Organizer and chair of WOCS'08: TAU Women in Computer Science Workshop, Tel Aviv, Israel, March 2008
- Co-organiser of the 9th Conference "Quantum Information Processing (QIP'06), Paris, Jan. 2006
- Organizer of the *Berkeley Seminar for Quantum Computation and Information* (2000-2002), Organizer of the Algo-Seminar at LRI (2005-2007), Organizer of the Tel Aviv Theory Seminar (2007-2008), Organiser of the Departmental Colloquium, Tel Aviv School of Computer Science (2008-2010)

Organization of Graduate Programs:

- Lead PI on NSF NRT grant to expand CDS Data Science PhD program, 2019 - 2023
- Designed and implemented the Medical PhD Track in Data Science, launched Fall 2020, NYU CDS
- Co-founder and manager of the Tel Aviv University "Graduate Program in Foundations of Computing", Fall 2008 - Fall 2010: Secured funding for and built up a competitive graduate program

Organization of Undergraduate Programs:

- Founder of the CDS Undergraduate Research Program (CURP), NYU: since 2021, recurring semester or summer program of research mentorship for undergraduate students, secured funding (fundraising)
- Designed and implemented the undergraduate Major and Minor in Data Science (launched in Fall 2019) and well as the joint CS-DS and Math-DS Majors, NYU CDS and College of Arts and Sciences (as of May 2023 over 900 declared majors and minors, over 300 graduates)

Evaluation, Grant Reviews, External Hiring Committees, Refereeing:

- Chaire Junior Universite Gustave Eiffel Hiring Committee, 2025
- ENS Paris ML+Statistical Physics Faculty Hiring Committee, 2024
- Choose France Faculty Hiring Committee, 2023
- MathGrandParis postdoc evaluation committee, 2023
- Member of the Expert Evaluation Committee of INRIA, French National Computer Science Institute (2023)
- Evaluator for Department of Energy's program in Advanced Scientific Computing Research (2020)
- Member of the Jury for "Mathematics and ..." , Vienna Science and Technology Fund (2009)
- Panel member for National Science Foundation, USA (2003)
- Evaluator for Erwin-Schroedinger-Institute, Vienna (2017), US-Israel Binational Science Foundation (2011), European Commission (2008), Canadian Research Foundation (2008), National Science Foundation USA (2008), Israeli Science Foundation (2004), Ministry of Science, France (2003, 2006, 2008)

- Referee for ICLR, NeurIPS, PNAS, STOC, FOCS, NATURE, SCIENCE, Journal of the ACM (JACM), SIAM Journal of Computing (SICOMP), CCC, ICALP, RANDOM, STACS, TAMC, ICS, IEEE Transactions on Computing, TCS, EQIS, ITW, ASPLOS, SOFSEM, Applied and Computational Harmonic Analysis, Physical Review A, Physical Review Letters, Physical Review E, Communications Math. Phys., Journal of Statistical Physics, Quantum Information and Computation (QIC), Quantum Information Processing (QIP), IJQI

Outreach, Miscellaneous:

- Member of Panel on Quantum Computing, World Science Festival, New York (2017)
- Participation in outreach events, in particular targeted at young women: panelist at Museum of Mathematics "The Limit Does Not Exist": a Program for Teen and Tween Girls Who Like Math (2020), speaker at Women in Theory (2018), Paris Women in Science (2011), TAU Women in Computer Science (which I organised and secured funding for, 2008), participation in several radio emissions on science and women in science (France, 2006-2007)

MENTORSHIP

Postdoc:

- Julia Linhart, NYU CDS, joint with Shirley Ho, 2025 -
- Jeremie Roland (LRI) 2004 - 2005

PhD students:

- Niket Patel, NYU CDS, 2025 -
- Yunzhen Feng, NYU CDS, 2021 -
- Jingtong Su, NYU CDS, 2021 -
- Nikolaos Tsilivis, NYU CDS 2021 -
- Artem Vysogorets, NYU CDS, 2019 - 2024
- Or Sattath, Computer Science, TAU (joint with Dorit Aharonov, HUJI), Fall 2008 - 2012
- Mateus Oliveira, Computer Science, TAU, March 2009 - November 2010

PhD students advised at Meta FAIR Paris:

- Shobhita Sundaram, intern, May-October 2025
- Natasha Butt, intern, co-advised with Yann Ollivier, April-September 2025
- Ismail Labiad, PhD student, April 2025 -

Masters students thesis advisor:

- Roy Kasher (TAU) 2009 - 2010
- Thomas Vidick (ENS) - 2006
- Kim Thang Nguyen (Ecole Polytechnique) - 2006

Masters student projects/independent study advisor:

- Haowen Guan, Zhiyang Li, Zishi Wang, Xuan Zhao, NYU CDS Capstone Project, 2022
- Graham Murphy, Sammie Kim, Antonio Robayo, NYU CDS Capstone Project, 2021
- Dhrupad Bhardwaj, NYU CDS, Independent study project, 2020 - 2021
- Dhrupad Bhardwaj, Evaristus Ezekwem, Amber Teng, NYU CDS Capstone Project, 2020
- Andrei Kapustin, NYU CDS, Research project, 2020

Undergraduate students:

- Ya Shi Zhang, Courant Math and CS Honors, mentoring research project, Fall 2022 - Fall 2023
- Kaidong Wang and Shiqi Yang, mentoring research project, Summer 2021
- Isaac Robinson and Aldo Polanco, Spring 2021, mentor in the framework of the CURP program for underrepresented students

Co-advising of PhD students (usually temporary):

- Sevag Gharibian, 2010-2011, Computer Science, University of Waterloo (together with R. Cleve)
- Julien Degorre, 2001, Computer Science, LRI, France (together with M. Santha)
- Joshua von Korff, 2003-2004, Physics, UC Berkeley (together with K.B. Whaley)
- Neil Shenvi, 2002-2003, Chemistry, UC Berkeley (together with K.B. Whaley)
- Jesse Fern, 2003-2004, Mathematics, UC Berkeley (together with K.B. Whaley)

Thesis Committees:

- Member of the PhD Yearly Review Committee
  - Krunoslav Lehman Pavasovic, Meta FAIR and ENS, 2024, 2025
  - Sanae Lotfi, NYU, 2023, 2024, 2025
  - Xiang Pan, NYU, 2024, 2025
- Member of the PhD Committee (external examiner) of Mahalakshmi Sbanayagam, TU Munich, 2025
- Member of the PhD Committee (Examiner) of Freya Behrens, EPFL, 2025

- Chair of the PhD Committee of Maria Zameshina, Computer Science, Universite Gustave Eiffel, Paris, 2024
- Member of the PhD Committee of Mark Finzi, Computer Science, NYU, 2023
- Member of the DQE (Depth Qualifying Exam) Committee of Sanae Lotfi, Data Science, NYU 2022
- Member of the PhD Thesis Committee of Avinatan Hassidim, Hebrew University, December 2008
- Member of the Master's Thesis Committee of Liron Schiff, Tel Aviv University, June 2008
- Member of the Master's Thesis Committee of Lior Eldar, Tel Aviv University, January 2008
- Member of the Master's Thesis Committee of Alex Rapaport, Tel Aviv University, May 2007

TEACHING

- 2022: **Fall, MSDS Capstone course**
  NYU CDS graduate program
- 2021: **Fall, Introduction to Data Science for PhD Students (co-teaching)**
  NYU CDS PhD program
- 2021: **Fall, MSDS Capstone course**
  NYU CDS graduate program
- 2020: **Fall, Introduction to Data Science for PhD Students (inaugural course)**
  NYU CDS PhD program
- 2019: **Spring, Machine Learning**
  NYU CDS graduate program
- 2018: **Fall, Co-teaching MSDS Capstone course**
  NYU CDS graduate program
- 2011: **Co-teaching the course in Quantum Computation**, Paris-Masters program, Fall 2010, Paris, France
- 2010: **Spring, Teaching the Graduate Course "Quantum Computing"**
  Tel Aviv University
- 2009: **Fall, Teaching the required Undergraduate Course "Computational Models"**
  Tel Aviv University
- 2009: **Spring, Teaching the Undergraduate Course "Fundamental Ideas in Computer Science"**
  Tel Aviv University
- 2009: **Spring, Teaching the Graduate Seminar "Milestones in Theoretical Computer Science"**
  Tel Aviv University
- 2008: **Fall, Teaching the Graduate Course "Quantum Computing"**
  Tel Aviv University
- 2008: **Spring, Teaching the Graduate Course "Quantum Computing"**
  Tel Aviv University
- 2008: **Spring, Teaching the Graduate Seminar "Computational Lens in the Sciences"**
  Tel Aviv University
- 2007: **Spring, Teaching the Graduate Course "Quantum Computing"**

Tel Aviv University

- 2005: **Co-teaching and co-organising the course in Quantum Computation**, Paris-Masters program, Fall 2005, Paris, France
- 2004: **Co-teaching the course in Quantum Computation**, Paris-Masters program, Fall 2004, Paris, France
- 2003: **Lecturer**, Summer 2003, University of California Berkeley CS61B: "Data Structures, Algorithms and Introduction to Java"
- 2003: **Co-teaching the course in Quantum Computation**, Masters program, Spring 2003, Ecole Normale Superieure, Paris, France
- 1998: **Head Teaching Assistant**, Math16B: Calculus, UC Berkeley
- 1997: **Teaching Assistant**, Math16A: Calculus, UC Berkeley

DISSEMINATION

Publications in Machine Learning (since 2022):

- **Teaching Models to Teach Themselves: Reasoning at the Edge of Learnability**
  Shobhita Sundaram, John Quan, Ariel Kwiatkowski, Kartik Ahuja, Yann Ollivier, Julia Kempe
  PREPRINT 2026 [arXiv] [Blog]

- **OpenApps: Simulating Environment Variations to Measure UI-Agent Reliability**
  Karen Ullrich, Jingtong Su, Claudia Shi, Arjun Subramonian, Amir Bar, Ivan Evtimov, Nikolaos Tsilivis, Randall Balestriero, Julia Kempe, Mark Ibrahim
  ICLR 2026 Oral [arXiv]

- **How reinforcement learning after next-token prediction facilitates learning**
  Nikolaos Tsilivis, Eran Malach, Karen Ullrich, Julia Kempe
  ICLR 2026 [arXiv]

  | **Workshop version:** "How reinforcement learning after next-token prediction facilitates learning" — EurIPS Workshop on Principles of Generative Modeling (PriGM), 2025. Oral

- **Soft Tokens, Hard Truths**
  Natasha Butt, Ariel Kwiatkowski, Ismail Labiad, Julia Kempe*, Yann Ollivier* *(*Equal senior authorship)*
  ICLR 2026 [arXiv]

- **From Concepts to Components: Concept-Agnostic Attention Module Discovery in Transformers**
  Jingtong Su, Julia Kempe*, Karen Ullrich* *(*Equal senior authorship)*
  ICLR 2026 [arXiv]

- **Embedding Trust: Semantic Isotropy Predicts Nonfactuality in Long-Form Text Generation**
  Dhrupad Bhardwaj, Julia Kempe, Tim G. J. Rudner
  PREPRINT 2025 [arXiv]

- **Don't Waste Mistakes: Leveraging Negative RL-Groups via Confidence Reweighting**
  Yunzhen Feng, Parag Jain, Anthony Hartshorn, Yaqi Duan, Julia Kempe
  PREPRINT 2025 [arXiv]

- **Outcome-based Exploration for LLM Reasoning**
  Yuda Song, Julia Kempe, Rémi Munos
  NEURIPS WORKSHOP ON ALIGNING RL EXPERIMENTALISTS AND THEORISTS (2ND EDITION) 2025 [arXiv]

- **What Characterizes Effective Reasoning? Revisiting Length, Review, and Structure of Chain-of-Thought**
  Yunzhen Feng, Julia Kempe, Cheng Zhang, Parag Jain, Anthony Hartshorn
  NEURIPS WORKSHOP ON EFFICIENT REASONING 2025 Spotlight [arXiv]

- **Tuning without Peeking: Provable Generalization Bounds and Robust LLM Post-Training**
  Ismail Labiad, Mathurin Videau, Matthieu Kowalski, Marc Schoenauer, Alessandro Leite, Julia Kempe, Olivier Teytaud
  PREPRINT 2025 [arXiv]

- **On the Geometry of Regularization in Adversarial Training: High-Dimensional Asymptotics and Generalization Bounds**
  Matteo Vilucchio, Nikolaos Tsilivis, Bruno Loureiro, Julia Kempe
  PREPRINT 2024 [arXiv]

- **Asymmetric REINFORCE for Off-Policy Reinforcement Learning: Balancing Positive and Negative Rewards**
  Charles Arnal, Gaëtan Narozniak, Vivien Cabannes, Yunhao Tang, Julia Kempe, Rémi Munos
  NEURIPS 2025 [arXiv]

- **PILAF: Optimal Human Preference Sampling for Reward Modeling**
  Y. Feng, A. Kwiatkowski, K. Zheng, J. Kempe*, Y. Duan* *(*Equal senior authorship)*
  ICML 2025 [arXiv]

  | **Workshop version:** "PILAF: Optimal Human Preference Sampling for Reward Modeling" — ICLR Workshop on Bidirectional Human–AI Alignment, 2025.

  | **Workshop version:** "PILAF: Optimal Human Preference Sampling for Reward Modeling" — COLT Workshop on Foundations of Post-Training, 2025.

- **Strong Model Collapse**
  E. Dohmatob, Y. Feng, A. Subramonian, J. Kempe
  ICLR 2025 Spotlight [arXiv]

- **DRoP: Distributionally Robust Data Pruning**
  A. Vysogorets, K. Ahuja, J. Kempe
  ICLR 2025 Spotlight [arXiv]

  | **Workshop version:** "Towards Robust Data Pruning" — ICLR Workshop on Datacentric Machine Learning, 2024. *Earlier title; subset of authors (main version added K. Ahuja).*

- **Flavors of Margin: Implicit Bias of Steepest Descent in Homogeneous Neural Networks**
  Nikolaos Tsilivis, Gal Vardi, Julia Kempe
  ICLR 2025 [arXiv]

| **Workshop version:** "Flavors of Margin: Implicit Bias of Steepest Descent in Homogeneous Neural Networks" — NeurIPS Workshop on Mathematics of Modern Machine Learning, 2024.

- **Beyond Model Collapse: Scaling Up with Synthesized Data Requires Verification**
  Y. Feng, E. Dohmatob, P. Yang, F. Charton, J. Kempe
  ICLR 2025 [arXiv]

  | **Workshop version:** "Beyond Model Collapse: Scaling Up with Synthesized Data Requires Reinforcement" — ICML Workshop on Theoretical Foundations of Foundation Models (TF2M), 2024. *Earlier title; main version revised framing and results.*

- **Emergent properties with repeated examples**
  F. Charton, J. Kempe
  NeurIPS Workshop on Scientific Methods for Understanding Deep Learning 2024
  🏆 Debunking Challenge Winner (Scientific Methods Workshop) Oral [arXiv]

  | **Workshop version:** "Repeated examples help learn arithmetic" — 4th NeurIPS Workshop on Mathematical Reasoning and AI, 2024. *Same core contribution, reframed toward learning arithmetic.*

- **The Price of Implicit Bias in Adversarially Robust Generalization**
  N. Tsilivis, N. Frank, N. Srebro, J. Kempe
  NeurIPS 2024 [arXiv]

  | **Workshop version:** "The Best Algorithm for Adversarial Training" — ICLR Workshop on Bridging the Gap Between Practice and Theory in Deep Learning (BGPT), 2024. *Earlier title; subset of authors (main version added N. Srebro).*

- **Mission Impossible: A Statistical Perspective on Jailbreaking LLMs**
  J. Su, J. Kempe*, K. Ullrich* *(*Equal senior authorship)*
  NeurIPS 2024 [arXiv]

  | **Workshop version:** "Mission Impossible: A Statistical Perspective on Jailbreaking LLMs" — ICML Workshop on Theoretical Foundations of Foundation Models (TF2M), 2024.

- **Iteration Head: A Mechanistic Study of Chain-of-Thought**
  V. Cabannes, C. Arnal, W. Bouaziz, A. Yang, F. Charton, J. Kempe
  NeurIPS 2024 [arXiv]

  | **Workshop version:** "Iteration Head: A Mechanistic Study of Chain-of-Thought" — ICML Mechanistic Interpretability Workshop, 2024.

- **Model Collapse Demystified: The Case of Regression**
  E. Dohmatob, Y. Feng, J. Kempe
  NeurIPS 2024 [arXiv]

  | **Workshop version:** "Towards a Theoretical Understanding of Model Collapse" — ICLR Workshop on Bridging the Gap Between Practice and Theory in Deep Learning (BGPT), 2024. *Earlier title; main version includes expanded results.*

- **Attacking Bayes: On the Adversarial Robustness of Bayesian Neural Networks**
  Y. Feng, T. G. J. Rudner, N. Tsilivis, J. Kempe
  Transactions on Machine Learning Research 2024 [arXiv] Reproducibility Certification

  | **Workshop version:** "Attacking Bayes: Are Bayesian Neural Networks Inherently Robust?" — 5th Symposium on Advances in Approximate Bayesian Inference (AABI), 2023. *Shorter version; revised title and expanded analysis in TMLR.*

- **A Tale of Tails: Model Collapse as a Change of Scaling Laws**
  E. Dohmatob, Y. Feng, P. Yang, F. Charton, J. Kempe
  ICML 2024 [arXiv]
  | **Workshop version:** "A Tale of Tails: Model Collapse as a Change of Scaling Laws" — ICLR Workshop on Navigating and Addressing Data Problems for Foundation Models (DPFM), 2024.

- **Deconstructing the Goldilocks Zone of Neural Network Initialization**
  A. Vysogorets, A. Dawid, J. Kempe
  ICML 2024 [arXiv]

- **Mind the GAP: Improving Robustness to Subpopulation Shifts with Group-Aware Priors**
  T. Rudner, Y. Zhang, A. Wilson, J. Kempe
  AISTATS 2024 Notable Paper Oral [arXiv]

- **On generated versus collected data**
  L. Sagun, E. Dohmatob, K. Ahuja, J. Kempe
  ICLR WORKSHOP ON GLOBAL AI CULTURES 2024

- **Embarrassingly Simple Dataset Distillation**
  Y. Feng, R. Vedantam, J. Kempe
  ICLR 2024 [arXiv]
  | **Workshop version:** "Embarrassingly Simple Dataset Distillation" — NeurIPS Workshop on Advancing Neural Network Training, 2023.

- **On the Robustness of Neural Collapse and the Neural Collapse of Robustness**
  J. Su, Y. Zhang, N. Tsilivis, J. Kempe
  TRANSACTIONS ON MACHINE LEARNING RESEARCH 2024 [arXiv]
  | **Workshop version:** "On the Robustness of Neural Collapse and the Neural Collapse of Robustness" — NeurIPS Workshop on Unifying Representations in Neural Models, 2023.

- **Kernels, Data & Physics (Lecture Notes, Les Houches 2022)**
  F. Cagnetta, D. Oliveira, M. Sabanayagam, N. Tsilivis, J. Kempe
  JOURNAL OF STATISTICAL MECHANICS: THEORY AND EXPERIMENT 2024 [arXiv]

- **Galaxy Dataset Distillation by Self-Adaptive Trajectory Matching**
  H. Guan, X. Zhao, Z. Wang, Z. Li, J. Kempe
  NEURIPS WORKSHOP ON MACHINE LEARNING AND THE PHYSICAL SCIENCES 2023 [arXiv]

- **Connectivity Matters: Neural Network Pruning Through the Lens of Effective Sparsity**
  A. Vysogorets, J. Kempe
  JOURNAL OF MACHINE LEARNING RESEARCH 2023
  | **Volume 24, Issue 99, pages 1–23.** [arXiv]

- **What Can The Neural Tangent Kernel Tell Us About Adversarial Robustness?**
  N. Tsilivis, J. Kempe
  NEURIPS 2022 [arXiv]

- **Wavelets Beat Monkeys at Adversarial Robustness**
  J. Su, J. Kempe
  NEURIPS WORKSHOP ON MACHINE LEARNING AND THE PHYSICAL SCIENCES 2022 [arXiv]

- **Adversarial Noise Injection for Learned Turbulence Simulations**
  J. Su, J. Kempe, D. Fielding, N. Tsilivis, M. Cranmer, S. Ho
  NEURIPS WORKSHOP ON MACHINE LEARNING AND THE PHYSICAL SCIENCES 2022

- **Can We Achieve Robustness from Data Alone?**
  N. Tsilivis, J. Su, J. Kempe
  ICML WORKSHOP ON NEW FRONTIERS IN ADVERSARIAL MACHINE LEARNING 2022 [arXiv]

Publications in Quantum Computation and Information, in reverse chronological order (conferences, journals and book chapters)[1]:

Patent:

- *"Universal Quantum Computation with the Exchange Interaction"* (with D. Bacon, D. Lidar, K.B. Whaley), US Patent Number 7,184,555; 27. February 2007

Note: My work in finance in industry (2011-2019) led to internal publications only.

62. **S. Gharibian and J. Kempe:** *"Hardness of approximation for quantum problems"*, **ICALP** (1), p. 387-398 (2012), also accepted as short contributed talk to **QIP'12**

61. **R. Kasher and J. Kempe:** *"Two-source Extractors Secure Against Quantum Adversaries"*, **Theory of Computing**, Vol. 8, p. 461-486 (2012) (journal version of 56.)

60. **S. Gharibian and J. Kempe:** *"Approximation Algorithms for QMA-complete problems"*, **SIAM J COMP**, Vol. 41, No. 4, p. 1028-1050 (2012) (journal version of 59.)

59. **S. Gharibian and J. Kempe:** *"Approximation Algorithms for QMA-complete problems"*, **CCC'11** (2011), p. 178-188 (2011), also won **best poster award at QIP'11**

58. **A. Ambainis, J. Kempe and O. Sattath:** *"A Quantum Lovasz Local Lemma"*, **JACM**, Vol. 59(5), Art. No. 24 (2012) (journal version of 54.)

57. **J. Kempe and T. Vidick:** *"Parallel Repetition of Entangled Games"*, **STOC'11**, p. 353-362 (2011), also featured talk at **QIP'11** (2011)

56. **R. Kasher and J. Kempe:** *"Two-source Extractors Secure Against Quantum Adversaries"*, **APPROX-RANDOM'10**, p. 656-669 (2010)

55. **J. Kempe, O. Regev and B. Toner:** *"Unique Games with Entangled Provers are Easy"*, **SIAM J. Comp.**, Vol. 39(17) p. 3207-3229 (2010) (journal version of 44.)

54. **A. Ambainis, J. Kempe and O. Sattath:** *"A Quantum Lovasz Local Lemma"*, **Proc. 42nd STOC'10**, p. 151-160 (2010), invited talk at **QIP'10**.

[1] Note for publications in Theoretical Computer Science: Many papers are first published in conference proceedings (conference acceptance is peer reviewed and very competitive). Later, journal versions, rewritten and often substantially expanded, containing additional results, are submitted to peer reviewed journals. TCS paper authors appear alphabetically, whereas Physics and Machine Learning publications have an ordering reflecting contribution, with the senior author generally last.

53. **J. Kempe and O. Regev:** *"No Strong Parallel Repetition with Entangled and Non-signaling Provers"*, **Proc. 25th CCC'10**, p. 7-15 (2010), accepted as contributed short talk to **QIP'10**.

52. **J. Kempe, H. Kobayashi, K. Matsumoto, B. Toner and T. Vidick:** *"Entangled games are hard to approximate"*, **SIAM J. Comp.**, Vol. 40(3), p. 848-877 (2011), invited to special issue dedicated to selected FOCS'08 papers (journal version of 43.)

51. **J. Kempe, O. Regev, F. Unger, R. de Wolf:** *"Upper Bounds on the Noise Threshold for Fault-tolerant Quantum Computing"*, **QIC**, Vol. 10(5-6), p. 361–3176 (2010) (journal version of 46.)

50. **J. Kempe, H. Kobayashi, K. Matsumoto, T. Vidick:** *"Using Entanglement in Quantum Multi-Prover Interactive Proofs"*, **Computational Complexity**, Vol. 18(2), p. 273-307 (2009) (journal version of 45.)

49. **D. Aharonov, D. Gottesman, S. Irani and J. Kempe:** *"The power of quantum systems on the line"*, **Comm. Math. Phys.**, Vol. 287(1), p. 41-65 (2009) (journal version of 42.)

48. **D. Aharonov, W. van Dam, J. Kempe, Z. Landau, S. Lloyd, O. Regev**, *"Adiabatic Quantum Computation is Equivalent to Standard Quantum Computation"*, **SIAM Review**, issue 50-4, p. 755–787, December 2008 (first journal version in 34).

47. **D. Gavinsky, J. Kempe, I. Kerenidis, R. Raz and R. de Wolf:** *"Exponential separations for one-way quantum communication complexity, with applications to cryptography"*, **SICOMP**, Vol. 38(5), p. 1695-1708 (2008) (journal version of 40.)

46. **J. Kempe, O. Regev, F. Unger, R. de Wolf:** *"Upper Bounds on the Noise Threshold for Fault-tolerant Quantum Computing"*, **Proc. 35th ICALP**, p. 845–856 (2008), invited talk at **QIP'08**

45. **J. Kempe, H. Kobayashi, K. Matsumoto, T. Vidick:** *"Using Entanglement in Quantum Multi-Prover Interactive Proofs"*, **Proc. 23rd CCC'08 (Complexity)**, p. 211-222 (2008), invited to special issue of **Computational Complexity** dedicated to selected CCC'08 papers, also accepted as contributed long talk to **QIP'08**

44. **J. Kempe, O. Regev and B. Toner:** *"Unique Games with Entangled Provers are Easy"*, **Proc. 49th FOCS'08**, p. 457-466 (2008), accepted as contributed long talk to **QIP'08**

43. **J. Kempe, H. Kobayashi, K. Matsumoto, B. Toner and T. Vidick:** *"Entangled games are hard to approximate"*, **Proc. 49th FOCS'08**, p. 447-456 (2008), invited to special issue of **SICOMP** dedicated to selected FOCS'08 papers, also accepted as contributed short talk to **QIP'08**, subsumes **J. Kempe and T. Vidick:** *"On the power of entangled quantum provers"*, Technical Report quant-ph/0612063 (2006) .

42. **D. Aharonov, D. Gottesman, S. Irani and J. Kempe:** *"The power of quantum systems on the line"*, **Proc. 48th FOCS**, p. 373-383 (2007), subsumes previous version by **D. Aharonov, D. Gottesman and J. Kempe** with same title, which was accepted as contributed long talk to **QIP'07**.

41. **J. Kempe and T. Vidick:** *"Quantum Algorithms"*, book chapter in "Quantum Information, Computation and Cryptography", **Springer Lecture Notes in Physics** series Volume 808/2010, p. 309-342 (2010)

40. **D. Gavinsky, J. Kempe, I. Kerenidis, R. Raz and R. de Wolf:** *"Exponential separations for one-way quantum communication complexity, with applications to cryptography"*, **Proc. 39th STOC**, p. 516-525 (2007), also accepted as contributed long talk at **QIP'07**, supersedes **D. Gavinsky, J. Kempe, and R. de Wolf:** *"Exponential Separation of Quantum and Classical One-Way Communication Complexity for a Boolean Function"*, Technical Reports quant-ph/0607174 and ECCC TR06-086 (2006)

39. **J. Kempe, L. Pyber, and A. Shalev:** *"Permutation groups, minimal degrees and quantum computing"*, **Groups, Geometry, and Dynamics**, Vol. 1 (4), p. 553-584 (2007)

38. **D. Gavinsky, J. Kempe, O. Regev, and R. de Wolf:** *"Bounded-Error Quantum State Identification and Exponential Separations in Communication Complexity"*, **SIAM Journal of Computing**, Vol. 39 (1), p.1-24 (2009) (journal version of 32.)

37. **D. Gavinsky, J. Kempe, and R. de Wolf:** *"Strengths and Weaknesses of Quantum Fingerprinting"*, **Proc. of 21st CCC**, p. 288-295 (2006)

36. **J. Kempe:** *"Approaches to Quantum Error Correction"*, book chapter in **Quantum Decoherence**, Poincaré Seminar 2005, B. Duplantier, J.-M. Raimond and V. Rivasseau Editors, Progress in Mathematical Physics series, Birhäuser, p. 85–123, 2006

35. **J. Kempe:** *"Quantum Algorithms"*, book chapter in **Lecture Notes on Quantum Information**, D. Bruss and G. Leuchs, Editors, Physics Textbook, Whiley-VCH, p. 87–102 (2006)

34. **D. Aharonov, W. van Dam, J. Kempe, Z. Landau, S. Lloyd, O. Regev:** *"Adiabatic Quantum Computation is Equivalent to Standard Quantum Computation"*, **SIAM Journal of Computing**, Vol. 37, Issue 1, p. 164-196 (2007), also selected for the SIGEST section of SICOMP, **SIAM Review** (see 48.) (journal version of 22.)

33. **J. Kempe, F. Magniez, S. Laplante:**, *"Comment calculer quantique"*, **La Recherche**, Vol. 398 (June), p. 30-37 (2006)

32. **D. Gavinsky, J. Kempe, O. Regev, and R. de Wolf:** *"Bounded-Error Quantum State Identification and Exponential Separations in Communication Complexity"*, **Proc. 38th STOC**, p. 594-603 (2006), invited to special issue of SICOMP dedicated to selected STOC'06 papers, also accepted as long contributed talk at **QIP'06**

31. **J. Kempe, A. Kitaev and O. Regev:** *"The Complexity of the Local Hamiltonian Problem"*, **SIAM Journal of Computing**, Vol. 35(5), p. 1070-1097 (2006) (journal version of 24.)

30. **J. Fern, J. Kempe, S. Simic, S. Shastry:** *"Fault-tolerant quantum computation - a dynamical systems approach"*, **IEEE Transactions on Automated Control**, Vol. 51 (3), p. 448-459 (2006)

29. **P. Zoller et al.:** (39 authors) *"Quantum information processing and communication"*, **Eur. Phys. Jour. D**, Vol. 36, p. 203-228 (2005)

28. **J. Kempe:** *"Discrete Quantum Walks Hit Exponentially Faster"*, **Probability Theory and Related Fields**, Vol. 133 (2), p. 215-235 (2005) (journal version of 18.)

27. **M. Storcz, F.K. Wilhelm, K. Brown, J. Kempe, J. Vala, K.B. Whaley:** *"Full protection of superconducting qubit systems from coupling errors"*, **Phys. Rev. B**, Vol. 72, 064511-1–5 (2005)

26. **A. Ambainis, J. Kempe, A. Rivosh:** *"Coins Make Quantum Walks Faster"*, **Proc. 16th ACM-SIAM SODA**, p. 1099-1108, (2005)

25. **J. Kempe and A. Shalev:** *"The hidden subgroup problem and permutation group theory"*, **Proc. 16th ACM-SIAM SODA**, p. 1118-1125, (2005)

24. **J. Kempe, A. Kitaev and O. Regev:** *"The Complexity of the Local Hamiltonian Problem"*, **Proc. 24th Found. Software Tech. and Theoretical Computer Science (FSTTCS)**, p. 372-383 (2004)

23. **J. von Korff and J. Kempe:** *"Quantum Advantage in Transmitting a Permutation"*, **Phys. Rev. Lett.**, Vol. 93(26), 260502 (2004), old title *"Quantum Color Coding is Better"*

22. **D. Aharonov, W. van Dam, J. Kempe, Z. Landau, S. Lloyd, O. Regev:** *"Adiabatic Quantum Computation is Equivalent to Standard Quantum Computation"*, **Proc. 45th FOCS**, p. 42-51 (2004), invited to special issue of **SICOMP** dedicated to selected FOCS'04 papers

21. **M. Hsieh, J. Kempe, S. Myrgren, K.B. Whaley:** *"An explicit universal gate-set for exchange-only quantum computation"*, **Quantum Information Processing**, Vol. 2(4), p. 289-307 (2003)

20. **J. Kempe:** *"Quantum random walks - an introductory overview"*, **Contemporary Physics**, Vol. 44(4), p. 307-27 (2003)

19. **J. Kempe and O. Regev:** *"3-local Hamiltonian is QMA-complete"*, **Quantum Information and Computation**, Vol. 3 (3), p. 258-64 (2003)

18. **J. Kempe:** *"Discrete Quantum Walks Hit Exponentially Faster"*, **Proceedings of RANDOM'03**, p. 354-69 (2003)

17. **N. Shenvi, J.Kempe, K.B. Whaley:** *"A Quantum Random Walk Search Algorithm"*, **Phys. Rev. A**, Vol. 67 (5), 052307-1–11 (2003)

16. **J. Kempe and K.B. Whaley:** *"Exact gate-sequences for universal quantum computation using the XY-interaction alone"*, **Phys. Rev. A**, Vol. 65 (5), 052330-1–6 (2002)

15. **C. Simon and J.Kempe:** *"Robustness of Multiparty Entanglement"*, **Phys. Rev. A**, Vol. 65 (5), 052327-1–4 (2002)

14. **J. Kempe, D. Bacon, D. P. DiVincenzo, K.B. Whaley:** *"Encoded Universality from a Single Physical Interaction"*, in Special Issue of **Quantum Information and Computation**, edited by R. Clark et al. (Rinton Press, New Jersey), p. 33-55 (2001)

13. **D. Bacon, J. Kempe, D. P. DiVincenzo, D. Lidar, K. B. Whaley:** *"Encoded Universality in Physical Implementations of a Quantum Computer"*, **Proc. of the International Conference on Experimental Implementation of Quantum Computation (IQC 01)**, Sydney, Australia, p.257 (2001)

12. **M. Nielsen and J. Kempe:** *"Separable States are more Mixed Locally than Globally",* **Phys. Rev. Lett.**, Vol. 86, 5184-7 (2001)

11. **D. Aharonov, A. Ambainis, J. Kempe, U. Vazirani:** *"Quantum Walks on Graphs"*, **Proceedings of 33rd ACM Symposium on Theory of Computation (STOC)**, p. 50-59 (2001)

10. **D. Bacon, A. Childs, I. Chuang, D. Leung, J. Kempe, X. Zhou:** *"Universal Simulation of Markovian Quantum Dynamics"*, **Phys. Rev. A**, Vol. 64, 062302 (2001)

9. **D. Lidar, D. Bacon, J. Kempe, K.B. Whaley:** *"Decoherence Free Subspaces for Multiple-Qubit Errors: (II) Universal, Fault-Tolerant Quantum Computation"*, **Phys. Rev. A**, Vol. 63 (2), 022307-1–18 (2001)

8. **D. Lidar, D. Bacon, J. Kempe, and K.B. Whaley:** *"Decoherence Free Subspaces for Multiple Qubit Errors: (I) Characterization"*, **Phys. Rev. A**, Vol. 63 (2), 022306-1–13 (2001)

7. **J. Kempe, D. Bacon, D. Lidar, K.B. Whaley:** *"Theory of Decoherence-Free Fault- Tolerant Universal Quantum Computation"*, **Phys. Rev. A**, Vol. 63(4), 042307-1–29 (2001)

6. **D.P. DiVincenzo, D. Bacon, J. Kempe, G. Burkard, K.B. Whaley:** *"Universal Quantum Computation with the Exchange Interaction"*, **NATURE** Vol. 408, p. 339-342 (2000)

5. **J. Kempe, Ch. Simon, G. Weihs:** *"Lambda's, V's and optimal cloning with stimulated emission"* , **Phys. Rev. A** Vol. 62 (3), 032302-1–8 (2000)

4. **D. Bacon, J. Kempe, D. Lidar, K.B. Whaley:** *"Universal Fault Tolerant Quantum Computation on Decoherence-Free Subspaces"*, **Phys. Rev. Lett.** Vol. 85 (8), p. 1758-61 (2000)

3. **D. Lidar, D. Bacon, J. Kempe, K.B. Whaley:** *"Protecting Quantum Information Encoded in Decoherence Free States Against Exchange Errors"*, **Phys. Rev. A** Vol. 60 (5), p. 52307-1–5 (2000)

2. **J.Kempe:** *"Multiparticle entanglement and its applications to cryptography"*, **Phys. Rev. A** Vol. 60 (2), p. 910-916 (1999)

1. **J.Kempe, A.Radchik, G.B.Smith:** *"New Transform Techniques Applied to Anomalous Absorption in the Dense Chain of Metal Cylinders"*, **Proc. Roy. Soc. A**, Vol. 452 1845-1856 (1996)

Theses:

4. **J. Kempe:** *"Quantum Computation"*, Habilitation-thesis, Computer Science, University of Paris-Sud, September 2010

3. **J. Kempe:** *"Universal Noiseless Quantum Computation: Theory and Applications"*, PhD-thesis, Mathematics, UC Berkeley, December 2001

2. **J. Kempe:** *"Calcul Quantique: Marches Aléatoires et Etude d'Enchevetrement"*, thèse presentée pour obtenir le grade de docteur in sciences de l'Ecole Nationale Superieure des Telecommunications (PhD in Computer Science), April 2001

1. **K. Gerdes and J. Kempe:** *"Vers une décomposition équidimensionelle des variétés algébriques"*, Masters Thesis in Algebra, École Polytechnique, France (1996)

SELECTED INVITED TALKS

83. **Theoretical Physics for AI**, Aspen Center for Physics Conference, 01/26

82. **Beg Rohu Summer School**, France, 06/25

81. **Lausanne Event on Machine Learning and Neural Network Theory (LemanTh 2025)**, Lausanne, Switzerland, 05/25

80. **Physics of Learning Workshop**, Washington DC, 04/25

79. **Filofocs Day**, Paris, 11/24

78. **Aspen Meeting on Foundational Models**, Aspen, 10/24

77. **Machine learning for theories and theories of machine learning**, Rovijn, Croatia, 09/24

76. **Hi! Paris Seminar**, Palaiseau, 06/24

75. **IHES workshop on "Mathematics for and by LLMs"**, 05/24

74. **DeepMind Seminar**, London, 04/24

73. **PRAIRIE workshop**, Paris 04/24

72. **ENS-Data Science Colloquium**, ENS Paris, 10/23

71. **Statistical physics and machine learning back together again**, Cargese, 08/23

70. **Cosmic Connections: A ML X Astrophysics Symposium**, Simons Foundation, New York, 05/23

69. **Physics for Neural Networks**, Princeton Center for Theoretical Science, 04/23

68. **Theoretical Physics for Machine Learning**, Aspen Center for Physics Conference, 02/23

67. **Les Houches Summer School**, Lecturer in the Summer School on Statistical Physics of Machine Learning, 07/22

66. **ICML'20**, Panelist, "Quantum Machine Learning", 07/20

65. **QSTar'19**, Puerto Madryn, Argentina, 10/19

64. **Women in Theory'18**, Harvard University, Boston, 06/18

63. **Manipulation of Simple Quantum Systems**, Saclay, France, 06/17

62. **Quantum Information in Paris**, Paris, France, 05/11

61. **Saclay Theoretical Physics Lectures**, Saclay, France, 04-06/11

60. **Weizmann Institute Foundations of CS Seminar - Walmart Series Speaker**, Rehovot, Israel 02/11

59. **LRI Algorithms and Complexity Seminar**, Orsay, France, 06/10

58. **ICTP'10**, Trieste, Italy, 06/10

57. **QIP'10**, Zurich, Swizerland, 01/10

56. **Quantum Information in Paris**, Paris, France, 10/09

55. **A tour in quantum statistics**, Orsay, France, 09/09

54. **SCALA Summer School**, invited lecturer, Cargese, Corsica 08/09
53. **Giambiagi Winter School**, invited tutorial speaker, University of Buenos Aires, Argentina, 08/09
52. **Computer Science Colloquium, Tel Aviv University**, Israel, 06/09
51. **Quantum Computation: Theory and Feasibility Workshop JST-CNRS**, IHP, Paris, France, 09/08
50. **Physics Colloquium**, University of Buenos Aires, Buenos Aires, Argentina, 08/08
49. **McGill Workshop in Quantum Cryptography** - main speaker, Barbados, 03/08
48. **Physics Colloquium, Tel Aviv University**, Israel, 03/08
47. **GDR Information Quantique**, Institute Poincaré, 01/08
46. **Theory Seminar, Technion**, Israel, 11/07
45. **Physics Seminar, University of Vienna**, Austria, 11/07
44. **International Conference on Quantum Information Processing and Communication**, Barcelona, 10/07
43. **Dagstuhl Workshop on Algebraic Methods in Complexity**, Schloß Dagstuhl, Germany, 10/07
42. **LRI Algebra and Complexity Seminar**, LRI, Orsay, France, 09/07
41. **Giambiagi Winter School**, invited tutorial speaker, University of Buenos Aires, Argentina, 08/07
40. **Computational Complexity of Quantum Hamiltonian Systems**, Workshop, Leiden, Netherlands, 07/07
39. **Golden Jubilee Conference**, University of Waterloo, Canada, 06/07
38. **Mathematical Physics Seminar**, Technion, Israel, 05/07
37. **Seminar of the Perimeter Institute**, Waterloo, Canada, 08/06
36. **Physics Colloquium**, University of Buenos Aires, Buenos Aires, Argentina, 08/06
35. **International Congress on Mathematical Physics**, Rio de Janeiro, Brasil, 08/06
34. **CiE'06, Computability in Europe**, invited tutorial speaker, Swansea, UK, 06/06
33. **Trieste Summer School**, invited tutorial speaker, Italy, 06/06
32. **Gordon Conference**, Barga, Italy, 05/06
31. **The Weizmann Institute CS Colloquium**, Rehovot, Israel, 01/06
30. **Poincare "Bourbaphy" Seminar**, Poincare Institute, Paris, France, 11/05
29. **IPNO Seminar**, Orsay, France, 06/05
28. **Hebrew University Mathematics Colloquium**, Jerusalem, Israel, 12/04

27. **Colloque: "Information Quantique"**, Orsay, France, 12/04

26. **Quantum Information Theory: Present Status and Future Directions**, QIS-Workshop, Newton Institute, Cambridge, UK, 08/04

25. **Leiden Workshop on Quantum Information Processing**, Leiden, Netherlands, 05/04

24. **UC Davis Statistics Colloquium**, Davis, 05/04

23. **Berkeley Mathematics Department Colloquium**, Berkeley, 04/04

22. **MIT Special EECS Seminar**, MIT, Boston, 03/04

21. **Seventh Workshop on Quantum Information Processing**, Institute of Quantum Computation, Waterloo, Canada, 01/04

20. **RESQ Workshop**, Technical University of Barcelona, Spain, 01/04

19. **RESQ Workshop**, Max-Planck-Institute, Munich, Germany, 05/03

18. **Seminar of the Perimeter Institute**, Waterloo, Canada, 04/03

17. **Cambridge-MIT Seminar**, MIT, Boston, 04/03

16. **Inhomogeneous Random Systems 2003**, Cergy-Pontoise, France, 01/03

15. **Workshop on Random Graphs & Structures**, Isaac-Newton Institute, Cambridge, UK, 09/02

14. **International Conference on Quantum Information:** Conceptual Foundations, Developments and Perspectives, Oviedo, Spain, 07/02

13. **Workshop on Decoherence in Quantum Information Processing**, Durham, UK, 04/02

12. **RAND-APX'02 Workshop**, Paris, France, 04/02

11. **SQUINT Meeting**, Boulder, Colorado, 03/02

10. **ERATO-Seminar**, Tokyo, Japan, 12/01

9. **Colloque: "Information Quantique"**, IHP, Paris, France, 11/01

8. **Caltech IQI - Seminar**, Pasadena, 03/01

7. **Program "Quantum Measurement Theory and Quantum Information"**, Erwin-Schrödinger-Institut, Vienna, Austria, 12/00

6. **Workshop on Quantum Information**, Benasque, Spain, 07/00

5. **Think-tank on Computer Science Aspects**, Torino, Italy, 06/00

4. **Colloque: "Information Quantique"**, Orsay, France, 05/00

3. **AMS, Sectional Meeting**, Lowell, MA, 04/00

2. **Workshop on Quantum Information**, Technion, Haifa, Israel, 02/00

1. **UC Berkeley: Quantum Computation and Information Seminar**, 12/03, 4/02, 9/01, 3/01, 11/00, 10/00, 12/99, 10/99, 4/99, 2/99; **Analysis Seminar**, 11/02; **Undergraduate Applied Mathematics Seminar**, 11/03; **Mathematics Graduate Student Seminar**, 4/01, 5/99; **MSRI-Seminar**, 10/02, 03/05 **Bioengineering 143/243**, 4/04

RESEARCH VISITS

- 9/23-6/24 Invited Professor, **CSD, Ecole Normale Superieure**, Paris, France
- 07/09-10/07, 1-2/08, 9-10/08, 02/09, 06-07/09, 09-10/09, 01-02/10: **LRI**, Orsay
  Visiting the Algorithms group
- 09/09: **Erwin-Schrödinger Institut**, Vienna, Austria
  Program "Entanglement and correlations in many-body quantum mechanics"
- 1-4/06: **Poincare Institute**, Paris
  Visiting Researcher in the trimester on Quantum Computing
- 8/05: **CWI, University of Amsterdam, The Netherlands**
  collaborative visit
- 1-4/05: **MSRI & ICSI**, Berkeley
  participation in the semester on Randomized Algorithms at MSRI and visitor at ICSI
- 5/04, 12/04 & 8-9/05: **Hebrew University and University of Tel Aviv, Israel**
  collaborative visits
- 3/04: **IQI Caltech**, Caltech
  visit to the Quantum Information group
- 5/03 & 8/06: **Perimeter Institute**, Waterloo, Canada
  visit to the Quantum Information group
- 5/03: **MIT**, Boston
  visit to Quantum Information groups
- 2-3/03: **National University of Singapore**
  Collaboration with the Quantum Information group
- 12/01: **ERATO Project, Tokyo, Japan**
- 5/01 & 4/02: **University of Oxford, Clarendon Lab, UK**
  Collaboration with the group of A. Ekert
- 12/00: **Erwin-Schrödinger Institut**, Vienna, Austria
  Program "Quantum Measurement Theory and Quantum Information"
- 8/00: **University of Queensland, Brisbane, Australia**
  Collaboration with the Centre for Quantum Computation
- 3/00: **University of Vienna, Austria**
  Collaboration with the group of A. Zeilinger
- 8/99: **IBM - San Jose**
  Collaboration with the group of I. Chuang
- 12/99: **IBM - Watson Research Centre, Yorktown**
  Collaboration with the group of Ch. Bennett
- 11/98-1/99 & 03/01: **California Institute of Technology**
  Collaboration with the group of J. Preskill

INTERNSHIPS

- 1998: **McKinsey Consulting, Germany and Russia**
  Summer-Associate
  – Consulting in Finance (Investment Banking) in Russia, 3 months
- 1996: **IBM - Germany, Science-Centre, Heidelberg**
  Department for Statistics and Optimization, Summer-Intern, 2 months
  – Tour optimization and applications
- 1995: **AEG - Daimler Benz, Konstanz, Germany**
  Development, Summer-Intern, 2 months
  – developed bar-code standard for letters in the South-Pacific using error-correcting codes

LANGUAGES

- Russian (native), German (native), English (fluent), French (fluent), Hebrew (sufficient for teaching undergraduate courses), Spanish (conversational)