

# Erez Zohar – Curriculum Vitae, September 25, 2024

## 1. Personal Details

**Date of birth:** 31.12.1984

**Country of birth:** Israel

**Work address:** Office 109, Kaplun Building  
Racah Institute of Physics  
Givat Ram Campus  
The Hebrew University of Jerusalem, Jerusalem 91904, Israel

**Email address:** [erez.zohar@mail.huji.ac.il](mailto:erez.zohar@mail.huji.ac.il)

## 2. Employment

1/2024 – **Associate Professor**  
Racah Institute of Physics  
Hebrew University of Jerusalem  
Jerusalem, Israel

7/2019 – 1/2024 **Senior Lecturer (Assistant Professor)**  
Racah Institute of Physics  
Hebrew University of Jerusalem  
Jerusalem, Israel

1/2018 – 6/2019 **Max Planck Harvard Research Center for Quantum Optics (MPHQ) Postdoctoral Researcher**  
Max-Planck-Institut für Quantenoptik (MPQ)  
Theory Division, headed by Prof. J. Ignacio Cirac  
Garching bei München, Germany

6/2016 – 12/2017 **Senior Postdoctoral Researcher**  
Max-Planck-Institut für Quantenoptik (MPQ)  
Theory Division, headed by Prof. J. Ignacio Cirac  
Garching bei München, Germany

3/2014 – 5/2016 **Alexander von Humboldt Postdoctoral Researcher**  
Max-Planck-Institut für Quantenoptik (MPQ)  
Theory Division, headed by Prof. J. Ignacio Cirac  
Garching bei München, Germany

3/2014 – 5/2014 **Postdoctoral Researcher**  
Max-Planck-Institut für Quantenoptik (MPQ)  
Theory Division, headed by Prof. J. Ignacio Cirac  
Garching bei München, Germany

3/2008 – 1/2014 **Teaching Assistant**  
School of Physics and Astronomy, Tel Aviv University

### 3. Higher Education

3/2014 – 6/2019

**Postdoctoral Studies**

Max-Planck-Institut für Quantenoptik, Garching bei München, Germany

Host: Prof. J. Ignacio Cirac

(6/2014-5/2016 as an Alexander-von-Humboldt fellow between, since 1/2018 an MPQ-Harvard fellow)

10/2010 – 12/2013

**Ph.D. (Direct Track), Physics**

School of Physics and Astronomy, Tel Aviv University

Supervisor: Prof. Benni Reznik

(as an Adams fellow fellow since 10/2012)

10/2009 – 9/2010

**M.Sc., Physics**

School of Physics and Astronomy, Tel Aviv University

Supervisor: Prof. Benni Reznik

- Moved to the Ph.D. Direct Track after a year

10/2006 – 7/2009

**B.Sc., The combined Mathematics-Physics Program**

School of Physics and Astronomy, Tel Aviv University

During the 3rd year – a research project under the supervision of Prof. Yoram Dagan (honors program)

## 4. Grants, Scholarships and Fellowships

- 10/2024 – 9/2028      **Israel Science Foundation (ISF) Personal Research Grant** – Gauging and Degauging in Quantum Simulation
- 6/2024 – 5/2029      **ERC Consolidator Grant** – OverSign – Overcoming the Sign Problem in Lattice Gauge Theories
- 5/2022 – 4/2023      **Google Research Scholar Award** – Using Duality Transformations for Quantum Simulation
- 10/2020 – 9/2024      **Israel Science Foundation (ISF) Personal Research Grant** – Quantum Simulators of Gauge Theories – the Next Generation
- 1/2018 – 6/2019      **Max Planck Harvard Research Center for Quantum Optics (MPHQ) Postdoctoral Fellowship**  
Granted by the joint MPHQ research center of two research institutions, for postdoctoral research in the Max Planck institute of Quantum Optics
- 6/2014-5/2016      **Alexander von Humboldt Fellowship for Postdoctoral Researchers**  
Granted by the Alexander von Humboldt society, for postdoctoral research in the Max Planck institute of Quantum Optics
- 10/2012-3/2014      **Adams Fellowship**  
Granted by the Israel Academy of Sciences and Humanities, from 10/2012 until the end of the PhD studies (given every year to new 10-12 excellent PhD students, nominated by the universities, until the completion of their PhDs).
- 10/2011-9/2012      **Dean's Excellence Scholarship**  
Faculty of Exact Sciences, Tel-Aviv University

## 5. Prizes and Awards

- 2023**                      **Vigevani Research Project Prize**
- 2022**                      **Google Research Scholar Award** in the field of Quantum Computing
- 2020**                      **Highly commended young quantum scientist**  
2020 Nomination round of the International Quantum Technology Young Scientist Award, IOP
- 2015**                      **The Rector's List of Best Teaching Assistants, Tel Aviv University**  
For the academic year 2013-2014
- 2014**                      **The Rector's Award for Excellence in Teaching, Tel Aviv University**  
For the academic year 2012-2013
- 2014**                      **The Rector's List of Best Teaching Assistants, Tel Aviv University**  
For the academic year 2012-2013
- 2013**                      **Anne and Maurice Cohen Research Excellence Prize**  
School of physics and Astronomy, Tel Aviv University
- 2013**                      **The Rector's List of Best Teaching Assistants, Tel Aviv University**  
For the academic year 2011-2012
- 2012**                      **Alix De Rothschild Fund for Scholarships in Science and Technology**  
Research prize for 2011-2012
- 2012**                      **Anne and Maurice Cohen Teaching Excellence Prize**  
School of physics and Astronomy, Tel Aviv University
- 2011**                      **Shulamit Goldhaber Research Excellence Prize**  
School of physics and Astronomy, Tel Aviv University

## 6. Supervision of Students and Postdocs

### Postdocs

1. **Dr. Gertian Roose**, 9/2023 –
2. **Dr. Umberto Borla**, 1/2023 –  
Won the Excellence Fellowship for International Postdoctoral Researchers of the Israel Academy of Sciences and Humanities
3. **Dr. Johannes Knaute**, 2/2022 – 1/2024  
Won the Excellence Fellowship for International Postdoctoral Researchers of the Israel Academy of Sciences and Humanities
4. **Dr. Tsafir Armon**, 12/2020 – 9/2021

## PhD Students

1. **Itay Gomelski**, 10/2024 –  
Direct PhD track
2. **Jonathan Elyovich**, 10/2024 –  
Direct PhD track
3. **Guy Pardo**, 2/2022 –  
Jointly with Prof. Nadav Katz.  
Won the Israeli Council of Higher Education Fellowship for PhD students in Quantum Technologies.
4. **Ariel Kelman**, 10/2021 –
5. **Patrick Emonts**,  
Visiting PhD student from the Max Planck Institute of Quantum Optics (MPQ), 2020  
Co-supervised at MPQ, 2017-2019
6. **Julian Bender**,  
Visiting PhD student from the Max Planck Institute of Quantum Optics (MPQ), 2020  
Co-supervised at MPQ, 2017-2019

## Master Students

1. **Uri Friedman**, 5/2024 –
2. **Itay Gomelski**, 10/2024 – 8/2024
3. **Jonathan Elyovitch**, 3/2023 – 8/2024
4. **Emanuele Gaz**, 10/2022 – 5/2024
5. **Matan Feuerstein**, 3/2022 – 12/2023
6. **Tomer Greenberg**, 3/2021 – 12/2022
7. **Julian Bender**, 10/2016-10/2017, MPQ, co-supervised at MPQ  
*Digital Quantum Simulation of Lattice Gauge Theories*  
Grade: 1.0 (highest)
8. **Ilya Kull**, 10/2016-9/2017, MPQ, co-supervised at MPQ  
*Classification of Matrix Product States with a Local (Gauge) Symmetry*  
Grade: 1.0 (highest)
9. **Daniel González Cuadra**, 10/2015-9/2016, MPQ, co-supervised at MPQ  
Quantum Simulation of Abelian Lattice Gauge Theories with Ultracold Atoms  
Grade: 1.0 (highest)

## 7. Teaching

- **Quantum Computation for Physicists** (Fall 2021-2, Fall 2022-3, Fall 2023-4, Fall 2024-5) – a course developed by me, teaching the basics of quantum computing from a physical (rather than computer science) perspective
- **Quantum Mechanics 1** (Spring 2024, Spring 2025)
- **Quantum Information Methods for Many Body Physics** (Spring 2020, Spring 2021, Spring 2022, Spring 2023) – a course developed by me, on quantum simulation and tensor networks.

## 8. Other Academic and Scientific Work

- Peer review:
  - Nature
  - Physical Review Letters
  - Physical Review X
  - Physical Review X Quantum
  - Physical Review A
  - Physical Review D
  - Review of Modern Physics
  - Philosophical Transactions of the Royal Society A
  - Nature Communications
  - SciPost
  - New Journal of Physics
  - Journal of High Energy Physics
  - Annals of Physics
  - Physics Letters B
  - Quantum
- Conference and Workshop Organization:
  - **MPQ Theory Group Workshop**, Lenggries, Germany, June
  - **Quantum Simulation of Strong Interactions (QuaSI) Workshop 1: Theoretical Strategies for Gauge Theories**, InQubator for Quantum Simulation, University of Washington, Seattle, USA, April 2021 (online)
  - **Quantum Simulation of Strong Interactions (QuaSI) Workshop 2: Implementation Strategies for Gauge Theories**, InQubator for Quantum Simulation, University of Washington, Seattle, USA, May 2021 (online)
  - **Annual Retreat of the Hebrew University Quantum Information Center**, Ein Gedi, Israel, July 2021
  - **Discrete lattice gauge theories- emergence and quantum simulations**, MCQST workshop, MPQ, Garching, Germany, May 2022
- Scientific Journal Editing:
  - Guest Editor of the special issue **"Quantum Technologies in Particle Physics"** of the journal **Philosophical Transactions of the Royal Society A**, published in February 2022.
- Seminar Organization:
  - **Hebrew University Quantum Center (HUQ) Seminar**, 2022 – 2024
  - **Many Body Theory Seminar**, MPQ, 2018 – 2019
  - **Quantum Seminar**, Tel Aviv University, 2012-2013
- Advisory board member, International AIQT (Artificial Intelligence and Quantum Technology) foundation, Chur, Switzerland

## 9. Conferences, Workshops, Seminars, Research Visits

### Invited participation in conferences and workshops

- 1) March 2014            **COST action MP1006 on Fundamental Problems in Quantum Physics**  
Weizmann Institute, Rehovot, Israel  
  
                                  Invited Talk: **Simulation of Dynamic Abelian and Non-Abelian Gauge Theories with Ultracold Atoms**
  
- 2) June 2015            **Cold Atoms meet High Energy Physics**  
ECT\*, Trento, Italy  
  
                                  Invited Key Talk: **Quantum Simulation of Lattice Gauge Theories using Ultracold Atoms**
  
- 3) June-July 2016      **Humboldt Kolleg: From the Vacuum to the Universe**  
Kitzbühel, Austria  
  
                                  Invited Talk: **Projected Entangled Pair States (PEPS) and Local (Gauge) Symmetries**
  
- 4) Aug.-Sept. 2016     **Quantum Gases and Quantum Coherence: BEC2016**  
University of Salerno, Italy  
  
                                  Invited Talk: **Quantum Simulation of Lattice Gauge Theories with Ultracold Atoms in Optical Lattices**
  
- 5) December 2016      **632 Heraeus-Seminar – Gauge Field Dynamics with Ultracold Gas Systems**  
Physikzentrum Bad Honnef, Germany  
  
                                  Invited Talk: **Quantum Simulation of Lattice Gauge Theories with Ultracold Atoms in Optical Lattices**
  
- 6) May-June 2017      **From Static to Dynamical Gauge Fields with Ultracold Atoms**  
Galileo Galilei Institute, Florence, Italy  
  
                                  Invited Talk: **Quantum Simulation of Lattice Gauge Theories with Ultracold Atoms in Optical Lattices**
  
- 7) October 2017        **Quantum Cup, Joint MPQ-Freiburg workshop**  
MPQ, Garching, Germany  
  
                                  Invited Talk: **Digital Lattice Gauge Theories**
  
- 8) January 2018        **Inauguration Ceremony of the Max Planck Harvard Research Center for Quantum Optics**  
Garching and Munich, Germany  
  
                                  Invited Talk: **Gauge Symmetries with Cold Atoms and PEPS: Quantum Simulation and Tensor Network Studies of Lattice Gauge Theories**

- 9) March 2018      **NPQI 2018 – Intersections between Nuclear Physics and Quantum Information**  
Argonne National Lab, Argonne, Illinois, USA, March 2018
- Invited Talk: **Quantum Simulation of Lattice Gauge Theories with Ultracold Atoms**
- Participation in a Discussion Panel
- 10) June 2018      **Entanglement in Quantum Systems – Tensor Networks Focus Week**  
Galileo Galilei Institute, Florence, Italy
- Invited Lectures (2 session adding up to 3 hours): **PEPS and local (gauge) symmetries**
- 11) September 2018      **Quantum Entanglement at Collider Energies**  
Center for Frontiers in Nuclear Science, Stony Brook University, NY, USA
- Invited Talk: **PEPS with Gauge Symmetries: Tensor Network Studies of Lattice Gauge Theories**
- 12) September 2018      **Next steps in Quantum Science for HEP Theory**  
Fermilab, IL, USA
- Invited Talk: **Tensor Network and Cold Atoms Methods for Lattice Gauge Theories**
- 13) March 2019      **Tensor Networks from Simulation to Holography II**  
DESY, Zeuthen, Germany
- Invited Talk: **PEPS with a local (gauge) symmetry – studying lattice gauge theories with tensor networks in  $d > 1+1$**
- 14) June 2019      **High-energy physics at ultra-cold temperatures**  
ECT\*, Trento, Italy
- Invited Key Talk: **Quantum Simulation of Gauge Theories with Cold Atoms**
- 15) June 2019      **Humboldt Kolleg: Discoveries and Open Puzzles in Particle Physics and Gravitation**  
Kitzbühel, Austria
- Invited Talk: **Quantum Simulation and Tensor Networks Methods for Gauge Theories with Cold Atoms**
- 16) October 2019      **Collaboration Kick-Off Meeting of the HUJI QI Center & IQOQI Vienna**  
IQOQI, Vienna, Austria
- Invited Talk: **Studying Quantum Field Theories with Quantum Information and Simulation**



- 17) March 2020 **Fritz Haber Symposium**  
Hebrew University, Jerusalem, Israel
- Invited Talk: **Studying Quantum Field Theories with Quantum Information and Simulation**
- 18) February 2020 **Entanglement in Strongly Correlated Systems**  
Benasque, Spain
- Invited Talk: **Absorbing Fermionic Statistics by Lattice Gauge Fields and Eliminating the Fermions**
- 19) February 2020 **The Batsheva de Rothschild Seminar on Quantum Simulations using Photons, Atoms, and Molecules**  
Tse'elim, Israel
- Invited Talk: **Quantum Simulation of Gauge Theories with Cold Atoms**
- 20) October 2020 **INT Online Program: Scientific Quantum Computing and Simulation on Near-Term Devices**  
INT (Institute for Nuclear Theory), University of Washington, Seattle, WA USA
- Invited Talk: **Quantum Simulation of Lattice Gauge Theories in more than 1+1d: Challenges and Methods**
- 21) April 2021 **Quantum Simulation of Strong Interactions (QuaSI) Workshop 1: Theoretical Strategies for Gauge Theories**  
InQubator for Quantum Simulation, University of Washington, Seattle, USA
- Invited Talk: **Absorbing fermionic statistics by lattice gauge fields and eliminating fermions**
- 22) May 2021 **Tensor Networks in Many Body and Quantum Field Theory**  
INT (Institute for Nuclear Theory), University of Washington, Seattle, WA USA
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 23) July 2021 **Hebrew University Quantum Center Annual Retreat**  
Ein Gedi, Israel
- Invited Talk: **Locally and Unitarily Mapping Lattice Fermions to Bosons in the Presence of a Gauge Field**
- 24) July 2021 **Tensor Networks: Quantum Physics, Geometry and Applications**  
Levico Terme (Trento – organized by the BEC center), Italy
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**

- 25) July 2021 **Tensor Networks in Many Body and Lattice Field**  
Tsung-Dao Lee Institute, Shanghai Jiao Tong University, China
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 26) October 2021 **5<sup>th</sup> Workshop on the QCD Structure of the Nucleon (QCD-N2021)**  
Universidad de Alcalá, Spain
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 27) April 2022 **Simulating Quantum Many-Body Systems on Noisy Intermediate-Scale Quantum Computers**  
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
- Invited Talk: **Duality and Quantum Simulation**
- 28) June 2022 **Clues to a mysterious Universe - exploring the interface of particle, gravity and quantum physics**  
Kitzbühel, Austria
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 29) June 2022 **Max Planck-Harvard Quantum Optics Research Center Alumni Conference**  
Garching, Germany
- Invited Talk: **Selection rules and local constraints: my very own view on lattice gauge theories**
- 30) September 2022 **Non-perturbative and numerical approaches to quantum gravity, string theory and holography**  
Bangalore, India
- Invited Talk: **Quantum simulation of lattice gauge theories - requirements, challenges and methods**
- 31) September 2022 **Quantum simulations and algorithms with superconducting circuits**  
Kfar Blum, Israel
- Invited Talk: **Quantum simulation of lattice gauge theories - requirements, challenges and methods**
- 32) October 2022 **Tensor Networks: Mathematical Structures and Novel Algorithms**  
Erwin Schroedinger Institute, Vienna, Austria
- Invited Talk: **Gauged Gaussian Fermionic PEPS: a tool for studying lattice gauge theories**

- 33) November 2022 **Quantum Computing for Many-Body Problems: atomic nuclei, neutrinos, and other strongly correlated Fermi systems**  
IJCLab, Orsay, France
- Invited Talk: **Quantum simulation of lattice gauge theories - requirements, challenges and methods**
- 34) April 2023 **Quantum Computing Methods for High Energy Physics**  
MIAPbP, Garching, Germany
- Invited Talk: **Tensor network methods for lattice gauge theories**
- Member of a discussion panel: **Classical-simulation methods in HEP: what can they ultimately achieve and what is the limit?**
- 35) June 2023 **Nuclear and particle physics on a quantum computer: where do we stand now?**  
ECT\*, Trento, Italy
- Invited Talk: **Quantum Simulation of Lattice Gauge Theories in more than 1+1 D**
- 36) July 2023 **3<sup>rd</sup> Plenary Meeting of the International Tensor Network**  
TUM Akademiezentrum Raitenhaslach, Germany
- Invited Talk: **Gauged Gaussian Fermionic PEPS: a tool for studying lattice gauge theories in high dimensions**
- 37) April 2024 **NeQST workshop**  
Honda Research Institute, Offenbach, Germany
- Invited Talk: **Gauged Gaussian Fermionic PEPS: a tool for studying lattice gauge theories in high dimensions**
- 37) September 2024 **QUANTHEP2024 workshop**  
LMU, Munich, Germany
- Invited Talk: **Gauged Gaussian Fermionic PEPS: a tool for studying lattice gauge theories in high dimensions**

## Talks in Seminars and Colloquia

- 1) December 2011      **Particle Physics Seminar**  
Tel Aviv University, Israel  
  
Talk: **Confinement and Lattice QED Electric Flux Tubes Simulated with Ultracold Atoms**
- 2) December 2012      **Theoretical / Mathematical Physics Seminar**  
Technion, Haifa, Israel  
  
Talk: **Confinement and Lattice QED Electric Flux Tubes Simulated with Ultracold Atoms**
- 3) May 2013            **Particle Physics Seminar**  
Ben-Gurion University, Beer Sheba, Israel  
  
Talk: **Simulation of Dynamic Abelian and Non-Abelian Gauge Theories with Ultracold Atoms**
- 4) November 2013      **Particle Physics Seminar**  
Tel Aviv University, Israel  
  
Talk: **Quantum simulation of Abelian and Non-Abelian Lattice Gauge Theories using Ultracold Atoms**
- 5) April 2014            **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany  
  
Talk: **Topological Wilson-loop area law manifested using a superposition of loops**
- 6) April 2014            **Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany  
  
Talk: **Simulation of Dynamic Abelian and Non-Abelian Gauge Theories with Ultracold Atoms**
- 7) May 2014             **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany  
  
Talk: **Supersymmetric Quantum Mechanics**
- 8) September 2014      **Quantum Seminar**  
Hebrew University, Jerusalem, Israel  
  
Talk: **Ultracold Atoms as Quantum Simulators for Dynamic Abelian and Non-Abelian Gauge Theories**
- 9) Nov.-Dec. 2014      **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany  
  
Three talks: **The Vacuum Polarization and QED Renormalization**

- 10) Decemer 2014**      **Particle Physics Seminar**  
Tel Aviv University, Israel
- Talk: **Formulating Lattice Gauge Theories for Tensor Networks and Quantum Simulations**
- 11) January 2015**      **Theoretical / Mathematical Physics Seminar**  
Technion, Haifa, Israel
- Talk: **Formulating Lattice Gauge Theories for Tensor Networks and Quantum Simulations**
- 12) January 2015**      **Condensed Matter Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany
- Talk: **Introduction to Lattice Gauge Theory**
- 13) Jan.-Mar. 2015**      **Quantum Field Theory Course**  
Max Planck Institute for Quantum Optics, Garching, Germany
- A series of weekly introductory lectures on Quantum Field Theory for the Theory Group at MPQ
- 14) May 2015**      **Condensed Matter Seminar**  
Harvard University, Cambridge, MA, USA
- Talk: **Formulating Lattice Gauge Theories for Quantum Simulations**
- 15) October 2015**      **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany
- Talk: **Particle Oscillations and Symmetry Violation in the Weak Interactions**
- 16) December 2015**      **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany
- Talk: **PEPS and Local (Gauge) Symmetries**
- 17) December 2015**      **Condensed Matter Seminar**  
Weizmann Institute, Rehovot, Israel
- Talk: **PEPS and Local (Gauge) Symmetries**
- 18) January 2016**      **Condensed Matter Seminar**  
Hebrew University, Jerusalem, Israel
- Talk: **PEPS and Local (Gauge) Symmetries**
- 19) September 2016**      **Condensed Matter Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany
- Talk: **A Group Theory Approach to Lattice Gauge Theories**

- 20) October 2016      **Quantum Optics Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany  
Talk: **Gauge theories with ultracold atoms and tensor networks**
- 21) November 2016      **Condensed Matter Seminar**  
Tel Aviv University, Israel  
Talk: **Gauge Theories with Cold Atoms and Tensor Networks**
- 22) November 2016      **Condensed Matter Seminar**  
Hebrew University, Jerusalem, Israel  
Talk: **Gauge Theories with Cold Atoms and Tensor Networks**
- 23) November 2016      **Quantum Optics Seminar**  
IQOQI, Innsbruck, Austria  
Talk: **Digital Lattice Gauge Theories**
- 24) November 2016      **Colloquium**  
Max Planck Institute for Quantum Optics, Garching, Germany  
Talk: **PEPS with Local (Gauge) Symmetries**
- 25) March 2017      **Lewenstein Group Seminar**  
ICFO, Castelldefels, Spain  
Talk: **PEPS with Local (Gauge) Symmetries**
- 26) May 2017      **Quantum Group Seminar**  
University of Ghent, Ghent, Belgium  
Talk: **Gauging PEPS**
- 27) June 2017      **String Theory Journal Club**  
Ludwig Maximilian University (LMU), Munich, Germany  
Talk: **PEPS with Local (Gauge) Symmetries**
- 28) August 2017      **AMO Seminar**  
Weizmann Institute, Rehovot, Israel  
Talk: **Quantum Simulation of Lattice Gauge Theories: from Analog to Digital**
- 29) November 2017      **Condensed Matter Seminar**  
Hebrew University, Jerusalem, Israel  
Talk: **Quantum Simulation of Lattice Gauge Theories: from Analog to Digital**

- 30) November 2017**      **AMO Seminar**  
Weizmann Institute, Rehovot, Israel
- Talk: **Gauging PEPS: Constructing and Studying Tensor Networks with Local Gauge Invariance**
- 31) November 2017**      **Particle Physics Seminar**  
Tel Aviv University, Israel
- Talk: **Gauging PEPS: Constructing and Studying Tensor Networks with Local Gauge Invariance**
- 32) July 2018**              **INT Seminar**  
Institute for Nuclear Theory, University of Washington, USA
- Talk: **PEPS with Gauge Symmetries: Tensor Network Studies of Lattice Gauge Theories**
- 33) September 2018**      **IQI Seminar**  
IQIM, Caltech, Pasadena, USA
- Talk: **Tensor Network and Cold Atoms Methods for Lattice Gauge Theories**
- 34) October 2018**        **Many Body Theory Seminar**  
Max Planck Institute for Quantum Optics, Garching, Germany
- Talk: **Eliminating fermionic matter fields in lattice gauge theories**
- 35) November 2018**      **Seminar**  
Johannes Gutenberg University, Mainz, Germany
- Talk: **Tensor Networks and Quantum Simulation Methods for Lattice Gauge Theories**
- 36) November 2019**      **SynQS Seminar**  
Kirchoff Insitute for Physics, Heidelberg, Germany
- Tutorial: **Introduction to non-Abelian Gauge Theories**
- 37) December 2019**      **Condensed Matter Theory Seminar**  
Technical University of Munich (TUM), Garching, Germany
- Talk: **Eliminating fermions in lattice gauge theories**
- 38) April 2020**            **Theory Seminar**  
Theory Division, Max Planck Institute of Quantum Optics, Garching, Germany
- Talk: **Absorbing fermionic statistics by lattice gauge fields and eliminating fermions**

- 39) July 2020 **Tensor Networks in High Energy Physics Online Lecture Series**  
Albert Einstein Institute, Potsdam, Germany
- Invited Talk: **Absorbing fermionic statistics by lattice gauge fields and eliminating fermions**
- 40) March 2021 **ICFO Seminar**  
ICFO, Castelldefels, Spain
- Talk: **Absorbing fermionic statistics by lattice gauge fields and eliminating fermions**
- 41) March 2021 **High Energy Theory Seminar**  
Tel Aviv University, Israel
- Talk: **Absorbing fermionic statistics by lattice gauge fields and eliminating fermions**
- 42) November 2021 **Quantum Group Seminar**  
University of Ghent, Ghent, Belgium
- Talk: **Approximating Relativistic Quantum Field Theories with Continuous Tensor Networks**
- 43) December 2021 **Tensor Networks in High Energy Physics Online Lecture Series**  
Albert Einstein Institute, Potsdam, Germany
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 44) December 2022 **Hebrew University Quantum Center Seminar**  
Hebrew University of Jerusalem, Israel
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**
- 45) December 2022 **Physics Colloquium**  
Haifa University, Israel
- Invited Talk: **Quantum Information and Technology Methods for Lattice Gauge Theories**
- 46) June 2023 **Colloquium**  
Ben Gurion University, Israel
- Invited Talk: **Quantum Information and Technology Methods for Lattice Gauge Theories**
- 47) July 2023 **Condensed Matter Seminar**  
Technion, Israel
- Invited Talk: **Gauged gaussian fermionic PEPS - studying Hamiltonian LGTs in more than 1+1d using tensor networks and Monte-Carlo**



Contributed talks at workshops and conferences

- 1) October 2012      **Workshop on Quantum Simulations**  
UPV/EHU, Bilbao, Spain  
  
    Talk: **Simulation of Dynamic Abelian and Non-Abelian Gauge Theories with Ultracold Atoms**
  
- 2) June 2013      **Relativistic Quantum Information 2013 North**  
University of Nottingham, UK  
  
    Talk: **Simulation of Dynamic Abelian and Non-Abelian Gauge Theories with Ultracold Atoms**
  
- 3) November 2014      **MPQ Theory Group Workshop**  
Passau, Germany  
  
    Talk: **Formulating Lattice Gauge Theories for Quantum Simulations**
  
- 4) May 2015      **New Trends in Complex Quantum Dynamics**  
Cartagena, Spain  
  
    Talk: **Formulating Lattice Gauge Theories for Quantum Simulations**
  
- 5) July 2015      **Central European Workshop on Quantum Optics 2015**  
Warsaw, Poland  
  
    Talk: **Quantum Simulations of Lattice Gauge Theories using Ultracold Atoms**
  
- 6) May 2016      **MPQ Theory Group Workshop**  
Oetz, Austria  
  
    Talk: **Gauge Symmetries with Cold Atoms and PEPS**
  
- 7) July 2016      **Quantum Science: Implementations 2016**  
Centro de Ciencias de Benasque Pedro Pascual, Benasque, Spain  
  
    Tutorial: **Quantum Simulation of Lattice Gauge Theories: an introduction**
  
- 8) September 2016      **Humboldt Colloquium – Bridges to the Future: German-Israeli Scientific Relations**  
Tel Aviv University, Israel  
  
    Talk: **Gauge Theories with Tensor Networks and Ultracold Atoms**
  
- 9) February 2017      **Quantum Methods for Lattice Gauge Theories Calculations**  
Schloss Waldthausen (Mainz Institute for Theoretical Physics), Germany  
  
    Talk: **PEPS with Local (Gauge) Symmetries**

- 10) May 2017      **New Trends in Complex Quantum Dynamics**  
Cartagena, Spain
- Talk: **Projected Entangled Pair States (PEPS) and Local (Gauge) Symmetries**
- 11) June 2017      **MPQ Theory Group Workshop**  
Lenggries, Germany
- Talk: **Quantum Methods for Lattice Gauge Theories: What, When, Where, Why and Who**
- 12) October 2018      **MPQ Theory Group Workshop**  
Nördlingen, Germany
- Talk: **Lattice Gauge Theories in the Quantum Info Era**
- 13) October 2019      **IQOQI Vienna – HUJI Quantum Center Meeting**  
IQOQI, Vienna
- Talk: **Quantum Information and Optics for Quantum Field Theories**
- 14) October 2020      **IOP QUANTUM 2020**  
Virtual Conference
- Talk: **Locally and Unitarily Mapping Lattice Fermions to Bosons in the Presence of a Gauge Field**

Further Conferences and Workshops Attended

- 1) October 2009      **50 Years of the Aharonov-Bohm Effect**  
Tel Aviv University, Israel
- 2) December 2009      **Physical Implementations of Quantum Computing**  
Yad Hashmona, Israel
- 3) April 2010      **QION 10 – Workshop on Quantum Information and Quantum Dynamics in Ion Traps**  
Tel Aviv, Israel
- 4) November 2010      **Minerva-Weizmann Workshop on Entanglement in Atomic Systems**  
Weizmann Institute, Israel
- 5) September 2011      **Workshop on Quantum Field Theory Aspects of Condensed Matter Physics**  
LNF, Frascati, Italy
- 6) March 2012      **QION 12 – Workshop on Quantum Information and Quantum Dynamics in Ion Traps**  
Tel Aviv, Israel
- 7) May 2013      **Workshop on Quantum Simulations and Related Topics on the Occasion of the Award of the Wolf Prize to Peter Zoller and Ignacio Cirac**  
Technion, Israel

- 8) July 2013**                    **Summer Programme on Synthetic Gauge Fields for Photons and Atoms**  
BEC center, Trento, Italy
- 9) June 2014**                    **Second Kavli-MPQ workshop**  
Max Planck Institute for Quantum Optics, Garching, Germany
- 10) July 2014**                    **Quantum Science: Implementations 2014**  
Centro de Ciencias de Benasque Pedro Pascual, Benasque, Spain
- 11) February 2016**                **Quantum Simulation with Cold Matter and Photons**  
Solvay Institute, Brussels, Belgium