# Curriculum Vitae

**Dr. Lingzhen Guo**
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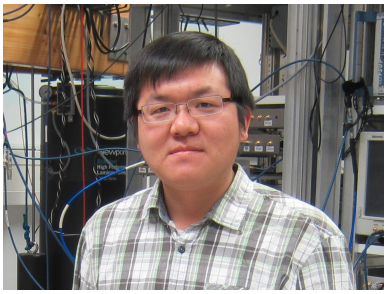
**Birth date:** 09 March 1982
**Nationality:** Chinese



## Professional Experience

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| 01.2018 – today | **Senior Postdoc**, Max Planck Institute for the Science of Light (MPL), Erlangen, Germany. |
| 09.2015 – 11.2017 | **Postdoc**, Leader of a junior research group funded by Carl-Zeiss-Stiftung (supervising one PhD student), in the Institute of Theoretical Solid State Physics (TFP), Karlsruhe Institute of Technology (KIT), Germany. |
| 09.2014 – 08.2015 | **Postdoc**, Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, Sweden. Collaborator: **Prof. Göran Johansson**. |
| 07.2013 – 08.2014 | **Postdoc**, TFP, Karlsruhe Institute of Technology (KIT), Germany. Collaborators: **Prof. Gerd Schön** and **Dr. Michael Marthaler**. |
| 06.2010 – 08.2010 | **Research Assistant**, Department of Chemistry, Hong Kong University of Science and Technology, Hong Kong. Collaborator: **Prof. Yijing Yan**. |

## Education Experience

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| 07.2013 | **Doctor degree** from Beijing Normal University, Beijing, China. |
| 09.2010 – 06.2013 | **PhD student** in TFP, Karlsruhe Institute of Technology (KIT), Germany. |
| 09.2009 – 07.2013 | **PhD student** in Department of Physics, Beijing Normal University, China. |
| 09.2006 – 07.2009 | **Master student** in Department of Physics, Beijing Normal University, China. |
| 09.2001 – 07.2005 | **Bachelor student** in Department of Physics, Beijing Normal University, China |

## Grants and Projects

**Project: Synthesizing Lattice Structure in Phase Space**

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| Grant Source: | Carl-Zeiss-Stiftung Nachwuchsprogramm 2015 |
| Research Period: | 1 September 2015 – 30 November 2017, two years |
| Total Funding: | 200,000 Euros |
| Participants: | Dr. Lingzhen Guo (PI), Dr. Michael Marthaler, Pengfei Liang (PhD) |

**Project: Quantum Effects in Driven Systems far from Equilibrium**

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|---|---|
| Grant Source: | KHYS Visiting Researcher Scholarship, KIT |
| Research Period: | 1 April 2014 – 30 September 2014, half year |
| Total Funding: | 4,925 Euros |
| Participants: | Dr. Lingzhen Guo (PI), Modan Liu (Master student) |

## Scholarships and Awards

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| 09.2010 – 08.2012 | Chinese Government Scholarship for Studying Abroad |
| 12.2010 – 05.2011 | Individuelle Förderung für Doktoranden aus dem Ausland-DAAD-STIBET |
| August, 2017 | Poster Award at International Conference on Ultra Low Temperature Physics |

## Research Fields

– Quantum optics (with superconducting circuits, time-delay, non-Markovian effects, etc )
– Quantum many-body physics (in Floquet systems, far-from-equilibrium dynamics, ect)
– Quantum computing (with ion traps, cold atoms, superconducting circuits)
– Machine learning in physics

## Publication List

[17] Gustav Andersson, Baladitya Suri, **Lingzhen Guo**, Thomas Aref, Per Delsing, *Nonexponential decay of a giant artificial atom*, arXiv:1812.01302.

[16] Ping Yang, Jan David Brehm, Juha Leppk̈angas, **Lingzhen Guo**, Michael Marthaler, Isabella Boventer, Alexander Stehli, Tim Wolz, Alexey V. Ustinov, Martin Weides, *Probing the Tavis-Cummings level splitting with intermediate-scale superconducting circuits*, arXiv:1810.00652.

[15] Juha Leppäkangas, Jan David Brehm, Ping Yang, **Lingzhen Guo**, Michael Marthaler, Alexey V. Ustinov, Martin Weides, *Resonance inversion in a superconducting cavity coupled to artificial atoms and a microwave background*, arXiv:1807.09567.

[14] Andre Schneider, Jochen Braumller, **Lingzhen Guo**, Patrizia Stehle, Hannes Rotzinger, Michael Marthaler, Alexey V. Ustinov, Martin Weides, *Local Sensing with the Multi-Level AC Stark Effect*, Phys. Rev. A **97**, 062334 (2018).

[13] Pengfei Liang, **Lingzhen Guo (corresponding author)**, *Scalable Ion Trap Architecture for Universal Quantum Computation by Collisions*, arXiv:1801.02593.

[12] Pengfei Liang, Michael Marthaler, **Lingzhen Guo (corresponding author)**, *Floquet Many-body Engineering: Topology and Many-body Physics in Phase Space Lattices*, New J. Phys. **20**, 023043 (2018).

[11] **Lingzhen Guo**, Arne Grimsmo, Anton Frisk Kockum, Mikhail Pletyukhov and Göran Johansson, *Giant acoustic atom: A single quantum system with a deterministic time delay*, Phys. Rev. A **95**, 053821 (2017) (**Editors' Suggestion**).

[10] **Lingzhen Guo**, Modan Liu and Michael Marthaler, *Effective Long-distance Interaction from Short-distance Interaction in Periodically Driven One-dimensional Classical System*, Phys. Rev. A **93**, 053616 (2016).

[9] **Lingzhen Guo** and Michael Marthaler, *Synthesizing Lattice Structures in Phase Space*, New J. Phys. **18**, 023006 (2016).

[8] J. Braumüller, J. Cramer, S. Schlör, H. Rotzinger, L. Radtke, A. Lukashenko, P. Yang, M. Marthaler, **Lingzhen Guo**, A.V. Ustinov and M. Weides, *Multi-photon dressing of an anharmonic superconducting many-level quantum circuit*, Phys. Rev. B **91**, 054523 (2015).

[7] **Lingzhen Guo**, Michael Marthaler and Gerd Schön, *Phase Space Crystals: A New Way to Create a Quasienergy Band Structure*, Phys. Rev. Lett. **111**, 205303 (2013)**(Editor's suggestion)**.

[6] **Lingzhen Guo**, V. Peano, M. Marthaler and M.I. Dykman, *Quantum critical temperature of a modulated oscillator*, Phys. Rev. A **87**, 062117 (2013).

[5] Stephan André, **Lingzhen Guo**, V. Peano, M. Marthaler, Gerd Schön, *Emission spectrum of the driven nonlinear oscillator*, Phys. Rev. A **85**, 053825 (2012).

[4] **Lingzhen Guo**, Michael Marthaler, Stephan André, Gerd Schön, *The role of damping for the driven anharmonic quantum oscillator*, J. Phys.: Conf. Ser. **400**, 042014(2012).

[3] **Lingzhen Guo**, Z. Zheng, X.Q. Li and Y. Yan, *Dynamic Quantum Tunneling in Mesoscopic Driven Duffing Oscillators*, Phys. Rev. E **84**, 011144 (2011).

[2] Z. Liu, L. Kuang, K. Hu, L. Xu, S. Wei, **Lingzhen Guo (corresponding author)**, Xin-Qi Li, *Deterministic creation and stabilization of entanglement in circuit QED by homodyne-mediated feedback control*, Phys. Rev. A **82**, 032335 (2010).

[1] **Lingzhen Guo**, Zhigang Zheng, Xin-Qi Li, *Quantum Dynamics of Mesoscopic Driven Duffing Oscillators*, EPL(Europhysics Letters) **90**, (2010) 10011.

## Conferences, Talks and Posters

• **Poster:** *Ultracold Atoms in Stroboscopic One-dimensional Lattices: Topology and Many-body Physics in Phase Space Crystals*,
International Conference on Ultra Low Temperature Physics (ULT 2017): Frontiers of Low Temperature Physics, Heidelberg University, Germany,
August 17-21, 2017.

• **Invited Talk:** *Giant acoustic atom: a single quantum system with a deterministic time delay*,
28th International Conference on Low Temperature Physics (LT28), Gothenburg, Sweden,
August 9-16, 2017.

• **Poster:** *The giant acoustic atom – a single quantum system with a deterministic time delay*,
SAWtrain summer school "Physics and application of GHz vibrations" at the Institut d'Études Scientifiques de Cargèse (IESC), Corsica, France,
July 11-21, 2017.

• **Talk:** *The giant acoustic atom – a single quantum system with a deterministic time delay*,
48th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Sacramento, California, US,
June 5-9, 2017.

• **Invited seminar talk:** *The giant acoustic atom — a single quantum system with a deterministic time delay*,
Seminar talk invited by Dr. Muxin Han, Florida Atlantic University, USA,
March 13, 2017.

• **Talk:** *Superconducting Qubit (transmon) coupled to Surface Acoustic Waves (SAWs)*,
APS March Meeting 2017, New Orleans, LA, US,
March 13 - 17, 2017.

• **Poster:** *Phase Space Crystals from Periodically Driven One-dimensional Systems*,
Quantum-Classical Transition in Many-Body Systems: Indistinguishability, Interference and Interactions, Dresden, Germany,
13 - 17 February, 2017.

• **Poster:** *Topology and Many-body Physics from Periodically Driven One-dimensional Systems*,
42nd Conference of the Middle European Cooperation in Statistical Physics (MECO42), ENS Lyon (France),
8 - 10 February, 2017.

• **Invited seminar talk:** *Phase Space Crystals from Periodically Driven One-dimensional Systems*,
Seminar talk invited by Prof. Andreas Buchleitner, Research group of Quantum Optics and Statistics, University of Freiburg, Germany,
November 18, 2016.

• **Talk:** *Superconducting qubit coupled to Surface Acoustic Waves*,
CMD26 of the European Physical Society (EPS), Groningen, The Netherlands,
September 04 - 09, 2016.

• **Invited talk:** *Effective Long-distance Interaction from Short-distance Interaction in Periodically Driven 1D Classical System*,
Conference on Long-Range Interacting Many-Body Systems: from Atomic to Astrophysical Scales, ICTP, Trieste, Italy,
July 25 - 29, 2016.

• **Invited seminar talk:** *Synthesizing Lattices in Phase Space: Out-of-equilibrium Cold Atoms in Low Dimensionality*,
Seminar talk invited by Prof. Markus Oberthaler, Research group of Synthetic Quantum Systems, University of Heidelberg, Germany,
June 14, 2016.

• **Poster:** *Transmon coupled to Surface Acoustic Waves*,
International Conference on the Frontiers in Atomic, Molecular, and Optical Physics, Shanghai,

China,
May 23 - 26, 2016.

• **Poster:** *The Giant Acoustic Atom — single quantum system with large time delay*,
SPICE-Workshop Quantum Acoustics - Surface Acoustic Waves meets Solid State Qubits, Mainz, Germany,
May 17 - 20, 2016.

• **Talk I:** *Quantum Critical Temperatures of a ModulatedOscillator*,
**Talk II:** *The Way to Phase Space CrystalsSimulating Non-Equilibrium Many-body Physics*,
APS March Meeting 2016, Baltimore, Maryland, US,
March 14 - 18, 2016.

• **Poster:** *Phase Space Crystals: Exotic Nonequilirium State of Driven Atoms in 1D Trap*,
WE-Heraeus-Seminar: Isolated Quantum Many-Body Systems out of Equilibrium, Physikzentrum Bad Honnef, Germany,
November 30 - December 3, 2015.

• **Poster:** *Giant Atom coupled to Surface Acoustic Waves (SAW)*,
QUTE-EUROPE Summer School 2015 : Quantum Simulation & Computation – From fundamentals to applications and implementations, Hindasgarden, Gothenburg, Sweden,
June 21 - 27, 2015.

• **Talk:** *Phase Space Interactions and Exchange Quasienergy in periodically driven many-body system*,
**Poster:** *Giant Atom coupled to Surface Acoustic Waves (SAW)*,
DPG Spring Meeting 2015, Berlin, Germany,
March 15 - 20, 2015.

• **Talk:** *Giant Atom Coupled to Surface Acoustic Waves*,
Workshop on Quantum Simulations, Benasque, Spain,
Feburary 22 - 27, 2015.

• **Invited seminar talk:** *Synthesizing Lattice Structures in Phase Space*,
Seminar talk invited by Prof. Joachim Ankerhold, Institute for Complex Quantum Systems, University of Ulm, Germany,
November 3, 2014.

• **Invited seminar talk:** *Phase Space Crystals in two dimensions: artificial gauge fields in phase space*,
Seminar talk invited by Prof. Florian Marquardt, University of Erlangen-Nuremberg, Germany,
April 14, 2014.

• **Talk:** *2D phase space crystals: artifical gauge fields in phase space*,
DPG Spring Meeting 2014, Dresden, Germany,
March 30 - April 04, 2014.

• **Invited seminar talk:** *Phase space crystals in cQED system via multi-photon processes*,
Seminar talk invited by Prof. Göran Janhansson, MC2, Chalmers University of Technology, Sweden,
March 13, 2014.

• **Invited seminar talk:** *Phase Space Crystal: A New Way to Create Quasienergy Bandstructure*,
Seminar talk invited by Prof. Florian Marquardt, University of Erlangen-Nuremberg, Germany,
April 24, 2013.

• **Talk:** *A New Way to Create Energy Band: Crystal Formed in Phase Space*,
DPG Spring Meeting 2013, Regensburg, Germany,
March 10 - 15, 2013.

• **Talk:** *Temperature Dependence of Driven Duffing Oscillator*,
DPG Spring Meeting 2012, Berlin, Germany,
March 25 - 30, 2012.

• **Poster:** *Temperature Fragility of Driven Duffing Oscillator*,
2nd international SOLID workshop, Grenoble, France,

Feburary 20 - 23, 2012.

• **Poster:** *Temperature Dependence of Driven Dung Oscillators*,
26th International Conference on Low Temperature Physics (LT26), Beijing, China,
August 10 - 17, 2011.

• **Talk:** *Creation and stabilization of entanglement in circuit QED system*,
**Poster:** *Temperature Dependence of Driven Duffing Oscillators*,
DPG Spring Meeting 2011, Dresden, Germany,
March 13 - 18, 2011.