

# Publication list

Anton Frisk Kockum

## Statistics

[Google Scholar](#) (>980 citations, h-index 17)

ResearcherID: [E-8255-2014](#) (>630 citations, h-index 15)

1 *Science*  
1 *Nature Physics*  
1 *Nature Reviews Physics*  
1 *Physical Review X*  
1 *Physics Reports*  
1 *Nature Communications*  
6 *Physical Review Letters*  
9 *Physical Review A*  
1 *New Journal of Physics*  
2 *Scientific Reports*  
1 *Journal of Physics B*

## Preprints

## Published articles

25. **Interaction of mechanical oscillators mediated by the exchange of virtual photon pairs**  
Omar Di Stefano, Alessio Settineri, Vincenzo Macrì, Alessandro Ridolfo, Roberto Stassi, [Anton Frisk Kockum](#), Salvatore Savasta, and Franco Nori  
[Physical Review Letters](#) **122**, 030402 (2019)  
arXiv:[1712.00121](#)
24. **Ultrastrong coupling between light and matter**  
[Anton Frisk Kockum](#), Adam Miranowicz, Simone De Liberato, Salvatore Savasta, and Franco Nori  
[Nature Reviews Physics](#) **1**, 19 (2019)  
arXiv:[1807.11636](#)
23. **Simple preparation of Bell and Greenberger-Horne-Zeilinger states using ultrastrong-coupling circuit QED**  
Vincenzo Macrì, Franco Nori, and [Anton Frisk Kockum](#)  
[Physical Review A](#) **98**, 062327 (2018)  
arXiv:[1810.09808](#)
22. **Photodetection probability in quantum systems with arbitrarily strong light-matter interaction**  
Omar Di Stefano, [Anton Frisk Kockum](#), Alessandro Ridolfo, Salvatore Savasta, and Franco Nori  
[Scientific Reports](#) **8**, 17825 (2018)  
arXiv:[1711.10698](#)

21. **Dissipation and thermal noise in hybrid quantum systems in the ultrastrong coupling regime**  
Alessio Settinieri, Vincenzo Macrì, Alessandro Ridolfo, Omar Di Stefano, [Anton Frisk Kockum](#), Franco Nori, and Salvatore Savasta  
*Physical Review A* **98**, 053834 (2018)  
arXiv:1807.06348
20. **Decoherence-free interaction between giant atoms in waveguide quantum electrodynamics**  
[Anton Frisk Kockum](#), Göran Johansson, and Franco Nori  
*Physical Review Letters* **120**, 140404 (2018)  
arXiv:1711.08863
19. **Nonperturbative dynamical Casimir effect in optomechanical systems: vacuum Casimir–Rabi splittings**  
Vincenzo Macrì, Alessandro Ridolfo, Omar Di Stefano, [Anton Frisk Kockum](#), Franco Nori, and Salvatore Savasta  
*Physical Review X* **8**, 011031 (2018)  
arXiv:1706.04134
18. **Reflective amplification without population inversion from a strongly driven superconducting qubit**  
Ping Yi Wen, [Anton Frisk Kockum](#), Hou Ian, Jeng-Chung Chen, Franco Nori, and Io-Chun Hoi  
*Physical Review Letters* **120**, 063603 (2018)  
arXiv:1707.06400
17. **Microwave photonics with superconducting quantum circuits**  
Xiu Gu\*, [Anton Frisk Kockum](#)\*, Adam Miranowicz, Yu-xi Liu, and Franco Nori  
*Physics Reports* **718-719**, 1-102 (2017)  
arXiv:1707.02046  
\*Equal author contributions
16. **Circuit quantum acoustodynamics with surface acoustic waves**  
Riccardo Manenti, [Anton Frisk Kockum](#), Andrew Patterson, Tanja Behrle, Joseph Rahamim, Giovanna Tancredi, Franco Nori, and Peter J. Leek  
*Nature Communications* **8**, 975 (2017)  
arXiv:1703.04495
15. **Quantum nonlinear optics without photons**  
Roberto Stassi, Vincenzo Macrì, [Anton Frisk Kockum](#), Omar Di Stefano, Adam Miranowicz, Salvatore Savasta, and Franco Nori  
*Physical Review A* **96**, 023818 (2017)  
arXiv:1702.00660
14. **Frequency conversion in ultrastrong cavity QED**  
[Anton Frisk Kockum](#), Vincenzo Macrì, Luigi Garziano, Salvatore Savasta, and Franco Nori  
*Scientific Reports* **7**, 5313 (2017)  
arXiv:1701.07973
13. **Deterministic quantum nonlinear optics with single atoms and virtual photons**  
[Anton Frisk Kockum](#), Adam Miranowicz, Vincenzo Macrì, Salvatore Savasta, and Franco Nori  
*Physical Review A* **95**, 063849 (2017)  
arXiv:1701.05038

12. **Feynman-diagrams approach to the quantum Rabi model for ultrastrong cavity QED: stimulated emission and reabsorption of virtual particles dressing a physical excitation**  
Omar Di Stefano, Roberto Stassi, Luigi Garziano, [Anton Frisk Kockum](#), Salvatore Savasta, and Franco Nori  
[New Journal of Physics](#) **19**, 053010 (2017)  
Selected as a [Highlight of 2017](#)  
arXiv:1603.04984
11. **Giant acoustic atom: A single quantum system with a deterministic time delay**  
Lingzhen Guo, Arne L. Grimsmo, [Anton Frisk Kockum](#), Mikhail Pletyukhov, and Göran Johansson  
[Physical Review A](#) **95**, 053821 (2017)  
Selected as an Editors' Suggestion  
arXiv:1612.00865
10. **Leggett–Garg inequality violations with a large ensemble of qubits**  
Neill Lambert, Kamanasish Debnath, [Anton Frisk Kockum](#), George C. Knee, William J. Munro, and Franco Nori  
[Physical Review A](#) **94**, 012105 (2016)  
arXiv:1604.04059
9. **Multiphoton quantum Rabi oscillations in ultrastrong cavity QED**  
Luigi Garziano, Roberto Stassi, Vincenzo Macrì, [Anton Frisk Kockum](#), Salvatore Savasta, and Franco Nori  
[Physical Review A](#) **92**, 063830 (2015)  
arXiv:1509.06102
8. **Probing the quantum vacuum with an artificial atom in front of a mirror**  
Io-Chun Hoi, [Anton Frisk Kockum](#), Lars Tornberg, Arsalan Pourkabirian, Göran Johansson, Per Delsing, and C. M. Wilson  
[Nature Physics](#) **11**, 1045 (2015)  
arXiv:1410.8840
7. **Propagating phonons coupled to an artificial atom**  
Martin V. Gustafsson, Thomas Aref, [Anton Frisk Kockum](#), Maria K. Ekström, Göran Johansson, and Per Delsing  
[Science](#) **346**, 207 (2014)  
Selected for an accompanying [Perspective](#)  
arXiv:1404.0401
6. **Designing frequency-dependent relaxation rates and Lamb shifts for a giant artificial atom**  
[Anton Frisk Kockum](#), Per Delsing, and Göran Johansson  
[Physical Review A](#) **90**, 013837 (2014)  
arXiv:1406.0350
5. **Quantum nondemolition detection of a propagating microwave photon**  
Sankar R. Sathyamoorthy, Lars Tornberg, [Anton Frisk Kockum](#), Ben Q. Baragiola, Joshua Combes, C. M. Wilson, Thomas M. Stace, and Göran Johansson  
[Physical Review Letters](#) **112**, 093601 (2014)  
arXiv:1308.2208
4. **Detailed modelling of the susceptibility of a thermally populated, strongly driven circuit-QED system**

Anton Frisk Kockum\*, Martin Sandberg\*, Michael R. Vissers, Jiansong Gao, Göran Johansson, and David P. Pappas

*Journal of Physics B: Atomic, Molecular and Optical Physics* **46**, 224014 (2013)

Selected for an accompanying [Lab Talk](#)

\*Equal author contributions

3. **Giant cross-Kerr effect for propagating microwaves induced by an artificial atom**

Io-Chun Hoi, Anton Frisk Kockum, Tauno Palomaki, Thomas M. Stace, Bixuan Fan, Lars Tornberg, Sankar R. Sathyamoorthy, Göran Johansson, Per Delsing, and C. M. Wilson

*Physical Review Letters* **111**, 053601 (2013)

arXiv:1207.1203

2. **Breakdown of the cross-Kerr scheme for photon counting**

Bixuan Fan, Anton Frisk Kockum, Joshua Combes, Göran Johansson, Io-Chun Hoi, C. M. Wilson, Per Delsing, G. J. Milburn, and Thomas M. Stace

*Physical Review Letters* **110**, 053601 (2013)

arXiv:1210.0991

1. **Undoing measurement-induced dephasing in circuit QED**

Anton Frisk Kockum, Lars Tornberg, and Göran Johansson

*Physical Review A* **85**, 052318 (2012)

arXiv:1202.2386

## Theses

### **Quantum optics with artificial atoms**

Anton Frisk Kockum

[Ph.D. thesis](#) (Chalmers University of Technology, Gothenburg, 2014)

### **Measurement back-action and photon detection in microwave quantum optics**

Anton Frisk Kockum

[Licenciate thesis](#) (Chalmers University of Technology, Gothenburg, 2012)

### **Modelling spectroscopy on transmon qubits in an undercoupled resonator**

Anton Frisk Kockum

M.Sc. thesis (Chalmers University of Technology, Gothenburg, 2010)

### **Cold-electron bolometers with thin absorbers and improved SIN and SIS' junctions for the BOOMERanG balloon project**

Hannes Kuusisto, Anna Karlsson, Oskar Lindgren, Anton Frisk Kockum, and Daniel Midtvedt  
B.Sc. thesis (Chalmers University of Technology, Gothenburg, 2009)

## Book chapters

2. **Quantum bits with Josephson junctions**

Anton Frisk Kockum and Franco Nori

to appear in an updated edition of Barone and Paterno's classic textbook *Physics and Applications of the Josephson effect*, edited by Francesco Tafuri (Springer International Publishing, in press)

1. **Quantum acoustics with surface acoustic waves**

Thomas Aref, Per Delsing, Maria K. Ekström, Anton Frisk Kockum, Martin V. Gustafsson, Göran Johansson, Peter J. Leek, Einar Magnusson, and Riccardo Manenti in *Superconducting devices in quantum optics*, edited by Robert H. Hadfield and Göran Johansson (Springer International Publishing, 2016)  
arXiv:[1506.01631](https://arxiv.org/abs/1506.01631)