

Literature: Thermodynamics in Superconducting Circuits

This is a personal and biased selection of further reading material for the lecture.

Circuit QED

- [1] S. M. Girvin, “Circuit QED: superconducting qubits coupled to microwave photons” in *Quantum Machines: Measurement and Control of Engineered Quantum Systems*, Edited by M. Devoret, B. Huard, R. Schoelkopf, and L. F. Cugliandolo, Springer (Oxford University Press, 2014), DOI:[10.1093/acprof:oso/9780199681181.003.0003](https://doi.org/10.1093/acprof:oso/9780199681181.003.0003)
- [2] A. Blais, A. L. Grimsmo, S. M. Girvin, A. Wallraff, “Circuit quantum electrodynamics”, *Rev. Mod. Phys.* **93**, 025005 (2021), DOI:[10.1103/RevModPhys.93.025005](https://doi.org/10.1103/RevModPhys.93.025005)
- [3] U. Vool, M. Devoret, “Introduction to quantum electromagnetic circuits”, *Int. J. Circ. Theor. Appl.* **45**, 897 (2017), DOI:[10.1002/cta.2359](https://doi.org/10.1002/cta.2359)
- [4] A. D. Armour, M. P. Blencowe, E. Brahim, A. J. Rimberg, “Universal Quantum Fluctuations of a Cavity Mode Driven by a Josephson Junction” *Phys. Rev. Lett.* **111**, 247001 (2013), DOI:[10.1103/PhysRevLett.111.247001](https://doi.org/10.1103/PhysRevLett.111.247001)

Quantum Thermal Machines

- [5] N. Lörchm C. Bruder, N. Brunner, P. P. Hofer, “Optimal work extraction from quantum states by photo-assisted Cooper pair tunneling”, *Quantum Sci. Technol.* **3**, 035014 (2018), DOI:[10.1088/2058-9565/aacbf3](https://doi.org/10.1088/2058-9565/aacbf3)
- [6] P. P. Hofer, J.-R. Souquet, A. A. Clerk, “Quantum heat engine based on photon-assisted Cooper pair tunneling”, *Phys. Rev. B* **93**, 041418(R) (2016), DOI:[10.1103/PhysRevB.93.041418](https://doi.org/10.1103/PhysRevB.93.041418)
- [7] P. P. Hofer, J. Bohr Brask, M. Perarnau-Llobet, and N. Brunner, “Quantum Thermal Machine as a Thermometer”, *Phys. Rev. Lett.* **119**, 090603 (2017), DOI:[10.1103/PhysRevLett.119.090603](https://doi.org/10.1103/PhysRevLett.119.090603)
- [8] P. P. Hofer, M. Perarnau-Llobet, J. Bohr Brask, R. Silva, M. Huber, and N. Brunner, “Autonomous quantum refrigerator in a circuit QED architecture based on a Josephson junction”, *Phys. Rev. B* **94**, 235420 (2016), DOI:[10.1103/PhysRevB.94.235420](https://doi.org/10.1103/PhysRevB.94.235420)

Experiments with similar architectures

- [9] M. Hofheinz, F. Portier, Q. Baudouin, P. Joyez, D. Vion, P. Bertet, P. Roche, and D. Esteve, “Bright Side of the Coulomb Blockade”, *Phys. Rev. Lett.* **106**, 217005 (2011), DOI:[10.1103/PhysRevLett.106.217005](https://doi.org/10.1103/PhysRevLett.106.217005)
- [10] A. Peugeot, G. Ménard, S. Dambach, M. Westig, B. Kubala, Y. Mukharsky, C. Altimiras, P. Joyez, D. Vion, P. Roche, D. Esteve, P. Milman, J. Leppäkangas, G. Johansson, M. Hofheinz, J. Ankerhold, and F. Portier, “Generating Two Continuous Entangled Microwave Beams Using a dc-Biased Josephson Junction”, *Phys. Rev. X* **11**, 031008 (2021), DOI:[10.1103/PhysRevX.11.031008](https://doi.org/10.1103/PhysRevX.11.031008)