

# Curriculum Vitae

Name:	Jean-Claude Besse
Position:	PostDoc, Quantum Device Lab, ETH Zurich.
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Citizenship:	Switzerland
DOB:	9 <sup>th</sup> of July 1992 in Winterthur, Switzerland.
Education:	2016 – 2021 <i>ETH Zürich</i> – PhD in experimental quantum physics. Thesis: ' <i>Generation, Manipulation, and Detection of Complex States of Microwave Radiation</i> ', Andreas Wallraff, ETH Zurich.
	2013 – 2015 <i>ETH Zürich</i> – MSc Physics. GPA: 5.92/6.00. Master thesis: ' <i>Design, optimization and measurements of 2D photonic crystals with high photon-phonon cooperativity</i> ', Oskar Painter, Caltech. Semester thesis: ' <i>Piezoelectric actuation of GaAs NEMS</i> ', Ataç İmamoğlu, ETH Zurich.
	2012 – 2013 <i>Imperial College London</i> – Erasmus Exchange program. GPA: 89/100. Imperial College International Diploma. Bachelor thesis: ' <i>Automated High-Resolution Structured Illumination Microscopy</i> ', Peter Török, Imperial College London.
	2010 – 2013 <i>EPFL</i> – BSc Physics. GPA: 5.90/6.00. 2nd Best GPA award. Summer project: ' <i>External Cavity Diode Laser</i> ', Tobias Kippenberg, EPFL.
	2007 – 2010 <i>Gymnase Auguste Piccard</i> – Swiss Matura. Awards in Mathematics and for best GPA. Mention for the Matura work.

## List of Publications

- 2020 *Microwave Quantum Link between Superconducting Circuits Housed in Spatially Separated Cryogenic Systems*,  
P. Magnard, S. Storz, P. Kurpiers, J. Schär, F. Marxer, J. Lütolf, **J.-C. Besse**, M. Gabureac, K. Reuer, A. Akin, B. Royer, A. Blais, and A. Wallraff  
*Phys. Rev. Lett.* **125**, 260502 (2020), also in [arXiv:2008.01642](#)
- Demonstration of an All-Microwave Controlled-Phase Gate between Far Detuned Qubits*,  
S. Krinner, P. Kurpiers, B. Royer, P. Magnard, I. Tsitsilin, **J.-C. Besse**, A. Remm, A. Blais, A. Wallraff,  
*Phys. Rev. Applied* **14**, 044039 (2020), also in [arXiv:2006.10639](#)
- Implementation of Conditional-Phase Gates based on tunable ZZ-Interactions*,  
M. C. Collodo, J. Herrmann, N. Lacroix, C. K. Andersen, A. Remm, S. Lazar, **J.-C. Besse**, T. Walter, A. Wallraff, C. Eichler,  
*Phys. Rev. Lett.* **125**, 240502 (2020), also in [arXiv:2005.08863](#)
- Realizing a Deterministic Source of Multipartite-Entangled Photonic Qubits*,  
**J.-C. Besse**, K. Reuer, M. C. Collodo, A. Wulff, L. Wernli, A. Copetudo, D. Malz, P. Magnard, A. Akin, M. Gabureac, G. J. Norris, J. I. Cirac, A. Wallraff, C. Eichler  
*Nature Communications* **11**, 4877 (2020), also in [arXiv:2005.07060](#)
- Primary thermometry of propagating microwaves in the quantum regime*,  
M. Scigliuzzo, A. Bengtsson, **J.-C. Besse**, A. Wallraff, P. Delsing, and S. Gasparinetti,  
*Phys. Rev. X* **10**, 041054 (2020), also in [arXiv:2003.13522](#)
- Parity Detection of Propagating Microwave Fields*,  
**J.-C. Besse**, S. Gasparinetti, M. C. Collodo, T. Walter, A. Remm, J. Krause, C. Eichler, and A. Wallraff,  
*Phys. Rev. X* **10**, 011046 (2020), also in [arXiv:1912.09896](#)
- 2019 *Quantum Communication with Time-Bin Encoded Microwave Photons*,  
P. Kurpiers, M. Pechal, B. Royer, P. Magnard, T. Walter, J. Heinsoo, Y. Salathe, A. Akin, S. Storz, **J.-C. Besse**, S. Gasparinetti, A. Blais, and A. Wallraff,  
*Phys. Rev. Applied* **12**, 044067 (2019), also in [arXiv:1811.07604](#)
- Two-photon resonance fluorescence of a ladder-type atomic system*,  
S. Gasparinetti, **J.-C. Besse**, M. Pechal, R. D. Buijs, C. Eichler, H. J. Carmichael, and A. Wallraff,  
*Phys. Rev. A* **100**, 033802 (2019), also in [arXiv:1901.00414](#)
- Entanglement stabilization using ancilla-based parity detection and real-time feedback in superconducting circuits*,  
C. Kraglund Andersen, A. Remm, S. Lazar, S. Krinner, J. Heinsoo, **J.-C. Besse**, M. Gabureac, A. Wallraff, and C. Eichler,  
*npj Quantum Information* **5**, 69 (2019), also in [arXiv:1902.06946](#)
- Observation of the Crossover from Photon Ordering to Delocalization in Tunably Coupled Resonators*,

- M. C. Collodo, A. Potoćnik, S. Gasparinetti, **J.-C. Besse**, M. Pechal, M. Sameti, M. J. Hartmann, A. Wallraff, and C. Eichler,  
*Phys. Rev. Lett.* **122**, 183601 (2019), also in [arXiv:1808.00889](#)
- 2018 *Rapid High-fidelity Multiplexed Readout of Superconducting Qubits*,  
 J. Heinsoo, C. Kraglund Andersen, A. Remm, S. Krinner, T. Walter, Y. Salathe, S. Gasparinetti, **J.-C. Besse**, A. Potoćnik, A. Wallraff, and C. Eichler,  
*Phys. Rev. Applied* **10**, 034040 (2018), also in [arXiv:1801.07904](#)
- Fast and Unconditional All-Microwave Reset of a Superconducting Qubit*,  
 P. Magnard, P. Kurpiers, B. Royer, T. Walter, **J.-C. Besse**, S. Gasparinetti, M. Pechal, J. Heinsoo, S. Storz, A. Blais, and A. Wallraff,  
*Phys. Rev. Lett.* **121**, 060502 (2018), also in [arXiv:1801.07689](#)
- Deterministic quantum state transfer and remote entanglement using microwave photons*,  
 P. Kurpiers, P. Magnard, T. Walter, B. Royer, M. Pechal, J. Heinsoo, Y. Salathe, A. Akin, S. Storz, **J.-C. Besse**, S. Gasparinetti, A. Blais, and A. Wallraff,  
*Nature* **558**, 264-267 (2018), also in [arXiv:1712.08593](#)
- Single-Shot Quantum Non-Demolition Detection of Individual Itinerant Microwave Photons*,  
**J.-C. Besse**, S. Gasparinetti, M. C. Collodo, T. Walter, P. Kurpiers, M. Pechal, C. Eichler, and A. Wallraff,  
*Phys. Rev. X* **8**, 021003 (2018), also in [arXiv:1711.11569](#)
- 2017 *Correlations and entanglement of microwave photons emitted in a cascade decay*,  
 S. Gasparinetti, M. Pechal, **J.-C. Besse**, M. Mondal, C. Eichler, and A. Wallraff,  
*Phys. Rev. Lett.* **119**, 140504 (2017), also in [arXiv:1705.05272](#)
- 2016 *Superconducting Switch for Fast On-Chip Routing of Quantum Microwave Fields*,  
 M. Pechal, **J.-C. Besse**, M. Mondal, M. Oppliger, S. Gasparinetti, and A. Wallraff,  
*Phys. Rev. Applied* **6**, 024009 (2016), also in [arXiv:1606.01031](#)

## List of Conference Contributions

- 2021 *Deterministic Generation and Manipulation of Entangled Microwave Photonic Qubits (talk)*,  
**J.-C. Besse**, K. Reuer, M. C. Collodo, L. Wernli, A. Copetudo, D. Malz, P. Magnard, P. Kurpiers, A. Akin, M. Gabureac, G. J. Norris, J. I. Cirac, A. Wallraff, C. Eichler,  
 QC40: Physics of Computation Conference 40th Anniversary, 2021
- Deterministic Generation of Multipartite-Entangled Microwave Photonic States (talk)*,  
**J.-C. Besse**, K. Reuer, M. C. Collodo, A. Wulff, L. Wernli, A. Copetudo, D. Malz, P. Magnard, A. Akin, M. Gabureac, G. J. Norris, J. I. Cirac, A. Wallraff, C. Eichler,

APS March Meeting, 2021

2019 *Single Photon Detection, Parity Measurements, and Heralded Cat States in the Microwave Domain (talk+poster)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, T. Walter, P. Kurpiers, M. Pechal, A. Remm, J. Krause, C. Eichler, A. Wallraff,

Les Houches Summer School, 'Quantum Information Machines', 2019

*Single Photon Detection, Parity Measurements, and Heralded Cat States in the Microwave Domain (poster)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, T. Walter, P. Kurpiers, M. Pechal, A. Remm, J. Krause, C. Eichler, A. Wallraff,

CIFAR Jouvence, 2019

*Quantum non demolition parity measurements of itinerant microwave fields (talk)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, A. Remm, C. Eichler, A. Wallraff,

APS March Meeting, 2019

*Itinerant microwave photon detection and parity measurements (talk)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, A. Remm, C. Eichler, A. Wallraff,

QSIT Arosa General Meeting, 2019

2018 *Single-Shot Quantum Non-Demolition Detection of Individual Itinerant Microwave Photons (poster)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, T. Walter, P. Kurpiers, M. Pechal, C. Eichler, A. Wallraff,

QSIT Monte Verita, 2018

*Single-Shot Quantum Non-Demolition Detection of Itinerant Microwave Photons (talk)*,

**J.-C. Besse**, S. Gasparinetti, M. Collodo, T. Walter, P. Kurpiers, C. Eichler, A. Wallraff,

APS March Meeting, 2018

2016 *Superconducting Switch for Fast On-Chip Routing of Quantum Microwave Fields (poster)*,

**J.-C. Besse**, M. Pechal, M. Mondal, M. Oppliger, S. Gasparinetti, and A. Wallraff,

QSIT Junior Meeting, 2016

Zürich, May 2021