

Curriculum Vitae

Name:	Jean-Claude Besse										
Position:	Senior Assistant, ETH Zurich - PSI Quantum Computing Hub.										
Contact:	Südstrasse 5 8304 Wallisellen, Switzerland Email: jbesse@phys.ethz.ch Phone: +41.79.587.89.32 jbesse.ch										
Citizenship:	Switzerland										
DOB:	9 th of July 1992 in Winterthur, Switzerland.										
Positions:	<table><tr><td>2021 – cur</td><td><i>ETH-PSI QC Hub</i> – PostDoc, promoted to Senior Assistant. Fabrication lead, ETH-PSI QC Hub.</td></tr><tr><td>2016 – 2021</td><td><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. Awarded the ETH medal for outstanding PhD Thesis.</td></tr><tr><td>2013 – 2015</td><td><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.</td></tr><tr><td>2012 – 2013</td><td><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.</td></tr><tr><td>2010 – 2013</td><td><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.</td></tr></table>	2021 – cur	<i>ETH-PSI QC Hub</i> – PostDoc, promoted to Senior Assistant. Fabrication lead, ETH-PSI QC Hub.	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. Awarded the ETH medal for outstanding PhD Thesis.	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.
2021 – cur	<i>ETH-PSI QC Hub</i> – PostDoc, promoted to Senior Assistant. Fabrication lead, ETH-PSI QC Hub.										
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. Awarded the ETH medal for outstanding PhD Thesis.										
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.										

List of Publications

- 2022 *Magnetic imaging of superconducting qubit devices with scanning SQUID-on-tip*,
E. Marchiori, L. Ceccarelli, N. Rossi, G. Romagnoli, J. Herrmann, **J.-C. Besse**, S.
Krinner, A. Wallraff, and M. Poggio
submitted, also in [arXiv:2206.08163](#)
- Realization of a Universal Quantum Gate Set for Itinerant Microwave Photons*,
K. Reuer, **J.-C. Besse**, L. Wernli, P. Magnard, P. Kurpiers, G. J. Norris, A. Wallraff,
and C. Eichler
Phys. Rev. X **12**, 011008 (2022), also in [arXiv:2106.03481](#)
- 2020 *Microwave Quantum Link between Superconducting Circuits Housed in Spatially Sepa-
rated 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. Potočník, 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. Potočník, 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

- 2022 *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, ETH Quantum Center, General Meeting, 2022
- 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, June 2022