Jonathan Bootle

Curriculum Vitae

IBM Research Zurich, Säumerstrasse 4
8803 Rüschlikon, Switzerland
✉ *jbt@zurich.ibm.com*
https://jbootle.github.io/

Research Interests

Zero-knowledge proofs, error-correcting codes, lattice cryptography, post-quantum cryptography.

Appointments

Oct'20 – present **Research Staff Member**, *IBM Research – Zürich*, Switzerland.

Jan'20 – Sep'20 **Postdoctoral Researcher**, *UC Berkeley*, USA.
Supervised by Professor Alessandro Chiesa.

Sep'19 – Dec'19 **VMware Research Fellow**, *Simons Institute, UC Berkeley*, USA.
Attending program on Proofs, Consensus and Decentralising Society.

Sep'18–Aug'19 **Postdoctoral Researcher**, *IBM Research – Zürich*, Switzerland.
Supervised by Dr Vadim Lyubashevsky.

Jun'18 – Aug'18 **Intern**, *Microsoft Research, Redmond*, USA.
Supervised by Dr Srinath Setty.

Jun'17 – Jul'17 **Intern**, *NTT Secure Platform Laboratories*, Japan.
Supervised by Dr Mehdi Tibouchi.

Teaching

2021–2022 **Lecturer**, *MSc Information Security, ETH Zürich, Switzerland*.
263-4665-00L, Zero-Knowledge Proofs.

2016–2017 **Co-Lecturer**, *MSc Information Security, University College London, UK*.
COMPGA18, Cryptanalysis.

2015 **Teaching Assistant**, *MSc Information Security, University College London, UK*.
COMPGA18, Cryptanalysis.

Supervision

Master's Projects

Sep'22–present **Ole Spjeldnaes**, *ETH Zürich, Switzerland*.
Verification of Isogeny Walks.

May'22–Nov'22 **Ran Liao**, *ETH Zürich, Switzerland*.
Linear-Time Zero-Knowledge Arguments in Practice.

Service

Program Committee Memberships

2022 **ICISC'22, PKC'22**.

2021 **ICISC'21, CRYPTO'21, ZKProofs 4, APKC'21**.

2020 **ICISC'20, ZKProofs 3, CCS'20, APKC'20**.

2019 **ICISC'19, APKC'19**.

2018 **APKC'18**.

Seminar Organisation

2015 – 2017 **Seminar Coordinator**, *University College London, UK*.
Seminars for UCL's Academic Centre of Excellence in Cyber Security

Education

2014 – 2018 **PhD in Computer Science**, *University College London*, UK.
Supervised by Professor Jens Groth and Professor Sarah Meiklejohn.
PhD Thesis: Designing Efficient Zero-Knowledge Proofs in the Ideal Linear Commitment Model.

2010 – 2014 **MMaths, First Class Honours**, *University of Cambridge*, UK.
Algebraic Number Theory, Elliptic Curves, Modular Forms, Analytic Number Theory.
Master's Thesis: Isogeny Volcanoes.

Publications

2022 **DualDory: Logarithmic-verifier linkable ring signatures through preprocessing**,
Jonathan Bootle, Kaoutar Elkhiyaoui, Julia Hesse and Yacov Manevich.
ESORICS'22

Gemini: Elastic SNARKs for Diverse Environments,
Jonathan Bootle, Alessandro Chiesa, Yuncong Hu and Michele Orrù.
EUROCRYPT'22

Zero-Knowledge IOPs with Linear-Time Prover and Polylogarithmic-Time Verifier,
Jonathan Bootle, Alessandro Chiesa and Siqi Liu.
EUROCRYPT'22

2021 **More Efficient Amortization of Exact Zero-Knowledge Proofs for LWE**,
Jonathan Bootle, Vadim Lyubashevsky, Ngoc Khanh Nguyen and Gregor Seiler.
ESORICS'21

Sumcheck Arguments and their Applications,
Jonathan Bootle, Alessandro Chiesa and Katerina Sotiraki.
CRYPTO'21

2020 **Linear-Time Arguments with Sublinear Verification from Tensor Codes**,
Jonathan Bootle, Alessandro Chiesa and Jens Groth.
TCC'20

A non-PCP Approach to Succinct Quantum-Safe Zero-Knowledge,
Jonathan Bootle, Vadim Lyubashevsky, Khanh Nguyen and Gregor Seiler.
CRYPTO'20

Privacy Protocols from Post-Quantum and Timed Classical Assumptions,
Jonathan Bootle, Anja Lehmann, Vadim Lyubashevsky and Gregor Seiler.
PQCrypto'20

2019 **Algebraic Techniques for Short(er) Exact Lattice-Based Zero-Knowledge Proofs**,
Jonathan Bootle, Vadim Lyubashevsky and Gregor Seiler.
CRYPTO'19

2018 **Arya: Nearly Linear-Time Zero-Knowledge Proofs for Correct Program Execution**,
Jonathan Bootle, Andrea Cerulli, Jens Groth, Sune K. Jakobsen and Mary Maller.
ASIACRYPT'18

LWE Without Modular Reduction and Improved Side-Channel Attacks Against BLISS,
Jonathan Bootle, Claire Delaplace, Thomas Espitau, Pierre-Alain Fouque and Mehdi Tibouchi.
ASIACRYPT'18

Sub-linear Lattice-Based Zero-Knowledge Arguments for Arithmetic Circuits,
Carsten Baum, Jonathan Bootle, Andrea Cerulli, Rafael del Pino, Jens Groth and Vadim Lyubashevsky.
CRYPTO'18

Bulletproofs: Efficient Range Proofs for Confidential Transactions,
Benedikt Bünz, Jonathan Bootle, Dan Boneh, Andrew Poelstra, Peter Wuille and Greg Maxwell.
IEEE S&P'18

Efficient Batch Zero-Knowledge Arguments for Low-Degree Polynomials,
Jonathan Bootle and Jens Groth.
PKC'18

Cryptanalysis of Compact-LWE,
Jonathan Bootle, Mehdi Tibouchi and Keita Xagawa.
CT-RSA'18

2017 **Linear-Time Zero-Knowledge Proofs for Arithmetic Circuit Satisfiability**,
Jonathan Bootle, Andrea Cerulli, Essam Ghadafi, Jens Groth, Mohammad Hajiabadi and Sune K. Jacobsen.
ASIACRYPT'17

2016 **Foundations of Fully Dynamic Group Signatures**,
Jonathan Bootle, Pyrros Chaidos, Andrea Cerulli, Essam Ghadafi and Jens Groth.
ACNS'16

Efficient Zero-Knowledge Arguments for Arithmetic Circuits in the Discrete Log Setting,
Jonathan Bootle, Andrea Cerulli, Pyrros Chaidos, Jens Groth and Christophe Petit.
EUROCRYPT'16

2015 **Efficient Zero-Knowledge Proof Systems**,
Jonathan Bootle, Andrea Cerulli, Pyrros Chaidos, and Jens Groth.
FOSAD'15

Short Accountable Ring Signatures Based on DDH,
Jonathan Bootle, Andrea Cerulli, Pyrros Chaidos, Essam Ghadafi, Jens Groth and Christophe Petit.
ESORICS'15

Presentations

2022 **Space-Efficient Proof Systems from Different Cryptographic Assumptions**,
Cryptography Seminar, Carnegie Mellon University.

Elastic SNARKs,
Efficient Probabilistic Proofs Workshop, Bertinoro.

Linear-Time Zero-Knowledge Arguments with Logarithmic Proof Size,
Research Seminar, Starkware.

2021 **Sumcheck Arguments and their Applications**,
Cryptography Seminar, Simula UiB.

Post-Quantum Cryptography - Challenges and Opportunities,
ETIS Security Seminar, CY Cergy Paris University.

Sumcheck Arguments and Their Applications,
Cryptography Seminar, Aarhus University.

Sumcheck Arguments and their Applications,
Seminar, Chair of Applied Cryptography, Friedrich Alexander University.

Sumcheck Arguments and Their Applications,
ZK Study Club.

Linear-Time Zero-Knowledge Succinct Arguments,
Cryptography Research Seminar, Protocol Labs.

Linear-Time Zero-Knowledge Succinct Arguments,
Applied Cryptography Seminar, ETH Zürich.

2020 **Linear-Time Zero-Knowledge Arguments with Logarithmic Proof-Size**,
Proofs, Consensus and Decentralising Society Reunion Workshop, Simons Institute.

2019 **Recursive Techniques for Lattice-Based Zero-Knowledge**,
Proofs, Consensus and Decentralising Society Workshop, Simons Institute.

2018 **Bulletproofs (and beyond?)**,
Xi'an International Workshop on Blockchain.

2016 **How to do Zero Knowledge using Discrete Logs in under 7kB**,
First prize, Elevator Pitch Competition, GCHQ ACE-CSR Annual Conference.

Languages

English	**Mothertongue**	*Fully proficient*
French	**Intermediate**	*Conversationally fluent*
Japanese	**Intermediate**	*Conversationally fluent*
German	**Basic**	*Basic words and phrases*

References

Professor Alessandro Chiesa, *EPFL*,
alessandro.chiesa@epfl.ch,
+41 21 693 90 98.
EPFL IC SSC-GE, INR 130, Station 14, 1015 Lausanne, Switzerland

Professor Jens Groth, *Dfinity*,
jens@dfinity.org.
Genferstrasse 11, 8002 Zürich, Switzerland

Dr Vadim Lyubashevsky, *IBM Research – Zurich*,
vad@zurich.ibm.com,
+41 44 724 84 03.
Säumerstrasse 4, 8803 Rüschlikon, Switzerland