

Matthew E. Ware

CURRENT EMPLOYMENT	IBM , Yorktown Heights, New York USA Quantum Engineer	Aug 2021 - Present
PREVIOUS EMPLOYMENT	Raytheon BBN Technologies , Cambridge, Massachusetts USA Experimental Physicist, Quantum Information Processing Group	Jan 2015 - Aug 2021
ACADEMIC PREPARATION	Syracuse University , Syracuse, New York USA Ph.D., Physics	May 2015
	Syracuse University , Syracuse, New York USA M.S., Physics	May 2011
	University of Alabama , Tuscaloosa, Alabama USA B.S., Physics and Applied Mathematics, Summa Cum Laude	May 2009
HONORS AND AWARDS	University Fellow, Syracuse University Phi Beta Kappa, University of Alabama	2009 - 2011 2009
ACADEMIC EXPERIENCE	Syracuse University , Syracuse, New York USA <i>Graduate Student</i> Ph.D. research on superconducting qubits for quantum information processing	July 2009 - December 2014
	University of Alabama , Tuscaloosa, Alabama USA <i>Undergraduate Research</i> Thin film deposition for giant magnetoresistance research in the groups of Patrick LeClair and Gary Mankey	Fall 2008 - May 2009
	Ludwig-Maximilians-Universität , Munich, Germany <i>DAAD R.I.S.E Intern</i> Lab/Research experience fabricating and measuring pentacene thin film transistors in the group of Bert Nickle	May - August 2007
PUBLICATIONS	Matthew Ware , Guilhem Ribeill, Diego Ristè, Colm A. Ryan, Blake Johnson and Marcus P. da Silva. "Experimental Pauli-frame randomization on a superconducting qubit." <i>Phys. Rev. A</i> 103 042604 (2021). Kenneth Rudinger, Guilhem Ribeill, L. C. G. Govia, Matthew Ware , Erik Nielsen, Kevin Young, Thomas A. Ohki, Robin Blume-Kohout and Timothy Proctor "Characterizing mid-circuit measurements on a superconducting qubit using gate set tomography." <i>arXiv:2103.03008</i> , March 2021. Benjamin Lienhard, Antti Vepsilinen, Luke C. G. Govia, Cole R. Hoffer, Jack Y. Qiu, Diego Rist, Matthew Ware , David Kim, Roni Winik, Alexander Melville, Bethany Niedzielski, Jonilyn Yoder, Guilhem J. Ribeill, Thomas A. Ohki, Hari K. Krovi, Terry P. Orlando, Simon Gustavsson and William D. Oliver "Deep Neural Network Discrimination of Multiplexed Superconducting Qubit States." <i>arXiv:2102.12481</i> , February 2021.	

L. C. G. Govia, Guilhem Ribeill, Diego Ristè, **Matthew Ware** and Hari Krovi. “Bootstrapping quantum process tomography via a perturbative ansatz.” *Nature Commun.* **11**, 1084 (2020).

Matthew Ware, Blake R. Johnson, Jay M. Gambetta, Thomas A. Ohki, Jerry M. Chow, and B. L. T. Plourde. “Cross-resonance interactions between superconducting qubits with variable detuning.” *arXiv:1905.11480*, May 2019.

P. Bhupathi, Peter Groszkowski, M. P. DeFeo, **Matthew Ware**, Frank K. Wilhelm, and B. L. T. Plourde. “Transient Dynamics of a Superconducting Nonlinear Oscillator.” *Phys. Rev. Applied* **5**, 024002 (2016).

Daniela F. Bogorin, D. T. McClure, **Matthew Ware**, and B. L. T. Plourde. “Copper waveguide cavities with reduced surface loss for coupling to superconducting qubits.” *IEEE Transactions on Applied Superconductivity* **24(4)**, 1700207 (2014).

A. D. Córcoles, Jay M. Gambetta, Jerry M. Chow, John A. Smolin, **Matthew Ware**, Joel Strand, B. L. T. Plourde, and M. Steffen. “Process verification of two-qubit quantum gates by randomized benchmarking.” *Phys. Rev. A* **87**, 030301 (2013).

J. D. Strand, **Matthew Ware**, Félix Beaudoin, T. A. Ohki, B. R. Johnson, Alexandre Blais, and B. L. T. Plourde. “First-order sideband transitions with flux-driven asymmetric transmon qubits.” *Phys. Rev. B* **87**, 220505 (2013).

CONFERENCE
TALKS/POSTERS

APS March meeting talk **March 2019**
Matthew Ware, Guilhem Ribeill, Diego Ristè, Luke Govia, Hari Krovi
“Bootstrapping quantum process tomography via a perturbative ansatz”

APS March meeting talk **March 2018**
Matthew Ware, Guilhem Ribeill, Marcus P. da Silva
“Detecting measurement correlations with graphical models”

APS March meeting talk **March 2017**
Matthew Ware, Guilhem Ribeill, Diego Ristè, Colm A. Ryan, Blake Johnson,
Marcus P. da Silva “Experimental Pauli-frame randomization on a
superconducting qubit”

APS March meeting talk **March 2016**
Matthew Ware, Kin Chung Fong, Colm A. Ryan, Brian Hassik, Thomas Ohki,
Marcus P. da Silva “Crosstalk characterization in superconducting qubits
by eigenvalue estimation: Experiment”

Poster session **March 2014**
Matthew Ware, Blake Johnson, Jay M. Gambetta, Colm Ryan, Thomas Ohki,
Jerry Chow, B. L. T. Plourde. Aspen Center for Physics winter conference “
Advances in quantum algorithms and computation”. “Cross-resonance interactions
between superconducting qubits with variable detuning”

APS March meeting talk **March 2014**
Matthew Ware, Blake Johnson, Jay M. Gambetta, Colm Ryan, Thomas Ohki,
Jerry Chow, B. L. T. Plourde. “Cross-resonance interactions between
superconducting qubits with variable detuning”

Student conference talk **June 2012**
9th Canadian Student Conference on Quantum Information, and the 2nd AQUA

Student Congress on Quantum Information, Institute for Quantum Computing, University of Waterloo, Ontario Canada. “Material and geometric effects in 3D transmon qubits”

APS March meeting talk

March 2012

Matthew Ware, M.P. Defeo, J.D. Strand, B. Xiao, B.L.T. Plourde, Stefano Poletto, Chad Rigetti. “Material and geometric effects in 3D transmon qubits”

PROFESSIONAL
EXPERIENCE

Assessing Performance of Quantum Computers (APQC)
Estes Park Colorado

Sept 2019

Principal Investigator of the QuVDe collaboration
LPS/ARO funded quantum verification and validation program

March 2017-Present

Advances in quantum algorithms and computation
Aspen Center for Physics, Aspen Colorado

March 2014

12th Canadian summer school on quantum information
Institute for Quantum Computing, University of Waterloo, Ontario Canada

June 2012

TECHNICAL
SKILLS

Fabrication experience: 5+ years of user experience at Cornell Universities Nanoscale Science and Technology Facility (CNF) including electron-beam lithography, photolithography, wet/dry etching, thin film deposition, Josephson junction processing, imaging/metrology, device design and layout
Simulation/Design: HFSS, Sonnet, Cadence
Code: C/C++,MATLAB,Python
Security Clearance: Top Secret
Measurement: 10+ years of low temperature (< 30mK) microwave measurement

PHD ADVISOR

Prof. Britton L. T. Plourde, Syracuse University