

Frederic T. Chong
Curriculum Vitae

Education

Massachusetts Institute of Technology, Ph.D. in Computer Science and Electrical Engineering, 1996.
Massachusetts Institute of Technology, S.M. in Computer Science and Electrical Engineering, 1992.
Massachusetts Institute of Technology, S.B. in Computer Science and Electrical Engineering, 1990.

Professional Experience

University of Chicago, Seymour Goodman Professor of Computer Architecture, 2015-present.
Chief Scientist for Quantum Software, Infleqtion, 2022-present.
Argonne National Laboratory, Senior Scientist, 2017-present.
Chief Scientist, Super.tech, 2021-2022.
Co-Founder, Super.tech (acquired by Infleqtion in 2022), 2020-2022.
University of California at Santa Barbara, Director of the Center for Energy Efficient Computing, 2008-2015.
University of California at Santa Barbara, Director of Computer Engineering, 2007-2015.
University of California at Santa Barbara, Professor, 2005-2015.
University of California at Davis, Associate Professor, 2001-2005.
University of California at Davis, Assistant Professor, 1997-2001.
Stanford University, Visiting Faculty, Winter-Spring 2000.
Massachusetts Institute of Technology, Research Assistant, 1990-1996.
NASA Ames Research Center, Visiting Research Assistant, September-October 1994.
Thinking Machines Corporation, Research Programmer, Summers 1990-1993.
IBM Almaden Research Center, Research Intern, Summers 1988 and 1989.

Awards and Honors

ACM Fellow 2024
IEEE Fellow 2022
Intel Outstanding Researcher Award 2018 (4 awarded worldwide across all sciences)
Quantrell Award for Undergraduate Teaching and Advising, 2024 (oldest teaching award in the US)
Quantrell Award for Graduate Teaching and Advising, 2020
Micro Hall of Fame (Int Symp on Microarchitecture), inducted 2019
ASPLOS Hall of Fame (Int Symp on Architectural Support for Prog Lang and Operating Sys), inducted 2019
ISCA Hall of Fame (Int Symp on Computer Architecture), inducted 2009
George Schultz Innovation Fund Venture Award 2020 (1 of 18 teams)
Argonne Chain Reaction Innovations Venture Award 2020 (6 of 150 teams)
Million Dollar International Quantum U Tech Accelerator Award 2020 (18 of 243 teams)
2023 IEEE/ACM Quantum Computing for Drug Discovery Challenge, 1st place
2023 IEEE/ACM Quantum Computing for Drug Discovery Challenge, Most Innovative
Best Paper (Algorithms 1st place), International Conference on Quantum Computing and Engineering 2023
Best Paper (Quantum Tech and Sys Eng 3rd place), Int. Conference on Quantum Computing and Engineering 2023
Best Paper, International Symposium on High-Performance Computer Architecture 2022
IEEE Micro Top Pick 2021
Best Paper, International Conference on Quantum Computing and Engineering 2021
Best Paper, International Conference on Rebooting Computing 2021
IEEE Micro Top Pick 2020
IBM Q Global Best Paper, 1st place, 2020
Best Paper, International Conference on Quantum Computing and Engineering 2020
Best Paper Runner-Up, International Symposium on Microarchitecture 2020
Best Poster, Quantum Information Processing 2019 (3 out of 480 posters)
Best Paper, International Symposium on Memory Systems 2017
Best Paper, International Parallel and Distributed Processing Symposium 2014
Best Paper, Computing Frontiers 2014
IEEE Micro Top Pick 2014
ACM Distinguished Scientist 2013
Best Paper, Computing Frontiers 2013
IEEE Micro Top Pick 2010
DARPA Tech Significant Technical Achievement Award 2002 (Most significant DARPA project in 2001 and 2002)

UC Davis Chancellor's Fellow 2002-2007 (~25 fellows university-wide)

NSF CAREER Award 1998-2002

ONR Graduate Fellow 1990-94

PART I. TEACHING

Graduate Degree Committees

MS Committees

Student	Year Degree Completed.	Chair/ Member	Optional Info (e.g., Current Employment)
Brian Neely (ECE)	2015	Chair	Raytheon
Jeff Heckey (ECE)	2014	Chair	Amazon
Alan Savage	2009	Chair	Google
Arvin Faruque (ECE)	2012	Chair	Nvidia
John McCann (UC Davis)	2001	Chair	Founder, Binary Computer Support Services
Justin Hensley (UC Davis)	2000	Chair	Architect, Apple
Aneet Chopra (UC Davis)	1999	Chair	District Sales Manager, Director Asia Pacific at Intel Corporation

PhD Committees

Graduated 27 as Chair or Co-Chair

Student	Year Degree Completed.	Chair/ Member	Optional Info (e.g., Current Employment)
Kevin Gui		Chair	
Joshua Vizslai		Chair	
Natalia Nottingham		Chair	
Siddharth Dangwal		Chair	
Lennart Maximilian Seifert		Chair	
Chris Kang		Chair	
James Sud		Chair	
Jason Chadwick		Chair	
Willers Yang		Chair	
Mariesa Teo		Chair	
Zachary Mallory		Chair	
Tina Oberoi		Chair	

Past Committees

Sophia Lin	2024	Chair	Amazon Research
Danylo Lykov	2024	Co-Chair	NVidia
Andrew Litteken	2023	Chair	Intel Research
Jonathan Baker	2022	Chair	Assistant Prof, UT Austin
Casey Duckering	2022	Chair	QuEra
Mohammad Reza Jokar	2022	Chair	IBM Research
Yongshan Ding	2021	Chair	Assistant Prof, Yale University
Ryan Wu	2021	Chair	Intel Research
Pranav Gokhale	2020	Chair	VP Quantum SW, Infleqtion
Yunong Shi	2020	Chair	Amazon Research
Adam Holmes	2020	Chair	HRL
Nelson Leung	2019	Member	Radix Trading
Weilong Cui (UCSB)	2019	Member	Google
Ali Javadi-Abhari (Princeton)	2017	Co-Chair (w/ M. Martonosi)	IBM Research
Summer Deng (UCSB)	2017	Chair	Facebook

Karim Elghamrawy (UCSB)	2016	Chair	VMWare
Heba Saadeldeen (UCSB)	2013	Chair	Intel
Xun Li (UCSB)	2013	Chair	ANT Financial
Hassan Wassal (UCSB)	2013	Co-Chair (w/ Sherwood)	Google
Vlasia Anagnostopoulou (UCSB)	2011	Chair	Intel
Susmit Biswas (UCSB)	2010	Chair	AMD
Qingqing Yuan (UCSB)	2009	Member	
Daniela Alvim Seabra de Oliveira (UC Davis)	2010	Member	Assoc. Prof., University of Florida
Ravishankar Rao (UC Davis)	2006	Chair	Intel
Tzvetan Metodi (UC Davis)	2007	Chair	Research Staff, Sandia National Laboratories
Jedidiah Crandall (UC Davis)	2007	Chair	Professor, U New Mexico
John Oliver (UC Davis)	2007	Co-Chair (w/ V. Akella)	Professor, Calpoly SLO
Darshan Thaker (UC Davis)	2008	Chair	KLA Tencor
Theodore Huffmire (UCSB)	2007	Member	Associate Prof., NPS
Rakesh Kumar (UCSD)	2006	Member	Associate Prof, UIUC
Satish Narayanasamy (UCSD)	2007	Member	Associate Prof, U Michigan
Dean Copsey (UC Davis)	2005	Chair	Intel
Diana Keen (UC Davis)	2002	Chair	Associate Prof., Calpoly SLO
Mark Oskin (UC Davis)	2001	Chair	Associate Prof., U of Washington

Postdoctoral Scholars Supervised

Year	Name
2022-present	Andy Goldschmidt
2020-2022	Kaitlin Smith (Assistant Prof, Northwestern University)
2020-2023	Gokul Subramanian Ravi (Assistant Prof, University of Michigan)
2020-2021	Rich Rines (now at Inflection)
2014-2017	Lunkai Zhang (now at Intel)
2014-2015	Xianyang Jiang (now Associate Prof, Wuhan University, Wuhan, China)
2012	Guoping Long (now Associate Prof, Chinese Academy of Sciences, Beijing, China)
2006	Dean Copsey (now at Intel)

PART II. PROFESSIONAL ACTIVITIES

Recent Lectures Presented

20 Keynotes, 14 Distinguished Lectures

Month/Yr	Title	Meeting/Place
May 2024	Invited Talk: Physics-Aware Co-Design and Optimization of Quantum and Hybrid Applications and Protocols	NQI Joint Algorithms Workshop, Albuquerque, NM
January 2024	Distinguished Seminar: Physics-Aware, Full-Stack Quantum Software Optimizations	IBM Research, Virtual (Global).

December 2023	Distinguished Seminar: Physics-Aware, Full-Stack Quantum Software Optimizations	Pittsburgh Quantum Institute, Pittsburgh, PA
November 2023	Invited Talk: Physics-Aware, Full-Stack Quantum Software Optimizations	SC23, Denver, CO
October 2023	Distinguished Lecture: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	Tulane University, New Orleans, LA
July 2023	Keynote: Enabling Quantum Applications with Physics-Aware Optimization, Classical Simulation, and Circuit Cutting	DOE ASCR Basic Research Needs in Quantum Computing and Networking, Washington, DC
June 2023	Keynote: Modular Approaches to Scaling Quantum Machines	3rd International Workshop on High Performance Chiplet and Interconnect Architectures (HiPChips) co-located with ISCA 2023 at Orlando, FL
June 2023	Keynote: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	33 rd GLSVLSI symposium, Knoxville, TN
May 2023	Keynote: Enabling Quantum Applications with Physics-Aware Optimization, Classical Simulation, and Circuit Cutting	Quantum Computing Applications in Chemical and Biochemical Engineering Workshop, Technical University of Denmark, Lyngby
April 2023	Invited Talk: Greater Efficiency for Quantum Applications by Breaking Abstractions	DARPA IMPAQT Webinar
November 2022	Keynote: Resource-Efficient Quantum Computing by Breaking Abstractions	Third International Workshop on Quantum Computing Software held in conjunction with SC22, Dallas, TX
October 2022	Keynote: Resource-Efficient Quantum Computing by Breaking Abstractions	International Conference on Parallel Architectures and Compilation Techniques, Chicago, IL.
September 2022	Keynote: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	IEEE International Conference on Quantum Computing and Engineering, Boulder, CO.
April 2022	Special Invited Lecture: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	IEEE International Symposium on Low-Power and High-Speed Chips (COOL Chips), Tokyo, Japan.
April 2022	Keynote: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	Opening Memorial Symposium, Quantum Computing System Center, Kyushu University, Fukuoka, Japan.
April 2022	Keynote: Closing the Gap between Quantum Algorithms and Machines with Physics-Aware Co-Design	Quantum Computing Applications in Chemical and Biochemical Engineering Workshop, Copenhagen, Denmark
November 2021	Keynote: Resource-Efficient Quantum Computing by Breaking Abstractions	IEEE International Conference on Rebooting Computing
September 2021	Resource-Efficient Quantum Computing by Breaking Abstractions	NSF Challenge Institute for Quantum Computation
June 2021	Keynote: Machine-Learning for Control and Noise-Mitigation in Quantum Computer Systems	AI-assisted Design for Architecture Workshop, ISCA 2021
May 2021	Resource-Efficient Quantum Computing by Breaking Abstractions	Pulse-level Quantum Control Workshop, Chicago, IL
January 2021	Distinguished Lecture: Resource-Efficient Quantum Computing by Breaking Abstractions	University of Michigan
January 2021	Resource-Efficient Quantum Computing by Breaking Abstractions	JTFI Computational Science Seminar Series, Argonne National Laboratory
November 2020	Distinguished Lecture: Resource-Efficient Quantum Computing by Breaking Abstractions	Lawrence Berkeley National Laboratory
October 2020	Resource-Efficient Quantum Computing by Breaking Abstractions	AMD Research
October 2020	Resource-Efficient Quantum Computing by Breaking Abstractions	Tufts University

October 2020	Keynote Address: Quantum Software will Close the Gap to Practical Quantum Computing	BCG/P33 Quantum in Finance
September 2020	Plenary Lecture: EPiQC – Enabling Practical-Scale Quantum Computing	NSF Quantum Leap Grantees Meeting
June 2020	Plenary Lecture: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	Pittsburgh Quantum Institute, University of Pittsburgh
January 2020	Distinguished Lecture: Resource-Efficient Quantum Computing by Breaking Abstractions	University of Edinburgh, Edinburgh, Scotland
January 2020	Resource-Efficient Quantum Computing by Breaking Abstractions	Northwestern University, Chicago, IL
January 2020	Invited Talk: Resource-Efficient Quantum Computing by Breaking Abstractions	PLanQC, at POPL 2020, New Orleans, LA
December 2019	EPiQC: Enabling Practical-scale Quantum Computing	LBNL, Berkeley, CA
October 2019	Resource-Efficient Quantum Computing by Breaking Abstractions	Notre Dame, South Bend, IN
October 2019	Keynote: Resource-Efficient Quantum Computing by Breaking Abstractions	32nd Workshop on Languages and Compilers for Parallel Computing (LCPC), Atlanta, GA
October 2019	Resource-Efficient Quantum Computing by Breaking Abstractions	UBC, Vancouver, BC
September 2019	Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	UIUC, Champaign, IL
June 2019	Quantum Software Optimizations and Verification	Duke, Raleigh, NC
June 2019	Grand Challenges and Research Tools for Quantum Computing	DAC Tutorial, Las Vegas, NV
May 2019	Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	LBNL, Berkeley, CA
May 2019	Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	Harvard, Cambridge, MA
March 2019	Grand Challenges and Research Tools for Quantum Computing	DATE Tutorial, Florence, Italy
February 2019	Distinguished Lecture: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	UCLA, Los Angeles, CA
February 2019	Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	USC, Los Angeles, CA
January 2019	Distinguished Lecture: Closing the Gap between Quantum Algorithms and Machines with Hardware-Software Co-Design	Georgia Tech, Atlanta, GA
December 2018	Panelist: Societal Impact of Expeditions Projects, opening panel for the 10-year celebration of NSF Expeditions in Computing	Washington, DC
October 2018	Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design	Kyushu University, Fukuoka, Japan
October 2018	Grand Challenges and Research Tools for Quantum Computing	Micro Tutorial, Fukuoka, Japan
July 2018	Grand Challenges and Research Tools for Quantum Computing Integration and Co-Design	DOE ATPESC, St. Charles, IL
July 2018	Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design	Argonne Quantum Computing Workshop, Lemont, IL
July 2018	Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design	QuTech, TU Delft, Delft, Netherlands
June 2018	Grand Challenges and Research Tools for Quantum Computing	Tutorial, International Symposium on Computer Architecture, Los Angeles, CA

April 2018	Keynote: Opportunities and Challenges in Intermediate-Scale Quantum Computing	CCGrid, Washington, DC
April 2018	Keynote: Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design	CERES Summit, Chicago, IL
March 2018	Keynote: Quantum Computing is Getting Real: Architecture, PL, and OS roles in Closing the Gap between Quantum Algorithms and Machines	ACM Symposium on Architectural Support of Programming Languages and Operating Systems (ASPLOS), Williamsburg, VA
March 2018	Distinguished Lecture: Quantum Computing is Getting Real: Architecture, PL, and OS roles in Closing the Gap between Quantum Algorithms and Machines	New Mexico State University, Las Cruces, NM
March 2018	Invited Talk: Closing the Gap Between Quantum Algorithms and Hardware through Software-Enabled Vertical Integration and Co-Design	American Physical Society, March Meeting, Los Angeles, CA
December 2017	Software for Large-Scale and Near-Term Quantum Computing	Fermilab, Batavia, IL
November 2017	Keynote: Quantum Computing and Irregular Applications	Workshop on Irregular Applications, Algorithms and Architectures, SC17, Denver, CO
September 2017	Ideas on Closing the Gap Between Quantum Algorithms and Hardware through Vertical Integration and Co-Design	Intel, Portland, OR
March 2017	Keynote: Enabling Killer Applications for Near-Term Quantum Computers	CERES Summit, Chicago, IL
March 2017	Software and Architectures for Large-Scale and Near-Term Quantum Computing	Microsoft Research, Bellevue, WA
October 2016	Software and Architectures for Large-Scale Quantum Computing	Intel, Portland, OR
September 2016	UChicago Harper Lecture: Software and Architectures for Large-Scale Quantum Computing	Raleigh, NC
June 2016	Software and Architectures for Large-Scale Quantum Computing	EPFL, Lausanne, Switzerland
June 2016	Software and Architectures for Large-Scale Quantum Computing	Delft University, Delft, Netherlands
June 2016	Uncommon Core: Software and Architectures for Large-Scale Quantum Computing	University of Chicago
December 2015	Distinguished Lecture: Software and Architectures for Large-Scale Quantum Computing	Simon Fraser University
October 2015	Software and Architectures for Large-Scale Quantum Computing	University of Wisconsin at Madison
August 2015	Software and Architectures for Large-Scale Quantum Computing	National Security Agency
April 2015	Large-Scale Quantum Computing Architectures: A Systems Perspective	University of California at Davis
February 2015	Quantum Programming Languages for Specification and Optimization	DOE ASCR Workshop on Quantum Computing
February 2015	Distinguished Lecture: Trustworthy Systems through Information Flow Analysis	University of California at Riverside
February 2015	Large-Scale Quantum Computing Architectures: A Systems Perspective	Purdue University
November 2014	Large-Scale Quantum Computing Architectures: A Systems Perspective	University of Chicago
November 2014	Large-Scale Quantum Computing Architectures: A Systems Perspective	University of Colorado at Boulder

October 2014	Large-Scale Quantum Computing Architectures: A Systems Perspective	University of California at Riverside
October 2014	Distinguished Lecture: Trustworthy Systems through Information Flow Analysis	Arizona State University
July 2014	The Energy-Efficiency Gap in Handling Big Data	University of Palermo, Sicily
March 2014	Keynote Address: The Energy-Efficiency Gap in Handling Big Data	IEEE International Symposium on Performance Analysis of Systems and Software
October 2013	Distinguished Lecture: Large-Scale Quantum Computing Architectures: A Systems Perspective	Chinese Academy of Sciences, Beijing
January 2014	Large-Scale Quantum Computing Architectures: A Systems Perspective	University of Central Florida
February 2012	Towards More Sustainable Computing	University of Maryland, College Park
March 2013	Scalable Quantum Computing Architectures	INRIA, Paris, France
April 2013	IEE Computing Solutions: Overview and Recent Highlights	IEE Research Review, UCSB
June 2013	Energy-Efficient Technologies	Istanbul Chamber of Commerce
June 2013	SurfNoC: A Low Latency and Provably Non-Interfering approach to Secure Networks-On-Chip	International Symposium on Computer Architecture, Tel Aviv, Israel
July 2009	Energy-Efficient Computing: Emerging Technologies	Panel on Energy-Efficient Computing, Microsoft Faculty Research Summit, Seattle, WA
August 2009	Information Flow Tracking from the Gates Up	Chalmers University, Gothenburg, Sweden
October 2009	Distinguished Lecture: Towards More Sustainable Computing	UC San Diego
January 2010	Towards More Sustainable Computing	UCSB Society for Advancing Hispanics Chicanos and Native Americans in Science
February 2010	Potential Collaborations in Security, Optics, and Energy Efficiency	Aerospace Corporation
March 2010	Energy-Proportional Computing Research and Testbed	UCSB IEE Director's Council
May 2010	Design and Verification of Secure Hardware	UCSB Security Day
August 2010	Energy-Proportional Systems Research and the Greenscale Test Datacenter	Citrix, Goleta CA
March 2011	Architecture and Technology Research at UCSB	RAMBUS strategic planning group, Santa Clara, CA
May 2011	Minimal Multithreading - Exploiting Redundancy in Parallel Systems	AMD Research, Seattle, WA
June 2011	Aggressive Optimization and Resource Estimation of Next-Generation Quantum Computing Systems	IARPA Quantum Computing Systems Kickoff, Baltimore, MD
July 2007	System Technologies for Attack Detection and Analysis	George Mason University
August 2007	Parallel Architecture Lectures	Fudan University
August 2007	Synchrosalar: A Multi-Clock Domain Mult-Core Next-Generation Digital Signal Processor	Institute for Computing Technology, Chinese Academy of Sciences, Beijing
September 2007	Computer Engineering Strategic Plan	COE IAB, UCSB
October 2007	Computer Engineering Research Highlights	Sony Corp Visit, UCSB
January 2008	System Technologies for Attack Detection and Analysis	UC Davis
February 2008	Design and Computing with Emerging Technologies	Engineering Insights, UCSB
October 2008	Keynote address: Towards More Sustainable Computer Design	International Conference on Computer Design
April 2009	Energy-Efficient Computing and its Resource Implications	Second Forum on Energy and Water Sustainability, Santa Barbara

May 2009	Enabling the Continued Growth of Internet Services	Santa Barbara Summit on Energy Efficiency
June 2009	Towards More Sustainable Computer Design	UCSB Summer Mentorship Program
August 2005	Quantum Computing Architectures: An Overview	Shanghai University (Shanghai, China)
August 2005	Computer Security with Minos	Shanghai University (Shanghai, China)
March 2006	Keynote Address: Nanoscale Fabrication Challenges in Quantum Computing	Foundations of Nanoscience (Snowbird, UT)
July 2006	Panel Position: The Future of Computer Architecture – Emerging Technologies	CRA-W/CDC Workshop on Computer Architecture (Princeton, NJ)

Grants and Contracts Awarded

Total \$124M, PI or Co-Lead \$46M, Co-PI \$78M

Years	Source	Title	Amount		Prin. Invest.
2024-2029	IBM	Co-designing Quantum Machine Learning Algorithms for ‘Omics-based Oncology Applications	2310478	Co-PI	(PI Riesenfeld)
2024-2025	Wellcome Leap	Quantum Biomarker Algorithms for Multimodal Cancer Data (Phase 2)	750000	PI	
2024-2029	DOE	MACH-Q: Modular and Error-Aware Software Stack for Heterogeneous Quantum Computing Ecosystems	12000000	Co-PI	(PI de Jong LBL)
2024-2029	DOE	SMART Stack: Scalable, Modular, Adaptable, Reconfigurable, error-Targeted approaches to quantum stack design	7500000	Co-PI	(PI Quiroz APL)
2023-2024	Wellcome Leap	Quantum Biomarker Algorithms for Multimodal Cancer Data (Phase 1)	1500000	PI	
2023-2028	NSF	STAQ II: Software-Tailored Architecture for Quantum Co-Design	15000000	Co-PI	(PI Monroe-Duke)
2023-2026	ARO/LPS	A Modular Superconducting Quantum Computing Architecture	4000000	Co-PI	(PI Cleland)
2019-2024	DOE	AIDE-QC: Advancing Integrated Development Environments for Quantum Computing through Fundamental Research	17500000	Co-PI	(PI de Jong LBL)
2019-2024	DOE	Tough Errors Are no Match (TEAM): Optimizing the quantum compiler for noise resilience	9000000	Co-Lead	(Deputy to Quiroz APL)
2018-2023	NSF	Expeditions: Enabling Practical-scale Quantum Computation (EPiQC)	10000000	PI	
2018-2023	NSF	PFCQC: STAQ: Software-Tailored Architecture for Quantum Co-Design	15000000	Co-PI	(PI Brown-GATech)
2016-2019	Intel	Scalable Mapping and Scheduling of Fault-Tolerant Quantum Programs	375000	PI	
2016-2018	LANL	Extensions to the Scaffold Quantum Programming Language and Compiler	900000	PI	
2015	NSF	REU: Scalable Quantum Computers in the Presence of Physical Noise: a Study of Surface Codes with Realistic Errors at the Algorithmic Level	10000	PI	

2014-2017	NSF	Scalable Quantum Computers in the Presence of Physical Noise: a Study of Surface Codes with Realistic Errors at the Algorithmic Level	480000	Co-PI	(PI Brown-GATech)
2012	IARPA	Optimized Resources and Architectures for Quantum aLgorithms (ORAQL) - funding supplement for quantum programming language design	75000	PI	
2012	IARPA	Optimized Resources and Architectures for Quantum aLgorithms (ORAQL) - funding supplement for refined resource estimation	27000	PI	
2012	IARPA	Aggressive Optimization and Resource Estimation of Next-Generation Quantum Computing Systems - funding supplement for refined resource estimation	85000	PI	
2011-2014	NSF	SHF: Creating Efficient, Verifiably-Secure Computing Architectures Using Programming Language Techniques	484000	Co-PI	(PI Hardekopf)
2011-2012	NSF	REU: Minimal Multithreading - Exploiting Redundancy in Parallel Systems	16000	Co-PI	(PI Franklin)
2011-2012	Army-ICB	Energy-Efficient Microprocessors using Memristive Neural Networks for Prediction	140000	PI	
2011-2012	DARPA	Study on the Impact of Photonics on the Next Generation of Data Centers	57000	Co-PI	(PI Blumenthal)
2010-2014	IARPA	Optimized Resources and Architectures for Quantum aLgorithms (ORAQL)	9000000	Co-Lead	(w/ Brown, GATech and Chuang, MIT)
2010-2014	IARPA	Aggressive Optimization and Resource Estimation of Next-Generation Quantum Computing Systems	7000000	Co-Lead	((w/ Pedram and Brun, USC)
2010-2013	NSF	SHF: Minimal Multithreading - Exploiting Redundancy in Parallel Systems	500000	Co-PI	(PI Franklin)
2010-2012	Google	A Data-Centric Approach to Energy-Proportional Computing	1500000	PI	
2010-2011	AFOSR-MURI	DURIP: A Self-Regenerative Architecture for the Incorruptible Enterprise	57000	PI	
2010	Xilinx	Hardware Prototyping Using the Convey Reconfigurable Architecture	57000	PI	
2009-2010	NSF	REU: A Vertical Systems Framework for Effective Defense against Memory-Based Attacks	16000	PI	
2009-2010	NSF	REU: Novel Operations, Circuit Optimization, and Technology Evaluation for Large-Scale, Fault-Tolerant Quantum Computing	16000	PI	
2009-2010	NSF	REU: A Vertical Systems Framework for Effective Defense against Memory-Based Attacks	16000	PI	
2009-2010	NSF	REU: Novel Operations, Circuit Optimization, and Technology Evaluation for Large-Scale, Fault-Tolerant Quantum Computing	16000	PI	
2008-2009	Google	An Innovative Graduate Course in Energy-Efficient Computing	25000	PI	
2008-2009	UCSB Institute for Energy Efficiency	The Rebound Effect: State of the Debate and Implications for Energy Efficiency Research	10000	Co-PI	(PI Geyer)
2007-2012	AFOSR-MURI	Helix: A Self-Regenerative Architecture for the Incorruptible Enterprise	4600000	Co-PI	(PI Knight-UVA, co-PI Su-UC Davis, co-PI Forrest-UNM)
2007-2011	NSF	CT-T: A Vertical Systems Framework for Effective Defense against Memory-Based Attacks	750000	Co-PI	(PI Su-UC Davis)

2007-2010	NSF	EMT: Novel Operations, Circuit Optimization, and Technology Evaluation for Large-Scale, Fault-Tolerant Quantum Computing	250000	Co-PI	(PI Chuang-MIT)
2007-2008	NSF	REU: A Vertical Systems Framework for Effective Defense against Memory-Based Attacks	12000	PI	
2007-2008	Nokia	Repurposing Used Mobile Phones for Surveillance Applications	41000	PI	
2006-2007	NSF	REU: Synchrosalar: Exploiting Synchronized Clock Domains for Energy Efficient Multirate Embedded Systems	12000	PI	
2003-2007	NSF	Synchrosalar: Exploiting Synchronized Clock Domains for Energy Efficient Multirate Embedded Systems	300000	PI	
2001-2006	DARPA	Architectures and Applications for Scalable Quantum Information Systems	3000000	Co-Lead	(w/ I. Chuang-MIT and J. Kubiawicz-Berkeley)
2001-2004	NSF	ITR: Improving System Functionality Using Monitoring Processors	370000	Co-PI	(PI Farrens-UC Davis, co-PI Devanbu-UC Davis)
1998-2003	NSF	CAREER: Care and Feeding of High-Performance Processors with Reconfigurable Memory Systems	230000	PI	
1998-2002	NSF	Multi-Level Parallel Execution on Decoupled Systems	551000	Co-PI	(PI Farrens-UC Davis)

Special Appointments (e.g., Editorships, Officer of Prof. Organization)

Years	Position	Type of Service
2020-present	Advisory Board	National Quantum Initiative, Office of Science and Technology Policy
2019-present	Advisory Board	ACM Transactions on Quantum Computing
2018-present	Advisory Board	Quantum Circuits Incorporated
2021-present	Steering Committee	International Symposium on Computer Architecture
2021-2022	Program Chair	International Symposium on Computer Architecture
2021-2022	Panelist	NASEM NNSA Panel on Post-Exascale Computing
2015-present	Steering Committee	International Conference on Supercomputing
2014-2015	Program Co-Chair	International Conference on Supercomputing
2012-2013	Guest Editor	Journal of Sustainable Computing (Elsevier)
2011-2012	Program Co-Chair	International Green Computing Conference
2008-2014	Technical Advisory Board Member	Diversified Global Partners, primary contractor to construct the NOAA primary datacenter
2008-2015	Advisory Board Member	Computer Engineering Program, California Polytechnic State University, San Luis Obispo
2005-2016	Associate Editor	ACM Transactions on Computer Architecture and Compiler Optimization

2005-2011	Associate Editor	ACM Journal on Emerging Technologies for Computing
2018-2019	Co-Organizer	American Physical Society March Meeting, Session on Programming and Compilation: The QC Stack
2020-2021	Program Committee Member	IEEE Micro Top Picks
2017-2018	Program Committee Member	IEEE Micro Top Picks
2017-2018	Program Committee Member	International Symposium on Computer Architecture
2017-2018	Program Committee Member	International Symposium on Architectural Support for Programming Languages and Operating Systems
2016-2017	Program Committee Member	International Symposium on Microarchitecture
2016-2017	Program Committee Member	International Symposium on Architectural Support for Programming Languages and Operating Systems
2015-2016	Program Committee Member	International Symposium on Computer Architecture
2015-2016	Program Committee Member	IEEE Micro Top Picks
2014-2015	Program Committee Member	International Symposium on Computer Architecture
2014-2015	Program Committee Member	International Symposium on Performance Analysis of Systems and Software
2013-2014	Program Committee Member	International Symposium on Computer Architecture
2014-2015	Program Committee Member	International Symposium on High-Performance Computer Architecture
2014-2015	Program Committee Member	IEEE Micro Top Picks
2014	Program Committee Member	26th International Symposium on Computer Architecture and High Performance Computing
2013-2014	Program Committee Member	International Symposium on Performance Analysis of Systems and Software
2014	Invited Participant	IEEE Rebooting Computing Summit, Santa Cruz, CA
2014	Member	IEEE Computer Society Ad-Hoc Committee on Computer Engineering
2012	Panelist	NRC/ARO The Future of Quantum Computing: A Meeting of Experts, National Academies, Irvine, CA
2011	Program Co-Chair	National Cyber Leap Year Summit, recommendations to the President
2010	Chair	External Review Committee for the Department of Computer Science at the University of New Mexico
2009-2010	Program Committee Member	IEEE International Symposium on High Performance Computer Architecture
2009-2010	Program Committee Member	IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2010-2011	Program Committee Member	Annual Computer Security Applications Conference (ACSAC)
2011-2012	Program Committee Member	International Conference for Compilers, Architectures, and Synthesis for Embedded Systems (CASES)
2011-2012	Program Committee Member	IEEE Micro Top Picks
2009-2010	External Program Committee Member	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)
2010	Track Chair	Santa Barbara Summit on Energy Efficiency
2011	Panel Chair	Santa Barbara Summit on Energy Efficiency
2011	Chair	Organizing committee for IEE/Kavli Roundtable on Large-Scale Datacenters and Clouds
2007	Program Committee Member	Symposium on Architectures for Networking and Communications Systems

2007	Tutorials Co-Chair	International Symposium on Computer Architecture
2007	Panelist	Workshop on Game-changing Solutions for Cyber Security (sponsored by NSF, IARPA, NSA, ONR and OSD)
2007-2008	Program Committee Member	ACM International Conference on Computing Frontiers
2008-2009	Program Committee Member	IEEE International Parallel & Distributed Processing Symposium
2009	Session Organizer	Santa Barbara Summit on Energy Efficiency
2009-2010	Program Committee Member	IEEE International Symposium on High Performance Computer Architecture
2009-2010	Program Committee Member	IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2007	Program Committee Member	Symposium on Architectures for Networking and Communications Systems
2007	Tutorials Co-Chair	International Symposium on Computer Architecture
2006	Program Committee Member	International Symposium on High-Performance Computer Architecture
2006	Program Committee Member	International Conference on Parallel Architectures and Compilation Techniques
2006	Program Committee Member	SPIE Optics East: Conference on Nanosensing: Materials, Devices, and Systems III
2006	Program Committee Member	Workshop on Architectural and System Support for Improving Software Dependability (ASID)
2006	Vice Program Committee Chair	International Symposium on Computing Frontiers (Track on Non-conventional Computing)

Other Professional Contributions (e.g., Consulting or other application of your professional expertise)

Technical advisor to Diversified Global Partners 2008-2011.
 Consultant for Huawei Technologies 2009-2010.
 Technical Expert for Latham and Watkins, 2001-2002
 Technical Expert for Skjerven, Morrill, and Macpherson, 2002-2003.
 Technical Expert for Covington and Burling 2009-2010.
 Technical Expert for Steptoe 2014.
 Technical Expert for Knobbe and Martin 2014-2018.
 Technical Expert for Benesch 2018.

Public Service (including service to K-12 Education)

Years	Position	Type of Service
1999-2023	Panelist	Many NSF proposal review panels
2012	Reviewer	SFI Investigators Programme (Irish NSF)
2010-2015	Panelist	AAAS panels for KACST

PART IV. RESEARCH

Cumulative List of Publications (or Creative Activities)

REFEREED PUBLICATIONS

Highlights: 21 ISCA, 14 MICRO, 15 ASPLOS, 10 HPCA, 4 Micro Top Picks (+3 Honorable Mention), 1 Nature, 1 Nature Cancer, 2 PLDI, 1 STOC, 11 Best Papers (+1 Runner-Up), 4 books, 2 presidential reports, 3 patents, and 7 software releases.

No.	Year	Title and Authors	Publisher	Category
1	1992	“Fault Tolerance And Performance Of Multipath Multistage Interconnection Networks,” F. T. Chong, E. Egozy, and A. DeHon.	Proceedings of the 1992 Brown/MIT Conference on Advanced Research in VLSI and Parallel Systems.	Refereed Conference Paper
2	1992	“Design And Performance Of Multipath MIN Architectures,” F. T. Chong, and T. Knight. http://www.cs.ucsb.edu/~chong/papers/multipath-spaa92.pdf	Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures (SPAA'92).	Refereed Conference Paper
3	1994	“METRO: A Router Architecture for High-Performance, Short-Haul Routing Networks,” A. DeHon, F. T. Chong, M. Becker, E. Egozy, H. Minsky, S. Peretz, and T. Knight. http://www.cs.ucsb.edu/~chong/papers/metro-isca94.pdf	21st Annual International Symposium on Computer Architecture	Refereed Conference Paper
4.	1994	“Packaging And Multiplexing Of Hierarchical Scalable Expanders,” F. T. Chong, E. Brewer, F. T. Leighton, And T. Knight.	Workshop on Parallel Computer Routing and Communication	Refereed Workshop Paper
5	1994	“Scalable Expanders: Exploiting Hierarchical Random Wiring,” E. Brewer, F. T. Chong, And F. T. Leighton. http://www.cs.ucsb.edu/~chong/papers/STOC94-scalable.pdf	26th Annual ACM Symposium on the Theory of Computing.	Refereed Conference Paper
6	1994	“Building A Better Butterfly: The Multiplexed Metabutterfly.,” F. T. Chong, E. Brewer, F. T. Leighton, And T. Knight.	International Symposium on Parallel Architectures, Algorithms, and Networks (ISPAN).	Refereed Conference Paper
7	1995	“Parallel Sparse Triangular Solution With Partitioned Inverses And Prescheduled DAGs,” F. T. Chong, And R. Schreiber.	Workshop on Solving Irregular Problems on Distributed Memory Machines	Refereed Workshop Paper
8	1995	“Remote Queues: Exposing Message Queues For Optimization And Atomicity,” E. Brewer, F. T. Chong, L. Liu, S. Sharma, And J. Kubiawicz. http://www.cs.ucsb.edu/~chong/papers/SPAA95-RQ.pdf	7th Annual ACM Symposium on Parallel Algorithms and Architectures (SPAA'95)	Refereed Conference Paper
9	1995	“Multiprocessor Runtime Support For Fine-Grained, Irregular DAGs,” F. T. Chong, S. Sharma, E. Brewer, And J. Saltz.	Parallel Processing Letters	Article
10	1996	“Application Performance On The MIT Alewife Multi-Processor,” F. T. Chong, B. H. Lim, R. Bianchini, J. Kubiawicz, And A. Agarwal. http://www.cs.ucsb.edu/~chong/papers/alewife-computer96.pdf	IEEE Computer	Article
11	1996	“Construction Of Hierarchical Networks Through Extension,” E. Brewer And F. T. Chong. http://www.patentstorm.us/patents/5519694/description.html	United States Patent Number 5,519,694	Patent

12	1997	“Care And Feeding Of High-Performance Processors With Reconfigurable Memory Systems,” F. T. Chong, M. Oskin, T. Sherwood, And J. Hensley.	Work-in-Progress and Poster Session, Proceedings of the Sixteenth ACM Symposium on Operating Systems Principles.	Refereed Short Paper
13	1998	“The Sensitivity Of Communication Mechanisms To Latency And Bandwidth,” F. T. Chong, R. Barua, F. Dahlgren, J. D. Kubiawicz, And A. Agarwal. http://www.cs.ucsb.edu/~chong/papers/sensitivity.pdf	Fourth International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
14	1998	“Active Pages: A Computation Model For Intelligent Memory,” M. Oskin, F. T. Chong, And T. Sherwood. http://www.cs.ucsb.edu/~chong/papers/AP-isca98.pdf	25th Annual International Symposium on Computer Architecture	Refereed Conference Paper
15	1998	“Low-Power Design Of Page-Based Intelligent Memory,” M. Oskin, F. T. Chong, A. Farooqui, T. Sherwood, And J. Hensley.	Workshop on Power-Driven Micorarchitecture held in conjunction with the 1998 International Symposium on Computer Architecture.	Refereed Workshop Paper
16	1998	“Sharing Data in Page-Based Intelligent Memory,” M. Oskin, T. Sherwood, J. Hensley, S. Yeh, and F. T. Chong.	The Seventh Workshop of Scalable Shared-Memory Multiprocessors held in conjunction with the 1998 International Symposium on Computer Architecture. Proceedings of the IEEE	Refereed Workshop Paper
17	1999	“The MIT Alewife Machine,” A. Agarwal, R. Bianchini, D. Chaiken, F. T. Chong, K. Johnson, K. Da, J. Kubiawicz, B. H. Lim, K. Mackenzie, And D. Yeung.		Article
18	1999	“Shared Memory Versus Message Passing for Iterative Solution Of Sparse, Irregular Problems,” F. T. Chong, And A. Agarwal.	Parallel Processing Letters	Article
19	1999	“Cache Coherence in Page-Based Intelligent Memory,” D. Keen, F. T. Chong, M. Oskin, And J. Hensley.	Eighth Workshop on Scalable Shared-Memory Multiprocessors held in conjunction with the 1999 International Symposium on Computer Architecture.	Refereed Workshop Paper
20	1999	“Activeos: Virtualizing Intelligent Memory,” M. Oskin, F. T. Chong, And T. Sherwood.	International Conference on Computer Design.	Refereed Conference Paper
21	1999	“Exploiting ILP in Page-Based Intelligent Memory,” M. Oskin, J. Hensley, D. Keen, F. T. Chong, M. Farrens, And A. Chopra. http://www.cs.ucsb.edu/~chong/papers/AP-micro99.pdf	32nd Annual International Symposium on Microarchitecture (MICRO-32)	Refereed Conference Paper
22	1999	“Active Page Architectures for Media Processing,” J. Hensley, M. Oskin, D. Keen, And F. T. Chong.	Workshop on Media Processors and DSPs, held with the 32nd Annual International Symposium on Microarchitecture.	Refereed Workshop Paper
23	2000	“HLS: Combining Statistical And Symbolic Simulation to Guide Microprocessor Designs,” M. Oskin, F. T. Chong, And M. Farrens. http://www.cs.ucsb.edu/~chong/papers/hls-isca2k.pdf	27th International Symposium on Computer Architecture. Pp 71-82.	Refereed Conference Paper

24	2000	“Cache Coherence in Intelligent Memory Systems,” D. Keen, M. Oskin, J. Hensley, And F. T. Chong.	Workshop on Solving the Memory Wall Problem, held with the International Symposium on Computer Architecture.	Refereed Conference Paper
25	2000	“Reducing Cost And Tolerating Defects in Page-Based Intelligent Memory,” M. Oskin, D. Keen, J. Hensley, L. V. Lita, And F. T. Chong.	International Conference on Computer Design.	Refereed Conference Paper
26	2000	“Algorithmic Complexity with Page-Based Intelligent Memory,” M. Oskin, L. V. Lita, F. T. Chong, J. Hensley, And D. Keen.	Parallel Processing Letters. Pp 99-110.	Article
27	2000	Proceedings Of The Second International Workshop on Intelligent Memory Systems,” F. T. Chong, C. Kozyrakis, And M. Oskin, Eds.	Lecture Notes in Computer Science. Vol. 2107, Springer-Verlag, Cambridge, Ma.	Book
28	2001	“Memory Issues in Hardware-Supported Software Safety,” D. Keen, F. Chong, P. Devanbu, M. Farrens, J. Brown, J. Hollfelder, And X.-T. Zhuang.	Workshop on Memory Performance Issues, held in conjunction with the 28th Annual International Symposium on Computer Architecture	Refereed Workshop Paper
29	2002	“A Practical Architecture for Quantum Computing,” M. Oskin, F. T. Chong, And I. L. Chuang. http://www.cs.ucsb.edu/~chong/papers/Oskin-A-Practical-Architecture-for-Reliable-Quantum-Computers.pdf	IEEE Computer. Pp 79-87.	Article
30	2002	“Memory Hierarchies for Quantum Data,” D. Copsey, M. Oskin, F. T. Chong, I. Chuang, And K. Abdel-Ghaffar.	Workshop on Non-Silicon Computing, International Symposium on High-Performance Computer Architecture.	Refereed Workshop Paper
31	2002	“IOP: A Preliminary Study of Instruction-Level Object Parallelism For Superscalars,” D. Keen, And F. Chong.	Workshop on Memory Performance Issues, held with the 29th International Symposium in Computer Architecture.	Refereed Workshop Paper
32	2002	“Using Statistical and Symbolic Simulation for Microprocessor Evaluation,” M. Oskin, F. T. Chong, And M. Farrens.	Journal of Instruction-Level Parallelism	Article
33	2002	“Operating Systems Techniques For Parallel Computation In Intelligent Memory,” M. Oskin, D. Keen, J. Hensley, L. V. Lita, And F. T. Chong.	Parallel Processing Letters. Pp 311-326.	Article
34	2002	“HLSpower: Hybrid Statistical Modeling of the Superscalar Power-Performance Design Space,” R. Rao, M. Oskin, And F. T. Chong.	Proceedings of the International Conference on High-Performance Computing. Pp 620-629.	Refereed Conference Paper
35	2003	“The Effect of Communication Costs in Solid-State Quantum Computing Architectures,” D. Copsey, M. Oskin, T. Metodiev, F. Chong, I. Chuang, And J. Kubiawicz. http://www.cs.ucsb.edu/~chong/papers/spaa2003.pdf	Symposium on Parallel Algorithms and Architectures. Pp 65-74.	Refereed Conference Paper
36	2003	“A Design Overview for a Simulation Infrastructure for Exploring Quantum Architectures,” D. Copsey, M. Oskin, A. Cross, T. Metodiev, F. T. Chong, I. Chuang, And J. Kubiawicz.	Workshop on Non-Silicon Computation	Refereed Workshop Paper

37	2003	A Brief Comparison: Ion-Trap and Silicon-Based Implementations of Quantum Computation,” T. Metodiev, D. Copsey, F. T. Chong, I. Chuang, M. Oskin, And J. Kubiawicz.	Workshop on Non-Silicon Computation	Refereed Workshop Paper
38	2003	“Building Quantum Wires: The Long and the Short of It,” M. Oskin, F. T. Chong, I. L. Chuang, And J. Kubiawicz. http://www.cs.ucsb.edu/~chong/papers/isca2003.pdf	International Symposium on Computer Architecture (ISCA '03). Pp 374-385.	Refereed Conference Paper
39	2003	“Cache Coherence in Intelligent Memory Systems,” D. Keen, M. Oskin, J. Hensley, And F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/AP-toc.pdf	IEEE Transactions on Computers. Pp 960-966.	Article
40	2003	“Synchrosalar: Initial Design Lessons in Power-Aware Design of Tile-Based Embedded Architectures,” J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, L. W. Jones, D. Copsey, D. Keen, V. Akella, F. T. Chong.	Workshop on Power-Aware Computing Systems (PACS '03) held in conjunction with the International Symposium on Microarchitecture. Pp 73-85.	Refereed Conference Paper
41	2003	“Toward a Scalable, Silicon-Based Quantum Computing Architecture,” D. Copsey, M. Oskin, F. Impens, T. Metodiev, A. Cross, F. Chong, I. Chuang, And J. Kubiawicz.	Journal of Selected Topics in Quantum Electronics	Article
42	2003	“Computer Architectures for Quantum Computation,” D. Copsey, M. Oskin, And F. Chong.	Advances in Computers. Pp 275-318.	Book Chapter
43	2004	“Datapath and Control for Quantum Wires,” N. Isailovic, M. Whitney, D. Copsey, Y. Patel, F. Chong, I. Chuang, J. Kubiawicz, And M. Oskin.	ACM Transactions on Architecture and Compiler Optimization. Pp 34-61.	Article
44	2004	“Synchrosalar: A Multiple Clock Domain Power-Aware Tile-Based Embedded Processor,” J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, L. Jones, D. Franklin, V. Akella, And F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/isca2004.pdf	International Symposium on Computer Architecture. Pp 150-161.	Refereed Conference Paper
45	2004	“Challenges in Reliable Quantum Computing,” D. Franklin And F. Chong.	In Nano, Quantum and Molecular Computing: Implications to High Level Design and Validation. S. Shukla and I. Bahar, editors. Kluwer Academic Publishers.	Book Chapter
46	2004	“Preliminary Results on Architectural Simulation of Scalable, Fault-Tolerant Ion-Trap Quantum Information Processors,” T. Metodiev, A. Cross, D. Thaker, K. Brown, D. Copsey, I. Chuang, F. Chong.	Workshop on Non-Silicon Computation	Refereed Workshop Paper
47	2004	“Minos: Control Data Attack Prevention Orthogonal to Memory Model,” J. Crandall And F. Chong. http://www.cs.ucsb.edu/~chong/papers/micro2004.pdf	International Symposium on Microarchitecture (MICRO)	Refereed Conference Paper
48	2004	“A Security Assessment of the Minos Architecture,” J. Crandall And F. Chong.	Workshop on Architectural Support for Security and Anti-virus (WASSA) http://minos.cs.ucsb.edu	Refereed Workshop Paper
49	2004	Minos Secure Microprocessor Emulator		Software Release
50	2004	DACODA Symbolic Execution Malware Analyzer	http://www.cs.unm.edu/~crandall/bochs-2.0.2-dacoda.tar.gz	Software Release
51	2004	“Efficient Orchestration of Sub-Word Parallelism in Media Processors,” J. Oliver, V. Akella, And F. Chong. http://www.cs.ucsb.edu/~chong/papers/spaa2004.pdf	International Symposium on Parallel Algorithms and Architectures (SPAA). Pp 225-234.	Refereed Conference Paper

52	2005	"A General-Purpose Architectural Layout for Arbitrary Quantum Computations," T. Metodiev, D. Thaker, A. Cross, F. T. Chong, And I. Chuang.	SPIE Defense And Security Symposium.	Refereed Conference Paper
53	2005	"On Using Recursive TMR as a Soft Error Mitigation Technique," D. Thaker, F. Impens, I. Chuang, R. Amirtharajah, And F. T. Chong.	Workshop On System Effects Of Logic Soft Errors	Refereed Conference Paper
54	2005	"On Designing Self-Calibrating Nanoscale Sensors that Adaptively Invest Power for Accuracy," D. Thaker, A. Chen, R. Amirtharajah, And F. T. Chong.	The IEEE International Workshop On Design And Test Of Defect-Tolerant Nanoscale Architectures (Nanoarch'05). 8 pages.	Refereed Workshop Paper
55	2005	"Experiences Using Minos as a Tool for Capturing and Analyzing Novel Worms for Unknown Vulnerabilities," J. Crandall, S. Wu And F. T. Chong.	Conference On Detection Of Intrusions And Malware & Vulnerability Assessment (DIMVA). Pp 32-50.	Refereed Conference Paper
56	2005	"Recursive TMR: Scaling Fault Tolerance in The Nanoscale Era," D. Thaker, F. Impens, I. Chuang, R. Amirtharajah, And F. T. Chong.	IEEE Design And Test. Pp 298-305.	Article
57	2005	"On Deriving Unknown Vulnerabilities from Zero-Day Polymorphic And Metamorphic Worm Exploits," J. Crandall, Z. Su, S. Wu, And F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/ccs05.pdf	The ACM Conference On Computer And Communications Security. Pp 235-248.	Refereed Conference Paper
58	2005	"A Quantum Logic Array Microarchitecture: Scalable Layout For Arbitrary Quantum Computations," T. Metodiev, D. Thaker, A. Cross, F. T. Chong, And I. Chuang. http://www.cs.ucsb.edu/~chong/papers/micro05.pdf	The International Symposium On Microarchitecture. Pp 305-318.	Refereed Conference Paper
59	2005	"Reliability Requirements of Control, Address and Data Operations in Error Tolerant Applications," D. D. Thaker, D. Franklin, V. Akella and F. T. Chong.	Workshop on Architectural Reliability in conjunction with MICRO-38	Refereed Conference Paper
60	2005	"Circuit Interfaces and Optimzations for Resistive Nanosensors," R. Amirtharajah, A. Chen, D. D. Thaker and F. T. Chong.	SPIE Optics East	Refereed Conference Paper
61	2005	"Synchrosalar: Evaluation of an Embedded, Multi-core Architecture for Media Applications," J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	Journal of Embedded Computing. Pp 157-166.	Article
62	2006	"Tile Size Selection For Low-Power, Tile-Based Architectures," J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	International Symposium on the Computing Frontiers (20% acceptance rate). Pp 83-94.	Refereed Conference Paper
63	2006	"Scheduling Physical Operations in a Quantum Information Processor," T. Metodiev, D. Thaker, A. Cross, F. Chong, And I. Chuang.	The SPIE Defense & Security symposium	Refereed Conference Paper
64	2006	"Quantum Memory Hierarchies: Efficient Designs to Match Available Parallelism in Quantum Computing," D. D. Thaker, T. S. Metodi, A. Cross, I. L. Chuang and F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/Isca06_QuantumMemHier.pdf	International Symposium on Computer Architecture (ISCA-33). Pp 378-390.	Refereed Conference Paper
65	2006	"Temporal Search: Detecting Hidden Malware Timebombs with Virtual Machines," J. R. Crandall, G. Wassermann, D. de Oliveira, Z. Su, S. F. Wu, F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/asplos06temporal.pdf	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS). Pp 25-36.	Refereed Conference Paper

66	2006	“A Realizable Distributed Ion-Trap Quantum Computer,” D. Thaker, T. Metodi, and F. T. Chong.	13th Annual IEEE International Conference on High Performance Computing (18% acceptance rate). Pp 111-122.	Refereed Conference Paper
67	2006	“Minos: Architectural Support For Control Data Attack Prevention,” J. Crandall, S. F. Wu and F. T. Chong.	ACM Transactions on Architecture and Compiler Optimization. Pp 359-389.	Article
68	2006	“Quantum Computing for Computer Architects,” T. Metodi and F. T. Chong.	Synthesis Lectures in Computing, Morgan Claypool Publishers	Book
69	2006	“Characterization of Error-Tolerant Applications when Protecting Control Data,” D. Thaker, D. Franklin, J. Oliver, S. Biswas, D. Lockhart, T. Metodi, F. T. Chong.	IEEE International Symposium on Workload Characterization. Pp 142-149.	Refereed Conference Paper
70	2006	“ExecRecorder: VM-Based Full-System Replay for Attack Analysis and System Recovery”, D. A. S. de Oliveira, J. Crandall, G. Wasserman, Z. Su, F. Wu, F. T. Chong.	Workshop on Architecture and System Support for Improving software Dependability. Pp 66-71.	Refereed Workshop Paper
71	2006	“Life-Cycle Aware Computer Architecture: Reusing Silicon in the Technology Food Chain,” J. Oliver, R. Amirtharajah, R. Geyer, and F. T. Chong	International Symposium on Architectural Support for Programming Languages and Operating Systems, WACI session	Refereed Conference Short Paper
72	2007	“Tile Size Selection For Low-Power, Tile-Based Architectures,” J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	Transactions on High-Performance Embedded Architectures and Compilers. Pp 259-278.	Article
73	2007	“Spatial Optimization of the Classically Controlled Ion-Motion Interface in a Multiplexed Ion-Trap Quantum Computer,” T. S. Metodi, N. Isailovich, D. D. Thaker, M. Whitney, Y. Patel, J. D. Kubiatowicz and F. T. Chong	The SPIE Defense & Security symposium	Refereed Conference Paper
74	2007	“Efficient Storage of Defect Maps for Nanoscale Memory,” S. Biswas, T. Metodi, R. Kastner, F. T. Chong, and T. Sherwood	Workshop on Non-Silicon Computing, International Symposium on High-Performance Computer Architecture. 8 pages.	Refereed Workshop Paper
75	2007	“Preliminary Analysis of the Scalability of Ion-Trap Devices for Large-Scale Quantum Computation,” T. Metodi, D. Thaker, and F. T. Chong	Workshop on Non-Silicon Computing, International Symposium on High-Performance Computer Architecture. 8 pages.	Refereed Workshop Paper
76	2007	“Nano-enhanced Architectures: Using Carbon Nanotube Interconnects in Cache Design,” B. Agrawal, N. Srivastava, F. T. Chong, K. Banerjee, T. Sherwood	Workshop on Non-Silicon Computing, International Symposium on High-Performance Computer Architecture. 8 pages.	Refereed Workshop Paper
77	2007	“Combining Static and Dynamic Defect-Tolerance Techniques for Nanoscale Memory Systems,” S. Biswas, G. Wang, T. Metodi, R. Kastner, and F. T. Chong.	International Conference on Computer-Aided Design (ICCAD). Pp 773-778.	Refereed Conference Paper
78	2007	“Microchip Reuse: Environmental Rationale and Design Implications,” R. Geyer, J. Oliver, R. Amirtharajah, and F. T. Chong	International Conference on Life Cycle Management	Refereed Conference Abstract and Poster

79	2007	“Design-Space Exploration of Fault-Tolerant Building Blocks for Large-Scale Quantum Computing,” T. Metodi, D. Thaker, A. Cross, and F. T. Chong.	IEEE/ACM International Symposium on Nanoscale Architectures. Pp 7-14.	Refereed Conference Paper
80	2007	“A Pageable, Defect-Tolerant Nanoscale Memory System,” S. Biswas, R. Kastner, and F. T. Chong.	IEEE/ACM International Symposium on Nanoscale Architectures. Pp 85-92.	Refereed Conference Paper
81	2007	“Life-Cycle Aware Computer Architecture: Reusing Silicon in the Technology Food Chain,” J. Oliver, R. Geyer, R. Amirtharajah, V. Akella, and F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/computer07.pdf	IEEE Computer. Pp 51-61.	Article
82	2008	“Bezoar: Automated Virtual Machine-based Full-System Recovery from Control-Flow Hijacking Attacks,” D. A. S. de Oliveira, J. Crandall, G. Wasserman, S. Ye, Z. Su, F. Wu, and F. T. Chong.	11th IEEE/IFIP Network Operations and Management Symposium. Pp. 121-128.	Refereed Conference Paper
83	2008	“Exploring the Processor and ISA Design for Wireless Sensor Network Applications,” S. Mysore, B. Agrawal, F. T. Chong, and T. Sherwood	The 21st International Conference on VLSI Design. Pp 59-64.	Refereed Conference Paper
84	2008	“Credit-Based Dynamic Reliability Management using Online Wearout Detection,” J. Oliver, V. Akella, R. Amirtharajah, and F. T. Chong.	International Symposium on Computing Frontiers. Pp .139-148.	Refereed Conference Paper
85	2008	“From Speculation to Security: Practical and Efficient Information Flow Tracking Using Speculative Hardware,” H. Chen, X. Wu, L. Yuan, B. Zhang, P. Yew and F.T. Chong. http://www.cs.ucsb.edu/~chong/papers/isca2008.pdf	International Symposium on Computer Architecture. Pp 401-412.	Refereed Conference Paper
86	2008	“Preliminary Experiments on Similar Executions with Reduced Off-Chip Accesses in Multi-core Processors,” S. Biswas, F. T. Chong, D. Franklin and T. Sherwood	Workshop on Parallel Execution of Sequential Programs on Multi-core Architectures. Pp 39-46.	Refereed Conference Paper
87	2008	“High-Level Interconnect Model for the Quantum Logic Array Architecture,” T. Metodi, D. Thaker, A. Cross, I. Chuang, and F. T. Chong.	Journal of Emerging Technologies for Computing. Pp 1:1--1:28.	Article
88	2009	“Complete Information-Flow Tracking from the Gates Up,” M. Tiwari, H. Wassel, B. Mazloom, S. Mysore, F. T. Chong, and T. Sherwood. http://www.cs.ucsb.edu/~chong/papers/ASPLOS-09-glift.pdf	International Symposium on Architectural Support for Programming Languages and Operating Systems. Pp. 109-120.	Refereed Conference Paper
89	2009	“Putting Trojans on the Horns of a Dilemma: Redundancy for Information Theft Detection,” J. Crandall, J. Brevik, G. Wasserman, D. A. S. de Oliviera, Z. Su, S. F. Wu, and F. T. Chong.	Transactions on Computational Sciences: Special Issue on Security. Pp. 244-262.	Article
90	2009	“Multi-Execution: Multicore Caching for Data-Similar Executions,” S. Biswas, D. Franklin, A. Savage, T. Sherwood, and F. T. Chong. http://www.cs.ucsb.edu/~chong/papers/ISCA-09-multiexecution.pdf	International Symposium on Computer Architecture. Pp. 164-173.	Refereed Conference Paper
91	2009	“Experiences with Life-Cycle Aware Computer Architecture,” J. Oliver, A. Savage, R. Geyer, R. Amirtharajah, V. Akella, and F. T. Chong.	Mudd Design Workshop VII: "Sustaining Sustainable Design"	Refereed Workshop Paper
92	2009	“Energy Conservation in Datacenters through Cluster Memory Management and Barely-Alive Memory Servers,” V. Anagnostopoulou, S. Biswas, A. Savage, R. Bianchini, T. Yang, and F. T. Chong.	Workshop on Energy Efficient Design. 6 pages.	Refereed Workshop Paper

93	2009	“Soft Coherence: Preliminary Experiments with Error-Tolerant Memory Consistency in Numerical Applications,” G. Long, F. T. Chong, D. Franklin, J. Gilbert, and D. Fan.	Workshop on Chip Multiprocessor Memory Systems and Interconnects. 9 pages.	Refereed Workshop Paper
94	2009	“Experiences with Life-Cycle Aware Computer Architecture,” J. Oliver, A. Savage, R. Geyer, R. Amirtharajah, V. Akella, and F. T. Chong.	International Journal of Engineering Education. Pp 297-304.	Article
95	2009	“National Cyber Leap Year Summit 2009 Co-Chairs’ Report,” F. Chong, R. Lee, C. Vishik, A. Acquisto, W. Horne, C. Palmer, A. Gosh, D. Pendarakis, W. Sanders, E. Fleischman, H. Teufel III, G. Tsudik, D. Dasgupta, S. Hofmeyer, and L. Weinberger.	Networking and Information Technology Research and Development (NITRD) Recommendations to the President	Panel Recommendations
96	2009	“Conflict-Avoidance in Multicore Caching for Data-Similar Executions,” Susmit Biswas, Diana Franklin, Timothy Sherwood, Frederic T. Chong.	International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2009). Pp. 80-85.	Refereed Conference Paper
97	2009	“PSMalloc: Content Based Memory Management for MPI Applications,” Susmit Biswas, Diana Franklin, Timothy Sherwood, Frederic T. Chong, Bronis R. de Supinski, Martin Schulz.	MEDEA 2009 Workshop. Pp 43-48.	Refereed Workshop Paper
98	2009	“Execution Leases: A Hardware-Supported Mechanism for Enforcing Strong Non-Interference,” M. Tiwari, X. Li, H. Wassel, F. T. Chong, and T. Sherwood. http://www.cs.ucsb.edu/~chong/papers/MICRO-09-leases.pdf	The International Symposium On Microarchitecture	Refereed Conference Paper
99	2010	“Tracking Information Flow at the Gate-Level for Secure Architectures,” Mohit Tiwari, Xun Li, Hassan Wassel, Bitu Mazloom, Shashidhar Mysore, Frederic Chong, and Timothy Sherwood.	IEEE Micro: Micro's Top Picks from Computer Architecture Conferences. Pp. 293-504. (IEEE Micro - top pick)	Article
100	2010	“Secure Information Flow Analysis for Hardware Design: Using the Right Abstraction for the Job,” X. Li, M. Tiwari, B. Hardekopf, T. Sherwood, and F. T. Chong.	5th ACM SIGPLAN Workshop on Programming Languages and Analysis for Security. Pp 1-7.	Refereed Workshop Paper
101	2010	“Function Flattening for Lease-Based, Information-Leak-Free Systems,” X. Li, M. Tiwari, T. Sherwood, and F. T. Chong.	21st IEEE International Conference on Application-specific Systems, Architectures and Processors. Pp 349-352.	Refereed Conference Paper
102	2010	“Quantifying the Environmental Advantages of Large-Scale Computing,” V. Anagnostopoulou, H. Saadeldeen, and F. T. Chong.	International Conference on Green Computing. Pp 269-280.	Refereed Conference Paper
103	2010	“A Case for Smartphone Reuse to Augment Elementary School Education,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	Work in Progress in Green Computing, held with the International Conference on Green Computing. Pp. 459-466.	Refereed Workshop Paper
104	2010	“Smartphone Evolution and Reuse: Establishing a more Sustainable Model,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	International Workshop on Green Computing (GreenCom 2010). Pp. 476-484.	Invited Workshop Paper
105	2010	“Quantum Computing for Computer Architects, Second Edition,” T. Metodi, A. Faruque, and F. T. Chong.	Synthesis Lectures in Computing, Morgan Claypool Publishers	Book

106	2010	“SBLLMalloc, Version 1,” Susmit Biswas, Diana Franklin, Timothy Sherwood, Frederic T. Chong, Bronis R. de Supinski, Martin Schulz.	https://computation.llnl.gov/casc/SBLLmalloc/download/SBLLmalloc_agree.html	Software Release
107	2010	“Minimal Multi-Threading: Finding and Removing Redundant Instructions in Multi-Threaded Processors,” Guoping Long, Diana Franklin, Susmit Biswas, Pablo Ortiz, Jason Oberg, Dongrui Fan, and Frederic T. Chong . http://www.cs.ucsb.edu/~chong/papers/MICRO-10-MMT.pdf	International Symposium On Microarchitecture. Pp 337-348.	Refereed Conference Paper
108	2011	“Exploiting Data Similarity to Reduce Memory Footprints,” Susmit Biswas, Bronis R. de Supinski, Martin Schulz, Diana Franklin, Tim Sherwood, Frederic T. Chong.	25th IEEE International Parallel & Distributed Processing Symposium (IPDPS'11). Pp. 152-163.	Refereed Conference Paper
109	2011	“Caisson: a Hardware Description Language for Secure Information Flow,” Xun Li, Mohit Tiwari, Jason Oberg, Frederic T. Chong, Tim Sherwood, and Ben Hardekopf. http://www.cs.ucsb.edu/~chong/papers/109-Caisson-pldi.pdf	ACM Conference on Programming Language Design and Implementation. Pp. 109-120.	Refereed Conference Paper
110	2011	“Fighting Fire with Fire: Thermoelectric Cooling in Datacenters,” Susmit Biswas, Mohit Tiwari, Luke Theogarajan, Tim Sherwood, Frederic T. Chong. http://www.cs.ucsb.edu/~chong/papers/110-TEC-isca11.pdf	International Symposium on Computer Architecture. Pp 331-340.	Refereed Conference Paper
111	2011	“Crafting a Usable Microkernel, Processor, and I/O System with Strict and Provable Information Flow Security,” Mohit Tiwari, Jason Oberg, Xun Li, Jonathan Valamehr, Timothy Levin, Ben Hardekopf, Ryan Kastner, Frederic T. Chong, and Tim Sherwood. http://www.cs.ucsb.edu/~chong/papers/111-glift-isca11.pdf	International Symposium on Computer Architecture. Pp 189-200.	Refereed Conference Paper
112	2011	“Mitigating the Environmental Impact of Smartphones with Device Reuse,” Xun Li, Pablo Ortiz, Brandon Kuczenski, Diana Franklin, and Frederic T. Chong.	Sustainable Green Computing: Practices, Methodologies and Technologies. Pp 252-282.	Refereed Book Chapter
113	2011	“A Comprehensive Study of Reusing Smartphones to Augment Elementary School Education,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	International Journal of Handheld Computing Research. Pp. 73-92.	Refereed Journal Paper
114	2012	“Barely Alive Memory Servers: Keeping Data Active in a Low-Power State,” V. Anagnostopoulou, S. Biswas, H. Saadeldeen, A. Savage, R. Bianchini, T. Yang, D. Franklin, and F. T. Chong.	ACM Journal on Emerging Technologies in Computing. Pp 31:1--31:20.	Refereed Journal Paper
115	2012	“Opportunities and Challenges of using Plasmonic Components in Nanophotonic Architectures,” H. Wassel, D. Dai, M. Tiwari, J. Valamehr, L. Theogarajan, J. Dionne, F. T. Chong, and T. Sherwood.	IEEE Journal on Emerging and Selected Topics in Circuits and Systems. Pp 154-168.	Refereed Journal Paper
116	2012	“LogStore: Toward Energy-Proportional Storage Servers,” W. Zheng, A. Centeno, R. Bianchini, F. T. Chong.	International Symposium on Low Power Electronics and Design. Pp. 273-278.	Refereed Poster Paper

117	2012	“Power-aware Resource Allocation for CPU- and Memory-intense Internet Services,” V. Anagnostopoulou, S. Biswas, H. Saadeldeen, R. Bianchini, T. Yang, D. Franklin, and F. T. Chong.	International Workshop on Energy-Efficient Data Centres. Pp 69-80.	Refereed Workshop Paper
118	2012	“Building Technologies that Help Cyber-Defense: Hardware-enabled Trust,” Claire Vishik, Ruby B. Lee, and Fred Chong.	Information Security Solutions Europe Conference. Pp 316-325.	Refereed Conference Paper
119	2013	“A Case for Energy-Aware Security Mechanisms,” Xun Li and F. T. Chong.	Workshop on Energy-Aware Systems, Communications and Security. Pp. 1541-1546.	Refereed Workshop Paper
120	2013	“Barely Alive Servers: Greener Datacenters Through Memory-Accessible, Low-Power States,” Vlasia Anagnostopoulou, Susmit Biswas, Heba Saadeldeen, Alan Savage, Ricardo Bianchini, Tao Yang, Diana Franklin and Frederic T. Chong.	Sustainable Green Computing Systems; Springer Verlag Publishers. Pp 149-178	Refereed Book Chapter
121	2013	“Quantum Rotations: A Case Study in Static and Dynamic Machine-Code Generation for Quantum Computers,” Daniel Kudrow, Kenneth Bier, Zhaoxia Deng, Diana Franklin, Yu Tomita, Kenneth Brown, and Frederic T. Chong.	International Symposium on Computer Architecture. Pp 166-176.	Refereed Conference Paper
122	2013	“SurfNoC: A Low Latency and Provably Non-Interfering approach to Secure Networks-On-Chip,” Hassan Wassel, Ying Gao, Jason Oberg, Theodore Huffmire, Ryan Kastner, Frederic T. Chong, and Timothy Sherwood.	International Symposium on Computer Architecture. Pp 583-594.	Refereed Conference Paper
123	2013	“Optimized Code for a Solovay-Kitaev Quantum Rotation Generator,” Daniel Kudrow, Kenneth Bier, Zhaoxia Deng, Diana Franklin, and Frederic T. Chong.	http://cs.ucsb.edu/~dkudrow/downloads/skoptimized.tar.gz	Software Release
124	2013	“Sapper: A Language for Provable Hardware Policy Enforcement,” X. Li, V. Kashyup, J. Oberg, M. Tiwari, V. R. Rajathinam, R. Kastner, B. Hardekopf, T. Sherwood, and F. T. Chong.	6th ACM SIGPLAN Workshop on Programming Languages and Analysis for Security. Pp 39-44.	Refereed Workshop Paper
125	2013	“Memristors for Neural Branch Prediction: A Case Study in Strict Latency and Write Endurance Challenge,” Hebatallah Saadeldeen, Diana Franklin, Guoping Long, Charlotte Hill, Aisha Browne, Dmitri Strukov, Timothy Sherwood, and Frederic T. Chong.	International Symposium on Computing Frontiers. Pp 26:1--26:10. (Best Paper: Most Promising Paper)	Refereed Conference Paper
126	2013	“QuRE: The Quantum Resource Estimator Toolbox,” Suchara, Kubiawicz, Faruque, Chong, Lai, and Paz.	International Conference on Computer Design. Pp. 419-426.	Refereed Conference Paper
127	2014	“Sapper: A Language for Hardware-Level Security Policy Enforcement,” Xun Li, Vineeth Kashyap, Jason K. Oberg, Mohit Tiwari, Vasanth Ram, Ryan Kastner, Timothy Sherwood, Ben Hardekopf, Frederic T. Chong	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS). Pp. 97-112. (IEEE Top Pick Honorable Mention)	Refereed Conference Paper
128	2014	“Improving Energy Efficiency in Data Centers Beyond Technology Scaling,” Frederic T. Chong, Martijn Heck, Partha Ranganathan, Adel Saleh, and Hassan Wassel	IEEE Design and Test. Pp. 93-104.	Article

129	2014	“ReDHiP: Recalibrating Deep Hierarchy Prediction for Energy Efficiency,” Xun Li, Diana Franklin, Ricardo Bianchini, and Frederic T. Chong.	IEEE International Parallel & Distributed Processing Symposium (IPDPS) (Best Paper: Architecture Track)	Refereed Conference Paper
130	2014	“Networks-On-Chip with Provable Security Properties,” Hassan Wassel, Ying Gao, Jason Oberg, Theodore Huffmire, Ryan Kastner, Frederic T. Chong, and Timothy Sherwood.	IEEE Micro: Micro's Top Picks from Computer Architecture Conferences. Pp. 57-68. (IEEE Micro - top pick)	Article
131	2014	“ScaffCC: A Framework for Compilation and Analysis of Quantum Computing Programs,” Ali JavadiAbbari, Shruti Patil, Daniel Kudrow, Jeff Heckey, Alexey Lvov, Frederic T. Chong, and Margaret Martonosi.	International Symposium on Computing Frontiers. (Best Paper)	Refereed Conference Paper
132	2014	“Characterizing the Performance Effect of Trials and Rotations in Applications that use Quantum Phase Estimation,” Ali JavadiAbbari, Shruti Patil, Jeff Heckey, Chen-Fu Chiang, Margaret Martonosi, and Frederic T. Chong.	IEEE International Symposium on Workload Characterization.	Refereed Conference Paper
133	2014	“The ScaffCC Compiler and Benchmarks (version 1.0),” Ali JavadiAbbari, Shruti Patil, Daniel Kudrow, Jeff Heckey, Alexey Lvov, Frederic T. Chong, and Margaret Martonosi. https://github.com/ajavadia/ScaffCC	Github	Software Release
134	2015	“ScaffCC: Scalable Compilation and Analysis of Quantum Computing Programs,” Ali JavadiAbbari, Shruti Patil, Daniel Kudrow, Jeff Heckey, Alexey Lvov, Frederic T. Chong, and Margaret Martonosi.	Parallel Computing	Article
135	2015	“Compiler Management of Communication and Parallelism for Quantum Computation,” Jeff Heckey, Ali JavadAbhari, Shruti Patil, Daniel Kudrow, Ken Brown, Diana Franklin, Frederic T. Chong, and Margaret Martonosi	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS).	Refereed Conference Paper
136	2015	“Herniated Hash Tables: Exploiting Multi-Level Phase Change Memory for In-Place Data Expansion,” Zhaoxia Deng, Lunkai Zhang, Diana Franklin and Frederic T. Chong.	The International Symposium on Memory Systems	Refereed Conference Paper
137	2016	“IMR: High-Performance Low-Cost Multi-Ring NoCs,” Liu, Shaoli; Chen, Tianshi; Li, Ling; Feng, Xiaoxue; Xu, Zhiwei; Chen, Haibo; Chong, Frederic; and Chen, Yunji	Transactions on Parallel and Distributed Systems	Article
138	2016	“Mellow Writes: Extending Lifetime in Resistive Memories through Selective Slow Write Backs,” Lunkai Zhang, Brian Neely, Diana Franklin, Dmitri Strukov, Yuan Xie, Frederic T. Chong	International Symposium on Computer Architecture	Refereed Conference Paper
139	2016	“Impact of Future Technologies on Architecture,” Trevor Mudge, Frederic T. Chong, Igor Markov, Resit Sendag, Joshua J. Yi, and Derek Chiou	IEEE Micro	Article

140	2016	“The ScaffCC Compiler and Benchmarks (version 2.0),” Ali JavadiAbbari, Adam Holmes, Pranav Gokhale, David Noursi, Lee Ehudin, Diana Franklin, Margaret Martonosi, and Frederic T. Chong. https://github.com/epiqc/ScaffCC	Github	Software Release
141	2017	“Balancing Performance and Lifetime of MLC PCM by Using a Region Retention Monitor,” Mingzhe Zhang, Lunkai Zhang, Lei Jiang, Zhiyong Liu, and Frederic T. Chong	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
142	2017	“Challenging On-Chip SRAM Security with Boot-State Statistics,” Joseph McMahan, Weilong Cui, Liang Xia, Jeff Heckey, Frederic T. Chong and Timothy Sherwood	IEEE International Symposium on Hardware Oriented Security and Trust (HOST)	Refereed Conference Paper
143	2017	“Predicting Memory Page Stability and its Application to Memory Deduplication and Live Migration,” Karim Elghamrawy, Diana Franklin, and Frederic T. Chong	International Conference on Supercomputing	Refereed Conference Short Paper
144	2017	“Lemonade from Lemons: Harnessing Device Wearout to Create Limited-Use Security Architectures,” Zhaoxia Deng, Ariel Feldman, Stuart A. Kurtz, and Frederic T. Chong	International Symposium on Computer Architecture	Refereed Conference Paper
145	2017	“Programming Languages and Compilers Designed for Realistic Quantum Hardware,” Frederic T. Chong, Diana Franklin, and Margaret Martonosi	Nature (Insight)	Article
146	2017	“Thermal-aware, heterogeneous materials for improved energy and reliability in 3D PCM architectures,” Hebatallah Saadeldeen, Zhaoxia Deng, Timothy Sherwood and Frederic T. Chong	The International Symposium on Memory Systems (Best Paper)	Refereed Conference Paper
147	2017	“Optimized Surface Code Communication in Superconducting Quantum Computers,” Ali Javadi-Abhari, Pranav Gokhale, Adam Holmes, Diana Franklin, Ken Brown, Margaret Martonosi, and Frederic T. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper
148	2017	“Memory Cocktail Therapy: A General Learning-Based Framework to Optimize Dynamic Tradeoffs in NVMs”, Zhaoxia Deng, Lunkai Zhang, Nikita Mishra, Henry Hoffman and Frederic T. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper
149	2017	“Investigating Energy-Efficient Technologies for Next-Generation Optical Interconnection Networks,” Mohammad Reza Jocar, Lunkai Zhang, Yanjing Li, and Frederic T. Chong.	TECHCON	Refereed Conference Paper
150	2017	“Quick-and-Dirty: Improving Performance of MLC PCM by Using Temporary Short Writes,” Mingzhe Zhang, Lunkai Zhang, Lei Jiang, Frederic T. Chong, and Zhiyong Liu	The International Conference on Computer Design	Refereed Conference Short Paper

151	2018	“Compiler Management of Communication and Parallelism for Fault-Tolerant Quantum Computation,” Ali JavadAbhari, Adam Holmes, Jeff Heckey, Shruti Patil, Daniel Kudrow, Diana Franklin, Ken Brown, Margaret Martonosi, and Frederic T. Chong	ACM Transactions on Computer Systems	Article
152	2018	“The ScaffCC Compiler and Benchmarks (version 3.0),” Ali JavadiAbbari, Adam Holmes, Yongshan Ding, Pranav Gokhale, Yunong Shi, Ryan Wu, Diana Franklin, Margaret Martonosi, and Frederic T. Chong. https://github.com/epiqc/ScaffCC	Github	Software Release
153	2018	“Charm: A Language for Closed-Form High-Level Architecture Modeling,” Weilong Cui, Yongshan Ding, Deeksha Dangwal, Adam Holmes, Joseph McMahan, Ali JavadiAbhari, Georgios Tzimpragos, Frederic T. Chong, and Timothy Sherwood.	International Symposium on Computer Architecture	Refereed Conference Paper
154	2018	“Cooperative NV-NUMA: Prolonging Non-Volatile Memory Lifetime through Bandwidth Sharing,” Mohammad Reza Jokar, Lunkai Zhang and Frederic T. Chong	The International Symposium on Memory Systems	Refereed Conference Paper
155	2018	“Magic-State Functional Units: Mapping and Scheduling Multi-Level Distillation Circuits for Fault-Tolerant Quantum Architectures,” Yongshan Ding, Adam Holmes, Ali Javadi-Abhari, Diana Franklin, Margaret Martonosi, and Frederic T. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper
156	2018	“The ScaffCC Compiler and Benchmarks (version 4.0),” Ali JavadiAbbari, Adam Holmes, Yongshan Ding, Pranav Gokhale, Yunong Shi, Ryan Wu, Diana Franklin, Margaret Martonosi, and Frederic T. Chong. https://github.com/epiqc/ScaffCC	Github	Software Release
157	2018	“Hybrid Quantum-Classical Computing Architectures,” Martin Suchara, Yuri Alexeev, Frederic Chong, Hal Finkel, Henry Hoffmann, Jeffrey Larson, James Osborn, and Graeme Smith	The 3rd International Workshop on Post-Moore Era Supercomputing (PMES) at SC18	Refereed Workshop Paper
158	2018	“Memory-Efficient Quantum Circuit Simulation by Using Lossy Data Compression,” Xin-Chuan Wu, Sheng Di, Franck Cappello, Hal Finkel, Yuri Alexeev, and Frederic T. Chong	The 3rd International Workshop on Post-Moore Era Supercomputing (PMES) at SC18	Refereed Workshop Paper
159	2018	“Amplitude-Aware Lossy Compression for Quantum Circuit Simulation,” Xin-Chuan Wu, Sheng Di, Franck Cappello, Hal Finkel, Yuri Alexeev, and Frederic T. Chong	The 4th International Workshop on Data Reduction for Big Scientific Data (DRBSD-4)	Refereed Workshop Paper
160	2018	“Full State Quantum Circuits Simulation by Using Lossy Data Compression,” Xin-Chuan Wu, Sheng Di, Franck Cappello, Hal Finkel, Yuri Alexeev, and Frederic T. Chong	Poster at SC18	Refereed Poster and Abstract
161	2019	“Optimized Compilation of Aggregated Instructions for Realistic Quantum Computers,” Yunong Shi, Nelson Leung, Pranav Gokhale, Zane Rossi, David I. Schuster, Henry Hoffmann, and Frederic T. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper

162	2019	“Protecting Page Tables from RowHammer Attacks using Monotonic Pointers in DRAM True-Cells,” Xin-Chuan Wu, Yanjing Li, Timothy Sherwood, and Frederic T. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
163	2019	“Noise-Adaptive Compiler Mappings for Noisy Intermediate-Scale Quantum Computers,” Prakash Murali, Jonathan M. Baker, Ali Javadi-Abhari, Frederic T. Chong, and Margaret Martonosi.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
164	2019	“Unitary Entanglement Construction in Hierarchical Networks,” Aniruddha Bapat, Zachary Eldredge, James R. Garrison, Abhinav Desphande, Frederic T. Chong, and Alexey V. Gorshkov.	Physics Review A	Article
165	2019	“Quick-and-Dirty: An Architecture for High-Performance Temporary Short Writes in MLC PCM,” Mingzhe Zhang, Lunkai Zhang, Lei Jiang, Frederic T. Chong, and Zhiyong Liu.	IEEE Transactions on Computers	Article
166	2019	“Improved Quantum Circuits via Dirty Qutrits,” Pranav Gokhale, Jonathan Baker, Casey Duckering and Frederic T. Chong.	Conference on Quantum Information Processing (Best Poster, 3 out of 480)	Poster
167	2019	“Formal Constraint-based Compilation for Noisy Intermediate-Scale Quantum Systems,” Prakash Murali, Ali Javadi-Abhari, Frederic T. Chong, and Margaret Martonosi.	Microprocessors and Microsystems	Article
168	2019	“Resource Optimized Quantum Architectures for Surface Code Implementations of Magic-State Distillation,” Adam Holmes, Yongshan Ding, Ali Javadi-Abhari, Diana Franklin, Margaret Martonosi, and Frederic T. Chong.	Microprocessors and Microsystems	Article
169	2019	“Asymptotic Improvements to Quantum Circuits via Qutrits,” Pranav Gokhale, Jonathan Baker, Casey Duckering, Natalie Brown, Ken Brown, and Frederic T. Chong.	International Symposium on Computer Architecture	Refereed Conference Paper
170	2019	“Direct-Modulated Optical Networks for Interposer Systems,” Mohammad Reza Jokar, Lunkai Zhang, John Dallesasse, Frederic T. Chong, Yanjing Li	13th IEEE/ACM International Symposium on Networks-on-Chip (NOCS 2019)	Refereed Conference Paper
171	2019	“Partial Compilation of Variational Algorithms for Noisy Intermediate-Scale Quantum Machines,” Pranav Gokhale, Yongshan Ding, Thomas Propson, Christopher Winkler, Nelson Leung, Yunong Shi, David I. Schuster, Henry Hoffmann, Frederic T. Chong	The International Symposium on Microarchitecture	Refereed Conference Paper
172	2019	“Balancing Performance and Energy Efficiency of ONoC by Using Adaptive Bandwidth,” Mingzhe Zhang, Lunkai Zhang, Frederic T. Chong, and Zhiyong Liu	International Conference on Computer Design	Refereed Conference Paper

173	2019	“Full-state quantum circuit simulation by using data compression,” Xin-Chuan Wu, Sheng Di, Emma Maitreyee Dasgupta, Franck Cappello, Hal Finkel, Yuri Alexeev. and Frederic T Chong. In Proceedings	International Conference for High Performance Computing, Networking, Storage and Analysis (SC19)	Refereed Conference Paper
174	2019	“Use cases of lossy compression for floating-point data in scientific data sets,” Franck Cappello, Sheng Di, Sihuan Li, Xin Liang, Ali Murat Gok, Dingwen Tao, Chun Hong Yoon, Xin-Chuan Wu, Yuri Alexeev, Frederic T. Chong.	IJHPCA 33(6)	Article
175	2020	“Baldur: A Power-Efficient and Scalable Network Using All-Optical Switches,” M. Jocar, J. Qiu, J. Dallesasse, M. Feng, L. Goddard, Y. Li, and F. Chong.	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
176	2020	“Greater Quantum Efficiency by Breaking Abstractions”, Y. Shi, P. Gokhale, P. Murali, J. Baker, C. Duckering, Y. Ding, C. Chamberland, A.W. Cross, D.I. Schuster, K.R. Brown, M.R. Martonosi, D. Franklin, F.T. Chong	Proceedings of the IEEE	Article
177	2020	“Updating the Scaffold Quantum Compiler for NISQ Algorithms and Machines,” Claire Fan, Andrew Litteken, Devina Singh, Margaret Martonosi, and Frederic T. Chong.	Quantum Science and Technology	Article
178	2020	“Extending the Frontier of Quantum Computers with Qutrits,” Pranav Gokhale, Jonathan Baker, Casey Duckering, Natalie Brown, Ken Brown, and Frederic T. Chong.	IEEE Micro: Micro's Top Picks from Computer Architecture Conferences. (IEEE Micro - top pick)	Article
179	2020	“Optimization of Simultaneous Measurement for Variational Quantum Eigensolver Applications,” Pranav Gokhale, Olivia Angiuli, Yongshan Ding, Kaiwen Gui, Teague Tomesh, Martin Suchara, Margaret Martonosi, and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering (Best Paper Award) (also IBM Q Global Best Paper, 1st place)	Refereed Conference Paper
180	2020	“NISQ+: Boosting computational power of quantum computers by approximating quantum error correction,” Adam Holmes, Mohammad Reza Jocar, Ghasem Pasandi, Yongshan Ding, Massoud Pedram, Frederic T. Chong	International Symposium on Computer Architecture	Refereed Conference Paper
181	2020	“SQUARE: Strategic Quantum Ancilla Reuse for Modular Quantum Programs via Cost-Effective Uncomputation,” Yongshan Ding, Xin-Chuan Wu, Adam Holmes, Ash Wiseth, Diana Franklin, Margaret Martonosi, Frederic T. Chong	International Symposium on Computer Architecture (IEEE Micro Top Picks Honorable Mention)	Refereed Conference Paper
182	2020	“Efficient Quantum Circuit Decompositions via Intermediate Qudits,” Jonathan M. Baker, Casey Duckering, and Frederic T. Chong	IEEE International Symposium on Multi-Valued Logic	Refereed Conference Paper
183	2020	“Time-Sliced Quantum Circuit Partitioning for Modular Architectures,” Jonathan Baker, Casey Duckering, Alexander Hoover and Frederic T. Chong	ACM International Conference on Computing Frontiers	Refereed Conference Paper

184	2020	“Improved Quantum Circuits via Intermediate Qutrits,” Jonathan Baker, Pranav Gokhale, Casey Duckering, Natalie Brown, Ken Brown, and Frederic T. Chong.	ACM Transactions on Quantum Computing	Article
185	2020	“Quantum Computing for Enhancing Grid Security,” Rozhin Eskandarpour, Pranav Gokhale, Amin Khodaei, Frederic T. Chong, Esa Passo, and Shay Bahramirad.	IEEE Power Engineering Letters	Article
186	2020	“Systematic Crosstalk Mitigation for Superconducting Qubits via Frequency-Aware Compilation,” Yongshan Ding, Pranav Gokhale, Sophia Fuhui Lin, Richard Rines, Thomas Propson, Frederic T. Chong.	The International Symposium on Microarchitecture (IEEE Micro Top Picks Honorable Mention)	Refereed Conference Paper
187	2020	“Virtualized Logical Qubits: A 2.5D Architecture for Error-Corrected Quantum Computing,” Casey Duckering, Jonathan Baker, David Schuster, Frederic T. Chong.	The International Symposium on Microarchitecture (Best Paper Runner-Up)	Refereed Conference Paper
188	2020	“Quantum Compilation for NISQ Algorithms with Pulse-Backed Augmented Basis Gates,” Pranav Gokhale, Ali Javadi-Abhari, Nathan Earnest, Yunong Shi, and Frederic T. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper
189	2020	“Memory-Equipped Quantum Architectures: The Power of Random Access,” Jonathan Baker, David Schuster, and Frederic T. Chong.	International Conference on Parallel Architectures and Compilation Techniques	Refereed Conference Paper
190	2020	“The ScaffCC Compiler and Benchmarks (version 5.0),” Andrew Litteken, Claire Fan, Devina Singh, Casey Duckering, Jonathan Baker, Ali JavadiAbbari, Adam Holmes, Yongshan Ding, Pranav Gokhale, Yunong Shi, Ryan Wu, Diana Franklin, Margaret Martonosi, and Frederic T. Chong. https://github.com/epiqc/ScaffCC	Github	Software Release
191	2020	“Quantum Computer Systems: Research for Noisy Intermediate-Scale Quantum Computers,” Yongshan Ding and Frederic T. Chong	Synthesis Lectures in Computing, Morgan Claypool Publishers	Book
192	2020	“Quantum Computer Systems for Scientific Discovery,” Yuri Alexeev, Dave Bacon, Kenneth R. Brown, Robert Calderbank, Lincoln D. Carr, Frederic T. Chong, Brian DeMarco, Dirk Englund, Edward Farhi, Bill Fefferman, Alexey V. Gorshkov, Andrew Houck, Jungsang Kim, Shelby Kimmel, Michael Lange, Seth Lloyd, Mikhail D. Lukin, Dmitri Maslov, Peter Maunz, Christopher Monroe, John Preskil, Martin Roetteler, Martin J. Savage, and Jeff Thompson.	Physical Review Research	Article
193	2020	“Entanglement bounds on the performance of quantum computing architectures,” Zachary Eldredge, Leo Zhou, Aniruddha Bapat, James R. Garrison, Abhinav Deshpande, Frederic T. Chong, and Alexey V. Gorshkov.	Physical Review Research	Article

194	2020	“O(N ³) Measurement Cost for Variational Quantum Eigensolver on Molecular Hamiltonians,” Pranav Gokhale, Olivia Angiuli, Yongshan Ding, Kaiwen Gui, Teague Tomesh, Martin Suchara, Margaret Martonosi, Frederic T. Chong	IEEE Transactions on Quantum Engineering	Article
195	2021	“TILT: Achieving Higher Fidelity on a Trapped-Ion Linear-Tape Quantum Computing Architecture,” Xin-Chuan Wu, Dripto M. Debroy, Yongshan Ding, Jonathan Baker, Yuri, Kenneth R. Brown, Frederic T. Chong	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
196	2021	“Orchestrated Trios: Compiling for Efficient Communication in Quantum Programs with 3-Qubit Gates,” C. Duckering, J. Baker, A. Litteken, and F. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
197	2021	“Virtualized Logical Qubits: A Compact, Buildable Architecture for Fault-Tolerant Quantum Computing,” Jonathan Baker, Casey Duckering, David Schuster, and Frederic T. Chong.	IEEE Micro: Micro's Top Picks from Computer Architecture Conferences. (IEEE Micro - top pick)	Article
198	2021	“Gleipnir: Toward Practical Error Analysis for Quantum Programs,” Runzhou Tao, Yunong Shi, John Hui, Jianan Yao, Frederic T. Chong, and Ronghui Gu.	ACM Conference on Programming Language Design and Implementation	Refereed Conference Paper
199	2021	“Exploiting Long-Distance Interactions and Tolerating Atom Loss in Neutral Atom Quantum Architectures,” Jonathan M. Baker, Andrew Litteken, Casey Duckering, Henry Hoffmann, Hannes Bernien, Frederic T. Chong.	International Symposium on Computer Architecture	Refereed Conference Paper
200	2021	“A Quantum Leap Is Coming,” Honghao Zheng, Ryan Burg, Aleks Paaso, Rozhin Eskandarpour, Amin Khodei, Pranav Gokhale, Frederic T. Chong.	Transmission and Distribution World	Article
201	2021	“A Hybrid Optical-Electrical Analog Deep Learning Accelerator Using Incoherent Optical Signals,” Mingdai Yang, Mohammad Reza Jokar, Junyi Qiu, Qiuwen Lou, Yuming Liu, Aditi Udupa, Frederic T. Chong, John M. Dallesasse, Milton Feng, Lynford L. Goddard, X. Sharon Hu and Yanjing Li.	31st ACM Great Lakes Symposium on VLSI	Refereed Conference Paper
202	2021	“Applying Design-Space Exploration to Quantum Architectures,” Frederic T. Chong.	Communication of the ACM	Technical Perspective
203	2021	“Emerging Technologies for Quantum Computing,” Jonathan M. Baker and Frederic T. Chong.	IEEE Micro Special Issue on Quantum Computing	Article

204	2021	“Coreset Clustering on Small Quantum Computers,” Teague Tomesh, Pranav Gokhale, Eric R. Anschuetz, and Frederic T. Chong.	Electronics	Article
205	2021	“Quantum Fan-out: Circuit Optimizations and Technology Modeling,” Pranav Gokhale, Samantha Koretsky, Shilin Huang, Swarnadeep Majumder, Andrew Drucker, Kenneth Brown and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
206	2021	“Adaptive Job and Resource Management for the Growing Quantum Cloud,” Gokul Subramanian Ravi, Kaitlin Smith, Prakash Murali and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
207	2021	“Circuit Learning for Quantum Metrology,” Ziqi Ma, Pranav Gokhale, Tian-Xing Zheng, Sisi Zhou, Xiaofei Yu, Liang Jiang, Peter Maurer and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
208	2021	“Practical Implications of SFQ-based Two-qubit Gates,” Mohammad Reza Jokar, Richard Rines and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
209	2021	“Adapting Quantum Approximation Optimization Algorithm (QAOA) for Unit Commitment,” Samantha Koretsky, Pranav Gokhale, Jonathan Baker, Joshua Vizslai, Honghao Zheng, Niroj Gurung, Ryan Burg, Aleks Paaso, Amin Khodaei, Rozhin Eskandarpour and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering (Best Paper Award)	Refereed Conference Paper
210	2021	“Quantum Computing in the Cloud: Analyzing Job and Machine Characteristics,” Gokul Subramanian Ravi, Kaitlin N. Smith, Pranav Gokhale, and Frederic T. Chong.	IEEE International Symposium on Workload Characterization (IISWC)	Refereed Conference Paper
211	2021	“Reoptimization of Quantum Circuits via Hierarchical Synthesis,” Xin-Chuan Wu, Marc Davis, Frederic T. Chong and Costin Iancu.	IEEE International Conference on Rebooting Computing	Refereed Conference Paper
212	2021	“Optimized Quantum Program Execution Ordering to Mitigate Errors in Simulations of Quantum Systems,” Teague Tomesh, Kaiwen Gui, Pranav Gokhale, Yunong Shi, Martin Suchara, Margaret Martonosi and Frederic T. Chong.	IEEE International Conference on Rebooting Computing (Best Paper Award)	Refereed Conference Paper
213	2022	“SupermarQ: A Scalable Quantum Benchmark Suite,” Teague Tomesh, Pranav Gokhale, Victory Omole, Gokul Subramanian, Kaitlin, Joshua, Xin-Chuan, Nikos, Margaret R. Martonosi, and Frederic T. Chong.	International Symposium on High-Performance Computer Architecture (Best Paper Award)	Refereed Conference Paper
214	2022	“DigiQ: A Scalable Digital Controller for Quantum Computers Using SFQ Logic,” Mohammad Reza Jokar, Richard, Ghasem Pasandi, Haolin Cong, Adam Holmes, Yunong Shi, Massoud Pedram, and Frederic T. Chong.	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper

215	2022	“VAQEM: A Variational Approach to Quantum Error Mitigation,” Gokul Subramanian Ravi, Kaitlin Smith, Pranav Gokhale, Andrea Mari, Nathan Earnest, Ali Javadi-Abhari, and Frederic T. Chong.	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
216	2022	“QuantumNAS: Noise-Adaptive Search for Robust Quantum Circuits,” Hanrui Wang, Yongshan Ding, Jiaqi Gu, Yujun Lin, David Pan, Frederic T. Chong, and Song Han.	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper
217	2022	“Applying Design-Space Exploration to Quantum Architectures,” Frederic T. Chong	Communications of the ACM	Technical Perspective
218	2022	“Giallar: Push-button Verification for the Qiskit Quantum Compiler,” R. Tao, Y. Shi, J. Yao, X. Li, A. Javadi-Abhari, A. Cross, F. Chong, and R. Gu.	ACM Conference on Programming Language Design and Implementation (PLDI)	Refereed Conference Paper
219	2022	“TimeStitch: Exploiting Slack to Mitigate Decoherence in Quantum Circuits,” Kaitlin Smith, Gokul Subramanian Ravi, Prakash Murali, Jonathan Baker, Nate Earnest, Ali Javadi-Abhari, Frederic T. Chong.	ACM Transactions on Quantum Computing	Article
220	2022	“Time-Efficient Qudit Gates through Incremental Pulse Re-Seeding,” Lennart Maximilian Seifert, Jason Chadwick, Andrew Litteken, Frederic T. Chong and Jonathan M. Baker.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
221	2022	“Reducing Runtime Overhead via Use-Based Migration in Neutral Atom Quantum Architectures,” Andrew Litteken, Jonathan Baker and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
222	2022	“Training Quantum Boltzmann Machines with Coresets,” Joshua Vizslai, Teague Tomesh, Pranav Gokhale, Eric Anschuetz and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
223	2022	“Programming Physical Quantum Systems with Pulse-Level Control,” Kaitlin N Smith, Gokul Subramanian Ravi, Thomas Alexander, Nicholas T Bronn, Andre Carvalho, Alba Cervera-Lierta, Frederic T Chong, Jerry M Chow, Michael Cubeddu, Akel Hashim, Liang Jiang, Olivia Lanes, Matthew J Otten, David I Schuster, Pranav Gokhale, Nathan Earnest, Alexey Galda.	Frontiers of Physics	Article
224	2022	“Let Each Quantum Bit Choose Its Basis Gates,” S. Lin, S. Sussman, C. Duckering, P. Mundada, J. Baker, R. Kumar, A. Houck, and F. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper
225	2022	“Scaling Superconducting Quantum Computers with Chiplet Architectures,” K. Smith, G. Ravi, J. Baker, and F. Chong.	The International Symposium on Microarchitecture	Refereed Conference Paper

226	2022	“Optimized SWAP networks with equivalent circuit averaging for QAOA,” Akel Hashim, Rich Rines, Victory Omole, Ravi K. Naik, John Mark Kreikebaum, David I. Santiago, Frederic T. Chong, Irfan Siddiqi, and Pranav Gokhale	Physical Review Research 4, 033028	Article
227	2022	“System and Method of Optimizing Instructions for Quantum Computers,” Frederic T. Chong, Yunong Shi, Nelson Leung, Pranav Gokhale, Henry Hoffmann, and David Schuster	United States Patent Number 11,416,228	Patent
228	2022	“QuantumNAT: Quantum Noise-Aware Training with Noise Injection, Quantization and Normalization,” Hanrui Wang, Jiaqi Gu, Yongshan Ding, Zirui Li, Frederic T. Chong, David Z. Pan, Song Han	Design Automation Conference (DAC)	Refereed Conference Paper
229	2023	“CAFQA: A Classical Simulation Bootstrap for Variational Quantum Algorithms,” G. Ravi, P. Gokhale, Y. Ding, W. Kirby, K. Smith, J. Baker, P. Love, H. Hoffmann, K. Brown, and F. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
230	2023	“Navigating the Dynamic Noise Landscape of Variational Quantum Algorithms with QISMET,” Gokul Subramanian Ravi, Kaitlin Smith, Jonathan Baker, Nate Earnest, Ali Javadi-Abhari, Tejas Kannan, Henry Hoffmann, and Frederic Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
231	2023	“Better Than Worst-Case Decoding for Quantum Error Correction,” G. Ravi, J. Baker, A. Fayyazi, A. Javadi-Abhari, M. Pedram, and F. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
232	2023	“Qompress: Efficient Compilation for Ququarts Exploiting Partial and Mixed Radix Operations for Communication Reduction,” A. Litteken, L. Seifert, J. Chadwick, N. Nottingham, F. Chong, and J. Baker.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
233	2023	“Preparation of Metrological States in Dipolar-Interacting Spin Systems,” Tian-Xing Zheng, Anran Li, Jude Rosen, Sisi Zhou, Martin Koppenhöfer, Ziqi Ma, Frederic T. Chong, Aashish A. Clerk, Liang Jiang, Peter C. Maurer	npj Quantum Information	Article
234	2023	“A Hybrid Optical-Electrical Analog Deep Learning Accelerator Using Incoherent Optical Signals,” Mingdai Yang, Mohammad Reza Jokar, Junyi Qiu, Qiuwen Lou, Yuming Liu, Aditi Udupa, Frederic T. Chong, John M. Dallesasse, Milton Feng, Lynford L. Goddard, X. Sharon Hu and Yanjing Li,	ACM Journal on Emerging Technologies for Computing	Article
235	2023	“Dancing the Quantum Waltz: Compiling Three-Qubit Gates on Four-Level Architectures,” Andrew Litteken, Lennart Maximilian Seifert, Jason Chadwick, Natalia Nottingham, Tanay, Ziqian Li, David Schuster, Frederic T. Chong, and Jonathan M Baker.	International Symposium on Computer Architecture	Refereed Conference Paper

236	2023	“Clifford-based Circuit Cutting for Quantum Simulation,” Kaitlin N. Smith, Michael A. Perlin, Pranav Gokhale, Paige Frederick, David Owusu-Antwi, Richard Rines, Victory Omole, Frederic Chong	International Symposium on Computer Architecture	Refereed Conference Paper
237	2023	“Post-Exascale Computing for the National Nuclear Security Administration,” Katherine A. Yelick, John B. Bell, Frederic T. Chong, Dona L. Crawford, Mark E. Dean, Jack J. Dongarra, Ian T. Foster, Charles F. McMillan, Daniel I. Meiron, Daniel A. Reed, William Ward Carlson, Karen E. Willcox.	National Academies of Sciences, Engineering, and Medicine	NASEM Study
238	2023	“Renewing the National Quantum Initiative: Recommendations for Sustaining American Leadership in Quantum Information Science,” Kathryn Ann Moler, Charles G. Tahan,, Jamil Abo-Shaeer, Fred Chong, James S. Clarke, Deborah Ann Frincke, Gilbert V. Herrera, Nadya Mason, William D. Oliver, John Preskill, Mark B. Ritter, Robert J. Schoelkopf, Krysta M. Svore, Jinliu Wang, Jun Ye.	National Quantum Initiative Advisory Committee	Presidential Report
239	2023	“Efficient control pulses for continuous quantum gate families through coordinated re-optimization,” Jason Chadwick, and Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering (Best Paper, 3rd place)	Refereed Conference Paper
240	2023	“DISQ: Dynamic Iteration Skipping for Variational Quantum Algorithms,” Junyao Zhang, Hanrui Wang, Gokul Subramanian Ravi, Fred Chong, Song Han, Frank Mueller and Yiran Chen.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
241	2023	“SnCQA: An hardware-efficient equivariant quantum convolutional circuit architecture,” Han Zheng, Christopher Kang, Gokul Subramanian Ravi, Hanrui Wang, Kanav Setia, Frederic T. Chong and Junyu Liu.	IEEE International Conference on Quantum Computing and Engineering (Best Paper, 1st place)	Refereed Conference Paper
242	2023	“Superstaq: Deep Optimization of Quantum Programs,” Frederic Chong, Paige Frederick, Palash Goiporia, Pranav Gokhale, Benjamin Hall, Salahdeen Issa, Stephanie Lee, Andrew Litteken, Victory Omole, David Owusu-Antwi, Michael A. Perlin, Rich Rines, Kaitlin N. Smith, Noah Goss, Akel Hashim, Ravi K. Naik, Ed Younis, Daniel Lobser, Christopher G. Yale, Benchen Huang, Ji Liu.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
243	2023	“QuantumSEA: In-Time Sparse Exploration for Noise Adaptive Quantum Circuits,” Tianlong Chen, Zhenyu Zhang, Hanrui Wang, Jiaqi Gu, Zirui Li, David Z. Pan, Frederic Chong, Song Han and Zhangyang Wang.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
244	2023	“Fast Fingerprinting of Cloud-based NISQ Quantum Computers,” Kaitlin N. Smith, Joshua Vizslai, Lennart Maximilian Seifert, Jonathan M. Baker, Jakub Szefer, and Frederic T. Chong.	IEEE International Symposium on Hardware Oriented Security and Trust (HOST)	Refereed Conference Paper

245	2023	“HetArch: Heterogeneous Microarchitectures for Superconducting Quantum Systems,” S. Stein, S. Sussman, T. Tomesh, C. Guinn, E. Tureci, S. Lin, W. Tang, J. Ang, S. Chakram, A. Li, M. Martonosi, F. Chong, A. Houck, I. Chuang, and M. DeMarco.	The International Symposium on Microarchitecture	Refereed Conference Paper
246	2023	“System and method of partial compilation with variational algorithms for quantum computers,” Frederic T. Chong, Pranav Gokhale, Yongshan Ding, and Thomas Propson.	United States Patent Number 11,886,379	Patent
247	2023	“Exploring Ququart Computation on a Transmon using Optimal Control,” Lennart Maximilian Seifert, Ziqian Li, Tanay Roy, David I. Schuster, Frederic T. Chong, and Jonathan M. Baker.	Physics Review A	Article
248	2023	"Benchmarking the recursive quantum approximate optimization algorithm," Paige Frederick, Rich Rines, F. T. Chong, Pranav Gokhale.	Proc. SPIE 12446, Quantum Computing, Communication, and Simulation III, 1244609 (8 March 2023)	Article
249	2024	“VarSaw: Application-Tailored Measurement Error Mitigation for Variational Quantum Algorithms,” S. Dangwal, G. Ravi, P. Das, K. Smith, J. Baker, and F. Chong.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
250	2024	“Codesign of error-correcting codes and modular chiplets in the presence of defects,” S. Lin, J. Vizslai, K. Smith, G. Ravi, C. Yuan, F. T. Chong, and B. Brown.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
251	2024	“Quantum Vulnerability Analysis to Guide Robust Quantum Computing System Design,” F. Qi, K. Smith, T. LeCompte, N-F. Tzeng, X. Yuan, F. T. Chong, and L. Peng.	IEEE Transactions on Quantum Engineering	Article
252	2024	“NAPA: Intermediate-level Variational Native-pulse Ansatz for Variational Quantum Algorithms,” Zhiding Liang, Jinglei Cheng, Hang Ren, Hanrui Wang, Fei Hua, Yongshan Ding, Frederic T. Chong, Song Han, Xuehai Qian, and Yiyu Shi.	IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems	Article
253	2024	“Spacetime-Efficient Low-Depth Quantum State Preparation with Applications,” Kaiwen Gui, Alexander M. Dalzell, Alessandro Achille, Martin Suchara, and Frederic T. Chong.	Quantum	Article
254	2024	“Quantum Computing for Oncology,” Siddhi Ramesh, Teague Tomesh, Samantha Riesenfeld, Frederic T. Chong, and Alexander T. Pearson.	Nature Cancer	Article

255	2024	"Fundamental Causal Bounds of Quantum Random Access Memories," Yunfei Wang, Yuri Alexeev, Liang Jiang, Frederic T. Chong, and Junyu Liu.	npj Quantum Information	Article
256	2024	"Faster and More Reliable Quantum SWAPs via Native Gates," Pranav Gokhale, Teague Tomesh, and Frederic T. Chong. https://dl.acm.org/doi/10.1145/3656019.3689818	International Conference on Parallel Architectures and Compilation Techniques (PACT)	Refereed Conference Paper
257	2024	"Circuit decompositions and scheduling for neutral atom devices with limited local Addressability," Natalia Nottingham, Michael A. Perlin, Dhirpal Shah, Ryan White, Hannes Bernien, Frederic T. Chong, Jonathan M. Baker	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
258	2024	"Deep Learning for Low-Latency, Quantum-Ready RF Classification," Pranav Gokhale, Caitlin Carnahan, William Clark, Frederic T. Chong, Teague Tomesh.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
259	2024	"Using optimal control to guide neural-network interpolation of continuously-parameterized gates," Bikrant Bhattacharyya, Fredy An, Dominik Kozbiel, Andy Goldschmidt, Frederic Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
260	2024	"Averting multi-qubit burst errors in surface code magic state factories," Jason D. Chadwick, Christopher Kang, Joshua Vizslai, Sophia Fuhui Lin, Frederic T. Chong.	IEEE International Conference on Quantum Computing and Engineering	Refereed Conference Paper
261	2024	"Approximate t-designs in generic circuit architectures," Daniel Belkin, James Allen, Soumik Ghosh, Christopher Kang, Sophia Lin, James Sud, Fred Chong, Bill Fefferman, and Bryan K. Clark	PRX Quantum	Article

262	2024	<p>“Quantum-centric supercomputing for materials science: A perspective on challenges and future directions,” Yuri Alexeev, Maximilian Amsler, Marco Antonio Barroca, Sanzio Bassini, Torey Battelle, Daan Camps, David Casanova, Young Jay Choi, Frederic T Chong, Charles Chung, Christopher Codella, Antonio D Córcoles, James Cruise, Alberto Di Meglio, Ivan Duran, Thomas Eckl, Sophia Economou, Stephan Eidenbenz, Bruce Elmegreen, Clyde Fare, Ismael Faro, Cristina Sanz Fernández, Rodrigo Neumann Barros Ferreira, Keisuke Fuji, Bryce Fuller, Laura Gagliardi, Giulia Galli, Jennifer R Glick, Isacco Gobbi, Pranav Gokhale, Salvador de la Puente Gonzalez, Johannes Greiner, Bill Gropp, Michele Grossi, Emanuel Gull, Burns Healy, Matthew R Hermes, Benchen Huang, Travis S Humble, Nobuyasu Ito, Artur F Izmaylov, Ali Javadi-Abhari, Douglas Jennewein, Shantenu Jha, Liang Jiang, Barbara Jones, Wibe Albert de Jong, Petar Jurcevic, William Kirby, Stefan Kister, Masahiro Kitagawa, Joel Klassen, Katherine Klymko, Kwangwon Koh, Masaaki Kondo, Doğa Murat Kürkçüoğlu, Krzysztof Kurowski, Teodoro Laino, Ryan Landfield, Matt Leininger, Vicente Leyton-Ortega, Ang Li, Meifeng Lin, Junyu Liu, Nicolas Lorente, Andre Luckow, Simon Martiel, Francisco Martin-Fernandez, Margaret Martonosi, Claire Marvinney, Arcesio Castaneda Medina, Dirk Merten, Antonio Mezzacapo, Kristel Michielsens, Abhishek Mitra, Tushar Mittal, Kyungsun Moon, Joel Moore, Sarah Mostame, Mario Motta, Young-Hye Na, Yunseong Nam, Prineha Narang, Yu-ya Ohnishi, Daniele Ottaviani, Matthew Otten, Scott Pakin, Vincent R Pascuzzi, Edwin Pednault, Tomasz Piontek, Jed Pitera, Patrick Rall, Gokul Subramanian Ravi, Niall Robertson, Matteo AC Rossi, Piotr Rydlichowski, Hoon Ryu, Georgy Samsonidze, Mitsuhsa Sato, Nishant Saurabh, Vidushi Sharma, Kunal Sharma, Soyoung Shin, George Slessman, Mathias Steiner, Iskandar Sitdikov, In-Saeng Suh, Eric D Switzer, Wei Tang, Joel Thompson, Synge Todo, Minh C Tran, Dimitar Trenev, Christian Trott, Huan-Hsin Tseng, Norm M Tubman, Esin Tureci, David García Valiñas, Sofia Vallecorsa, Christopher Wever, Konrad Wojciechowski, Xiaodi Wu, Shinjae Yoo, Nobuyuki Yoshioka, Victor Wen-zhe Yu, Seiji Yunoki, Sergiy Zhuk, and Dmitry Zubarev</p>	Future Generation Computer Systems	Article
263	2024	<p>“COMPASS: Compiler Pass Selection For Improving Fidelity Of NISQ Applications,” Siddharth Dangwal, Gokul Subramanian Ravi, Lennart Maximilian Seifert, Poulami Das, James Sud and Frederic T. Chong.</p>	IEEE International Conference on Rebooting Computing	Refereed Conference Paper
264	2025	<p>“Interleaved Logical Qubits in Atom Arrays,” J. Viszlai, S. Lin, S. Dangwal, C. Bradley, V. Ramesh, J. Baker, H. Bernien, and F. Chong</p>	International Symposium on High-Performance Computer Architecture	Refereed Conference Paper

265	2025	“Modeling Short-Range Microwave Networks to Scale Superconducting Quantum Computation,” Nicholas LaRacunte, Kaitlin N. Smith, Poolad Imany, Kevin L. Silverman, and Frederic T. Chong.	Quantum	Article
266	2025	“Clapton: Clifford-Assisted Problem Transformation for Error Mitigation in Variational Quantum Algorithms,” L. Seifert, S. Dangwal, F. Chong, and G. Ravi.	International Symposium on Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper