Charles Tahan, PhD

Academic-style CV, April 2025

EDUCATION

2005 **Ph.D., Physics,** *University of Wisconsin-Madison*
Thesis: Silicon in the Quantum Limit: Quantum Computing and Decoherence in Silicon Architectures. *Advisor: Robert Joynt*

2000 **B.S., Physics and Computer Science** with Highest Honors
College of William and Mary, Williamsburg, VA

1996 *Gonzaga College High School, Washington, D.C.*

EMPLOYMENT – POSITIONS

06/24 – pres. **Partner**, Microsoft Quantum
Microsoft Corporation

03/24 – pres. **Visiting Research Professor**
Physics Department, University of Maryland

03/24 – 06/24 **Special Advisor to the President**
University of Maryland

06/20 – 03/24 **Assistant Director for Quantum Information Science**; and

06/20 – 03/24 **Director**, National Quantum Coordination Office (quantum.gov)
White House Office of Science and Technology Policy
On detail from NSA's Laboratory for Physical Sciences

06/20 – 03/24 **Chief Scientist,** Physical Sciences Research, *National Security Agency*
Chief, Solid State and Quantum Information Science Division, *LPS*
Director, LPS Qubit Collaboratory (qubitcollaboratory.org)

07/15 – 06/20 **Technical Director**, Physical Sciences Research, *National Security Agency*
Acting Technical Director (07/15-05/16)

08/13 – 06/20 **Manager**, Solid State and Quantum Physics Office, LPS

09/09 – 03/24 **Physicist and Program Manager**, Quantum Computing, LPS
Laboratory for Physical Sciences (College Park, MD)

10/08 – 09/09 **Associate**

10/07 – 09/08 **Senior Consultant**
Booz | Allen | Hamilton, Inc. (Arlington, VA)
Defense Advanced Research Projects Agency (DARPA-MTO)

09/05 – 10/07 **NSF Distinguished International Postdoctoral Research Fellow**
Cavendish Laboratory, University of Cambridge (UK)
Host/Advisor: *Prof. Peter Littlewood*

07/06 – 09/06 **Visiting Scientist**
University of Tokyo, Department of Physics and NTT (Japan)
Host: *Prof. Seigo Tarucha*

11/05 – 02/06 **Visiting Scientist**
Centre for Quantum Computer Technology and School of Physics, University of Melbourne (Australia),
Host: *Prof. Lloyd Hollenberg*

HONORS
[2021] Presidential Rank Award (NSA)
[2017] Science and Technology Fellow, Director of National Intelligence (ODNI)
[2016] Defense Intelligence Senior Leader (election to Senior Executive Service)
[2015] Fellow of the American Physical Society, "For important contributions to the field of quantum information science, including theoretical work advancing the experimental development of silicon quantum computers and proposing new quantum devices in the solid state."
[2014] Intelligence Community Seal Medallion, "For impressive contributions to the development and understanding of condensed matter physics and silicon based quantum computing"
[2012] Presidential Early Career Award for Scientists and Engineers (PECASE)
[2012] Researcher of the Year, National Security Agency
[2012] Invention of the Year Finalist, Physical Sciences Category, University of Maryland Office of Technology Commercialization
[2005-7] Math and Physical Sciences Distinguished International Postdoctoral Research Fellowship (MPS-DRF), National Science Foundation (NSF)
[2004] Nanotechnology Undergraduate Education (NUE) Teaching Fellowship in Nanotechnology and Society, National Science Foundation (NSF)
[2001] R.G. Herb Distinguished Graduate Fellowship in Materials Physics, University of Wisconsin-Madison
[2000] Van Vleck Scholarship, University of Wisconsin-Madison
[2000] Highest Honors, B.Sci. Thesis: Growth Simulations of Single Crystal Perovskite Alloys, College of William and Mary
[1996] Westinghouse Science Talent Search semifinalist, "The El Niño Southern Oscillation: A Computation Model Utilizing Satellite Data"

ARTICLES
[2025] J.H. DINH, M. WONG, M. BROOKS, C. TAHAN, M. LEE, "Quantum Intuition XR: Tangible Quantum Mechanics using Interactive XR Experience",
https://arxiv.org/abs/2504.08984

[2025] F. SABATINO, M. BROOKS, C. TAHAN, S. HOFFMAN, Simulated Non-Abelian Statistics of Majorana Zero Modes from a Kitaev Lattice",
https://arxiv.org/abs/2503.15405

[2025] M. BROOKS, F. SABATINO, C. TAHAN, S. HOFFMAN, "Measurement-based Simulation of Geometric Gates in Topological Qubits on NISQ Devices",
https://arxiv.org/abs/2503.15392

[2024] C. TAHAN, "Opinion: The simplest quantum computer",
https://arxiv.org/abs/2412.18726

[2024] M. BROOKS, R. LUNDGREN, C. TAHAN, "Phonon-Induced Exchange Gate Infidelities in Semiconducting Si-SiGe Spin Qubits",
Phys. Rev. B 110, 235204 (2024), https://arxiv.org/abs/2408.02742

[2024] B. HARPT, J. CORRIGAN, N. HOLMAN, P. MARCINIEC, D. ROSENBERG, D. YOST, R. DAS, R. RUSKOV, C. TAHAN, W. D. OLIVER, R. MCDERMOTT, M. FRIESEN, M. A. ERIKSSON, "Ultra-dispersive resonator readout of a quantum-dot qubit using longitudinal coupling", npj Quantum Information 11, 5 (2025), https://arxiv.org/abs/2407.08869

[2024] S. HOFFMAN, M. HAYS, K. SERNIAK, T. HAZARD, and C. TAHAN, "Decoherence in Andreev spin qubits",
Phys. Rev. B 111, 045304 (2025), https://arxiv.org/abs/2403.00710

[2024] U. GUNGORDU, R. RUSKOV, S. HOFFMAN, K. SERNIAK, A.J. KERMAN, and C. TAHAN, "Quantum dynamics of superconductor-quantum dot-superconductor Josephson junctions,"
https://arxiv.org/abs/2402.10330

[2024] Y. YANAY, B. SWINGLE, and C. TAHAN, "Detecting Measurement-Induced Entanglement Transitions With Unitary Mirror Circuits,"
Phys. Rev. Lett. 133, 070601 (2024), https://arxiv.org/abs/2401.17367

[2023] R. RUSKOV and C. TAHAN, "Longitudinal (curvature) couplings of an N-level qudit to a superconducting resonator at the adiabatic limit and beyond," accepted to PRB,
Phys. Rev. B 109, 245303 (2024), https://arxiv.org/abs/2312.03118

[2023] M. BROOKS and C. TAHAN, "Quantum Computation by Spin Parity Measurements with Encoded Qubits,"
Phys. Rev. B 108, 035206 (2023), https://arxiv.org/abs/2305.09727

[2023] Y. YANAY and C. TAHAN, "Low Overhead Quantum Bus with Coupling beyond the Nearest Neighbor via Mediated Effective Capacitance",
Phys. Rev. Applied 20, 024006 (2023), https://arxiv.org/abs/2302.04284

[2022] J. CORRIGAN, BENJAMIN HARPT, NATHAN HOLMAN, RUSKO RUSKOV, PIOTR MARCINIEC, D. ROSENBERG, D. YOST, R. DAS, W.D. OLIVER, R. MCDERMOTT, C. TAHAN, M. FRIESEN, M. A. ERIKSSON, "Longitudinal coupling between a Si/SiGe quantum dot and an off-chip TiN resonator",
Phys. Rev. Applied 20, 064005 (2023), https://arxiv.org/abs/2212.02736

[2022] T. M. HAZARD, A. J. KERMAN, K. SERNIAK, C. TAHAN, "Superconducting-semiconducting voltage-tunable qubits in the third dimension",
Phys. Rev. Applied 20, 034056 (2023), https://arxiv.org/abs/2203.06209

[2021] Y. YANAY, J. BRAUMÜLLER, T. P. ORLANDO, S. GUSTAVSSON, C. TAHAN, W. D. OLIVER, "Mediated interactions beyond the nearest neighbor in an array of superconducting qubits,"
Phys. Rev. Applied 17, 034060 (2022), https://arxiv.org/abs/2110.01699

[2021] A. H. KARAMLOU, J. BRAUMÜLLER, Y. YANAY, Y. DI PAOLO, P. HARRINGTON, B. KANNAN, D. KIM, M. KJAERGAARD, A. MELVILLE, S. MUSCHINSKE, B. NIEDZIELSKI, A.

VEPSÄLÄINEN, R. WINIK, J. L. YODER, M. SCHWARTZ, C. TAHAN, T. P. ORLANDO, S. GUSTAVSSON, W. D. OLIVER, "Quantum transport and localization in 1d and 2d tight-binding lattices,"
npj Quantum Inf 8, 35 (2022), https://arxiv.org/abs/2107.05035

[2021] M. BROOKS and C. TAHAN, "Hybrid Exchange Measurement-Based Qubit Operations in Semiconductor Double Quantum Dot Qubits,"
Phys. Rev. Applied 16, 064019 (2021), https://arxiv.org/abs/2105.12860

[2021] J. BRAUMÜLLER, A. H. KARAMLOU, Y. YANAY, B. KANNAN, D. KIM, M. KJAERGAARD, A. MELVILLE, B. M. NIEDZIELSKI, Y. SUNG, A. VEPSÄLÄINEN, R. WINIK, J. L. YODER, T. P. ORLANDO, S. GUSTAVSSON, C. TAHAN, W. D. OLIVER, "Probing quantum information propagation with out-of-time-ordered correlators,"
Nature Physics volume 18, pages 172-178 (2022), https://arxiv.org/abs/2102.11751

[2021] Y. YANAY and C. TAHAN, Fourier-style Quantum State Tomography and Purity Measurement of a Multi-qubit System from Bloch Rotations,"
Phys. Rev. A 103, 062411 (2021), https://arxiv.org/abs/2101.05860

[2020] R. RUSKOV and C. TAHAN, "Modulated longitudinal gates on encoded spin-qubits via curvature couplings to a superconducting cavity,"
Phys. Rev. B 103, 035301 (2021), https://arxiv.org/abs/2010.01233

[2020] D.L. CAMPBELL, Y.-P. SHIM, B. KANNAN, R. WINIK, A. MELVILLE, B.M. NIEDZIELSKI, J.L. YODER, C. TAHAN, S. GUSTAVSSON, W.D. OLIVER, "Universal non-adiabatic control of small-gap superconducting qubits",
Phys. Rev. X 10, 041051 (2020), https://arxiv.org/abs/2003.13154

[2020] C. TAHAN, "Democratizing Spin Qubits,"
Quantum 5, 584 (2021), https://arxiv.org/abs/2001.08251

[2020] Y. YANAY, J. BRAUMULLER, S. GUSTAVSSON, W. D. OLIVER, and C. TAHAN, "Realizing the two-dimensional hard-core Bose-Hubbard model with superconducting qubits,"
npj Quantum Inf 6, 58 (2020), https://arxiv.org/abs/1910.00933

[2019] C. TAHAN, "Graphene qubit motivates materials science," *News & Views*,
Nature Nanotechnology **14**, 102–103 (2019)

[2018] Y.-P. SHIM, R. RUSKOV, H. M. HURST, and C. TAHAN, "Induced quantum dot probe for material characterization"
Applied Physics Letters 114, 152105 (2019), https://arxiv.org/abs/1809.03523 (2018)

[2017] Y.-P. SHIM and C. TAHAN, "Barrier versus tilt exchange gate operations in spin-based quantum computing"
Phys. Rev. B 97, 155402 (2018), https://arxiv.org/abs/1711.00595 (2017)

[2017] R. RUSKOV, M. VELDHORST, A.S. DZURAK, and C. TAHAN, "Electron g-factor of valley states in realistic silicon quantum dots"
Phys. Rev. B 98, 245424 (2018), https://arxiv.org/abs/1708.04555 (2017)

[2017] R. RUSKOV and C. TAHAN, "Quantum-limited measurement on spin qubits via curvature coupling to a cavity,"
Phys. Rev. B 99, 245306 (2019), http://arxiv.org/abs/1704.05876 (2017)

[2016] V. SRINIVASA, J.M. TAYLOR, C. TAHAN, "Entangling distant resonant exchange qubits via circuit quantum electrodynamics,"
Phys. Rev. B 94, 205421 (2016), http://arxiv.org/abs/1603.04829 (2016)

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Phys. Rev. B **93**, 121410(R) (2016), http://arxiv.org/abs/1602.00320 (2016)

[2015] Y.-P. SHIM and C. TAHAN, "Semiconductor-inspired superconducting quantum computing,"
Nature Comm. **7**, 11059 (2016), http://arxiv.org/abs/1507.07923 (2015)

[2015] M. VELDHORST, R. RUSKOV, C.H. YANG, J.C.C. HWANG, F.E. HUDSON, M.E. FLATTE, C. TAHAN, K.M. ITOH, A. MORELLO, A.S. DZURAK, "Spin-orbit coupling and operation of multi-valley spin qubits,"
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IEEE JSTQE 21, 9100209 (2015), http://arxiv.org/abs/1407.0372 (2014)

[2014] R. RUSKOV and C. TAHAN, "Catching the quantum sound wave," *Perspective*, Science 346, 165 (2014)

[2014] X. HAO, R. RUSKOV, M. XIAO, C. TAHAN, H.-W. JIANG, "Electron spin resonance and spin-valley physics in a silicon double quantum dot,"
Nature Comm. **5**, 3860 (2014), http://arxiv.org/abs/1311.5937 (2013)

[2014] Y.-P. SHIM and C. TAHAN, "Bottom-up superconducting and Josephson junction devices inside a Group-IV semiconductor crystal,"
Nature Comm. **5**, 4225 (2014), http://arxiv.org/abs/1407.0372 (2013)

[2014] C. TAHAN and R. JOYNT, "Relaxation of excited spin, orbital, and valley qubit states in single electron silicon quantum dots",
Phys. Rev. B **89**, 075302 (2014), http://arxiv.org/abs/1302.0983 (2013)

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Nature Comm. **4**, 2069 (2013), http://arxiv.org/abs/1302.0983 (2013)

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Phys. Rev. B **88**, 064308 (2013), http://arxiv.org/abs/1208.1776 (2012)

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Phys. Rev. Lett. **107**, 235502 (2011), http://arxiv.org/abs/1106.1654

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Nature Physics **2**, 856 - 861 (Dec., 2006), arxiv/cond-mat/0609050

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[2006] C. TAHAN, R. LEUNG, G.M. ZENNER, K.D. ELLISON, W.C. CRONE, and C.A. MILLER, "Nanotechnology and Society: A discussion-based undergraduate course," *Am. J. Phys.* **74**, 443 (April 2006), http://arxiv.org/physics/0507065 (2005)

[2005] C. TAHAN, PhD Thesis (2005), "Silicon in the Quantum Limit: Quantum Computing and Decoherence in Silicon Architectures," http://arxiv.org/abs/0710.4263

[2004] S. GOSWAMI, MARK FRIESEN, J.L. TRUITT, C. TAHAN, L.J. KLEIN, J.O. CHU, D.W. VAN DER WEIDE, S.N. COPPERSMITH, ROBERT JOYNT, and MARK A. ERIKSSON, "Spectroscopy of valley splitting in a Si/SiGe two-dimensional electron gas," *Unpublished*; http://arxiv.org/cond-mat/0408389 (2004)

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[2001] C. TAHAN, M. SUEWATTANA, P. LARSEN, S. ZHANG, and H. KRAKAUER, "Kinetic Monte Carlo simulations of crystal growth in ferroelectric materials," *AIP Conference Proceedings* **582**, 118 (2001)

PRESENTATIONS

[03/2025] Invited Talk, “The simplest quantum computer”, APS March Meeting, Los Angeles, CA
[11/2024] “Bad Ideas”, Spin Qubit 6, Sydney, Australia
[09/2024] “You’ll never find that! Or, a career in quantum.”, UMD Career Nexus, College Park, MD - CareerNexus.pdf
[09/2024] Keynote, NYU Quantum Summit
[05/2024] “What’s neqst? (Bob Joynt Edition)”, Joyntfest, Madison, WI
[04/2024] “What’s neqst?”, Seminar, Cornell, NY
[03/2024] “Comments on “Measuring Quantum Politics and Defense"", Quantum Basel, Basel, Switzerland
[01/2024] “The National Quantum Initiative and You”, MIT
[05/2023] “From Designing Quantum Computers to Coordinating the National Quantum Initiative,” Stanford EE380 Seminar
[05/2023] “Quantum Information, National Quantum Policy, and the LPS Qubit Collaboratory”, NSA Policy Series
[04/2023] “Hot or Not?”, LQC Program Review Going Hot Workshop
[03/2023] “Quantum Information, National Quantum Policy, and the LPS Qubit Collaboratory”, CIA
[03/2023] Guest Lecture, “National Quantum Initiative Coordination Activities”, MIT Business School
[03/2023] Invited Talk, “Coordinating the National Quantum Initiative”, American Physical Society March Meeting, Las Vegas, NV
[02/2023] “Quantum Information, National Quantum Policy, and the LPS Qubit Collaboratory”, DTECH Conference, NSA
[02/2023] Colloquium, “So, a quantum computer…”, Physics Department, University of Wisconsin-Madison
[02/2023] “Toward a useful quantum computer”, Cosmos Club Lunch Series
[01/2023] Keynote, “NQI Update”, U. Washington Quantum Event
[12/2022] “Coordinating the U.S. National Quantum Initiative”, Quantum World Congress
[12/2022] “NQI Update”, Q2B, San Jose, California
[11/2022] “Progress and Perspectives on the National Quantum Initiative”, QED-C Meeting, D.C.
[11/2022] “Quantum information and device theory @ LPS”, NYU Physics Department
[11/2022] Keynote, “Quantum 2028”, NYC Quantum Summit, New York, NY
[10/2022] “The National Quantum Initiative”, briefing for NASEM
[09/2022] Public Lecture, “Quantum 2028”, Pittsburgh Quantum Institute, U. Pittsburgh, PA
[09/2022] “The USA National Quantum Initiative”, Quantum Africa Conference
[07/2022] “Pursuing Quantum Information Together”, NAS Chemistry
[07/2022] Keynote, “Update on Quantum Information Coordination Activities”, AFRL, Rome, NY
[07/2022] “Quantum information and device theory @ LPS”, LPS/ARO Quantum Computing Program Review, Annapolis, MD
[06/2022] “How to build a quantum computer”, LPS Quantum Summer School
[06/2022] “What if building a quantum computer was easy?”, Physical Society of Washington, Washington, DC
[06/2022] “An Update on the US Government’s Policy Innovations in Quantum Technologies”, Quantum.Tech, Boston, MA
[05/2022] “Pursuing Quantum Information Together,” Economist’s Commercializing Quantum Event
[02/2022] “Just Qubit.” Northwest Quantum Nexus, Seminar, Virtual
[11/2021] “The National Quantum Initiative and opportunities for the biomedical sciences”, NIH Quantum Workshop

[11/2021] “Progress and Perspectives on the National Quantum Initiative”, Chicago Quantum Summit, Virtual
[10/2021] “Progress and Perspectives on the National Quantum Initiative,” Virtual, University of Rhode Island
[09/2021] “Perspectives on microelectronics dependencies for emerging and exotic technologies,” NNSA Semiconductor Workshop, Virtual
[07/2021] “My “career” so far.”, Career Seminar, LPS
[07/2021] “International Cooperation and the National Quantum Initiative,” Hudson Institute Japan Dialogue, Virtual
[04/2021] “National Strategy and Coordination for Quantum Information Science”, MIT ATNS, Virtual
[04/2021] “National Strategy and Coordination for Quantum Information Science”, Japan Quantum Moonshot Kickoff, Rikken, Virtual
[03/2021] “National Strategy and Coordination for Quantum Information Science”, QED-C Plenary Meeting, Virtual
[02/2021] “The United States and the National Quantum Initiative”, Tokyo Quantum Hubs Launch, Virtual
[02/2021] Opening Remarks, Effecting Systematic Change in QIS Education, NSF Q2Work Workshop
[10/2020] “Q-12 Education Partnership Kick-Off,” Virtual Meeting, NSF Q2Work Program
[09/2020] “From Psi to Quantum Machine Learning,” NSA Math Research
[06-10/2020] “Strengthening US Leadership in Quantum Information Science,” various virtual venues (MIT, Arizona Center for Quantum Networks, IBM Q, AFRL).
[03/2020] “Democratizing Spin Qubits: or, How to make semiconductor-based quantum computers without fabricating quantum dot qubits,” APS March Meeting, Denver, CO (cancelled)
[01/2020] "A fundamental change in materials requires a fundamental change in characterization. What techniques can be devised to bring precision to the way we characterize quantum material systems?" NIST/UMD Center for Quantum Materials Workshop
[11/2019] “Quantum Computing at the Laboratory for Physical Sciences,” QUINCE, San Diego, CA
[10/2019] “LPS Approach to Quantum Information Science,” LPS Day, College Park, MD
[09/2019] “QIS Programs at LPS,” NQI Quantum Programs Day, Washington, DC
[07/2019] Program Reivew, “Quantum Device Theory Update,” ARO/LPS Quantum Computing Program Review, Raleigh, NC
[05/2019] Internal Seminar, “From Psi to Quantum Machine Learning,” Laboratory for Physical Science, College Park, MD
[04/2019] Keynote Talk, “Why focus on Materials Science for Quantum {Computing|Sensors|Networking}?,” Kavli Workshop on Materials Science for Quantum Computing, Materials Research Society Meeting, Pheonix, AZ
[04/2019] Invited Talk, “Tomorrow’s quantum {computers/sensors/networks} won’t be made with today’s qubits,” Columbia University, New York, NY
[04/2019] Invited Seminar, “Tomorrow’s quantum computers/networks/sensors won’t be made with today’s qubits: Quantum Information Science at the Laboratory for Physical Sciences,” Department of Energy, Germantown, MD
[02/2019] Colloquium, “The Laboratory for Physical Sciences: Past, Present, and Future,” Physics Dept., University of Maryland-College Park
[02/2019] Invited Seminar, “Quantum Science and Technology at the Laboratory for Physical Sciences,” National Reconnaissance Office, Chantilly, VA
[02/2019] Invited Seminar, “The n-th wave of quantum computing,” National Geospatial-Intelligence

Agency, Springfield, VA
[11/2018] "Perspectives on Quantum Information Research: Strategic goals and considerations," DOE-NSA Workshop, Washington, DC
[09/2018] Invited Talk, "Running the physics of quantum dot-resonator coupling to ground," 4th School and Conference on Spin-Based Quantum Information Processing, Konstanz, Germany
[08/2018] Talk, "Democratizing Spin Qubits," ARO Quantum Computing Program Review, Denver, CO
[06/2018] Talk, IEEE Meeting of Society on Social Implications of Technology, "An introduction to quantum computers and their societal implications," College Park, MD
[04/2018] NEQST Program Kickoff Meeting, "What's NEQST?," College Park, MD
[03/2018] APS March Meeting, Invited Talk, "Quantum-limited measurement of spin qubits via curvature coupling to a cavity (and more)," Los Angeles, CA
[02/2018] DC Quantum Computing Meetup, "The n-th wave of quantum computing: What we know and don't know about building useful quantum computers," Reston, VA
[02/2018] Seminar, "Enabling silicon quantum computers in silicon and semiconductor-inspired superconducting quantum computing," Stanford University, CA
[10/2017] Seminar, "Enabling silicon quantum computers with always-on, exchange-only (AEON) qubits," Research Laboratory of Electronics, MIT, Boston, MA
[08/2017] Silicon Quantum Electronics Workshop, "The case for always-on, exchange-only qubits," Portland, OR (given by Yun-Pil Shim because of sickness in the family)
[08/2017] ARO/LPS *Quantum Computing Program Review*, "Progress in solid-state quantum device theory," Alexandria, VA
[01/2017] Research Directorate *Program Review*, "Progress in solid-state quantum device theory," College Park, MD
[08/2016] ARO/LPS *Quantum Computing Program Review*, "Progress in solid-state quantum device theory," Alexandria, VA
[05/2016] Invited Seminar, "Dogs and cats, living together! How approaches to Josephson junction and spin-based quantum computing can learn from each other," Lincoln Laboratory, Boston, MA
[05/2016] Invited Talk, "Quantum Information Science at the Laboratory for Physical Sciences," ATNS Workshop, Lincoln Laboratory, Boston, MA
[03/2016] Invited Talk, "Silicon Quantum Information Technology," GOMACTech, Orlando, FL
[03/2016] *APS March Meeting*, "A new look at encoded-qubit quantum dot quantum computing," Baltimore, MD
[01/2016] Invited Presentation, "Progress and opportunities in superconducting/semiconducting/quantum devices," DARPA MTO Unplugged, Warrenton, VA
[08/2015] Presentation, "Theory of g-factor in silicon quantum dots / enabling modularity in silicon spin-based quantum computing", ARO/LPS Program Review, San Diego, CA
[07/2015] Presentation, "Semiconductor-inspired superconducting quantum computing", ARO/LPS Program Review, Arlington, VA
[06/2015] Seminar, "Super ♥ Semi: How superconductors and semiconductors could be better together", Universidad Complutense de Madrid, Spain
[05/2015] Seminar, "Super ♥ Semi: How superconductors and semiconductors could be better together", QDev, Neils Bohr Institute, University of Copenhagen Denmark
[05/2015] Seminar, "Super ♥ Semi: How superconductors and semiconductors could be better together", QuTech, TUDelft, The Netherlands
[04/2015] *Physics Colloquium,* "Bottom-up superconducting-semiconductor quantum devices,"

University of Maryland, Baltimore County, Baltimore, MD
[03/2015] *APS March Meeting*, "Quantum Mechanics is Intuitive," San Antonio, TX
[08/2014] *ARO/NSA Quantum Computing Program Review*, "Solid-state quantum device theory," Arlington, VA
[08/2014] *Colloquium, Physics Dept., Yale University*, "All the (quantum) world in silicon," New Haven, CT
[03/2014] *Invited Talk (given by co-author Yun-Pil Shim), APS March Meeting*, "Bottom-up superconducting and Josephson junction devices inside a Group-lV semiconductor crystal," Denver, CO
[03/2014] *Invited Speaker, Gordon Conference*, Mechanical Systems in the Quantum Regime, "On-chip cavity quantum phonodynamics in silicon and more?," Ventura, CA
[02/2014] *LPS Annual Review*, "Research progress in quantum," College Park, MD
[01/2014] *Researcher of the Year Talk*, *Laboratory for Physical Sciences,* "On-chip cavity-quantum phonodynamics in silicon," College Park, MD
[01/2014] *NSA Research Symposium*, "All the (quantum) world in silicon: toward quantum computing and new quantum devices," College Park, MD
[08/2013] *ARO/NSA Quantum Computing Program Review*, "Research in quantum computing," San Diego, CA
[03/2013] *Invited Talk, APS March Meeting*, "On-chip cavity quantum phonodynamics," Baltimore, MD
[02/2013] *LPS Annual Review,* "Understanding and exploiting phonons for silicon quantum computing and quantum devices," College Park, MD
[02/2013] *Workshop on Silicon Quantum Electronics,* "Understanding and exploiting phonons in silicon quantum devices," Grenoble, France
[11/2012] *Herb Seminar, U. Wisconsin Physics Department*, "On-chip cavity quantum phonodynamics," Madison, WI
[09/2012] *QIBEC Seminar, NIST-Gaithersburg*, "On-chip cavity quantum phonodynamics", Gaithersburg, MD
[08/16/2012] *ARO Quantum Computing Program Review*, "Spin qubits in silicon and on-chip cavity quantum phonodynamics", Denver, CO
[05/08/2012] *Invited Seminar, Naval Research Lab*, "Phonons are next: A sound-based analogue of cavity-QED and other applications of nanomechanics in the quantum limit", College Park, MD", Washington, DC
[04/04/2012] *LPS Seminar*, "Phonons are next: A sound-based analogue of cavity-QED and other applications of nanomechanics in the quantum limit", College Park, MD
[02/29/2012] *APS March Meeting*, "Silicon qubits and phonons/photons", Boston, MA
[02/23/2012] Invited Seminar, University of Queensland, "A sound-based analogue of cavity-QED", Brisbane, AU
[02/14/2012] *International Silicon Qubit Workshop*,"Silicon qubits and phonons/photons", Sydney, AU
[02/2012] *LPS Annual Review*, "Recent work in quantum computing and quantum device physics", College Park, MD
[11/03/2011] *Princeton Center for Complex Materials Symposium: Quantum Control of Solid State Systems*, "A sound-based analogue of quantum electrodynamics in silicon," Princeton, NJ
[08/2011] *DARPA ORCHID/QuASAR Program Review*, "Nanomechanics and Qubits in Silicon," San Diego, CA
[08/2011] *ARO/LPS Quantum Computing Program Review,* "Engineering quantum environments in silicon for quantum computing and new devices," College Park, MD
[05/12/2011] *2nd Annual CNAM Symposium,* "Engineering quantum environments in silicon for quantum

computing and new devices," University of Maryland-College Park
[03/22/2011] *APS March Meeting*, "Considerations for spin-based quantum computing in the solid-state," Dallas, Texas
[02/18/2011] *LPS Program Review,* "Engineering quantum environments in silicon for quantum computing and new devices," College Park, MD
[08/19/2010] *ARO/LPS Quantum Computing Program Review,* "Recent work on quantum computing," Cincinnati, OH
[06/10/2010] *Seminar,* "Spins in silicon quantum dots for quantum computing," UCLA Physics Dept.
[03/15/2010] *APS March Meeting*, "Review of spin and orbital relaxation in silicon quantum dot qubits," Portland, OR
[08/25/2008] *Poster,* "Solid Light – New physics and devices in engineered photon cavity-QED arrays," Gordon Research Conference on QIS, Big Sky, MT
[05/21/2008] *Colloquium*, "Spookytechnology and Society: The progress and implications of quantum information science and technology." EE380 Computer Systems Colloquium, Stanford University, CA
[04/04/2007] *Invited Seminar*: "Quantum phase transitions of light: Using condensed matter physics to control photons," Naval Research Lab, Washington, D.C.
[03/09/2007] *APS March Meeting*: "Quantum phase transitions of light," Denver, CO
[12/20/2006] *QIBEC Seminar*: "Quantum phase transitions of light," NIST, Gaithersburg, VA
[09/06/2006] *Seminar:* "Quantum phase transitions of light," Department of Applied Physics, University of Tokyo (Japan)
[08/09/2006] *Seminar:* "Quantum phase transitions in a photonic superlattice," Riken, (Wakoshi, Japan)
[07/26/2006] *Seminar:* "Quantum Dot Quantum Computing and Spintronics in Silicon Architectures," Department of Applied Physics, University of Tokyo (Japan)
[11/17/2005] *Seminar:* "Quantum Computing and Decoherence in Silicon Architectures," School of Physics, University of Melbourne (Melbourne, AU)
[03/22/2005] *Conference:* "Long-lived spin and valley states in lateral silicon quantum dots for quantum information processing," APS March Meeting (Los Angelos, CA)
[03/23/2005] *Conference:* "Nanotechnology and Society," APS March Meeting (Los Angelos, CA)
[02/28/2005] *Poster*: "Quantum Computing in Lateral Silicon Quantum Dots," Gordon Research Conference, Quantum Information (Ventura, CA)
[12/16/2004] *Invited Talk:* "The Ambassadors of Nano," Fall 2004 Delta Forum (University of Wisconsin-Madison)
[11/09/2004] *Seminar:* "Quantum dot quantum computers and other entanglement-based devices," Physical Chemistry Seminar, University of Wisconsin-Madison, Chemistry Dept.
[10/12/2004] *Invited Talk:* "Spin-Based Quantum Dot Quantum Computing in Silicon," Cavendish Laboratory, University of Cambridge, UK
[12/15/2003] *Poster:* "Spin and Valley States in Silicon for QC," Solid State QIP Conference (Amsterdam, Netherlands)
[03/28/2004] *Conference:* "Spin and pseudo-spin states in silicon for QC: lifetimes," APS March Meeting (Montreal, CA)
[09/30/2003] *Seminar:* "Amazing feats with artificial atoms: single spin readout and fast initialization," Atomic Physics Seminar, University of Wisconsin-Madison, Physics Dept.
[08/09/2003] *Conference:* "Spin Readout and Initialization in a Semiconductor Quantum Dot," 2nd International Workshop on Quantum Dots for Quantum Computing and Classical Size Effects Circuits, Notre Dame, IN
[03/07/2003] *Conference:* "Single Qubit Spin Readout and Initialization in a Quantum Dot Quantum

Computer: Design and Simulation," APS March Meeting (Austin, TX)

PUBLIC WRITING

- C. TAHAN, "Quantum Origin Stories", NQCO Director's Letter, Feb. 02, 2024
- C. TAHAN, "Cheek by Jowl", NQCO Director's Letter, August 03, 2023
- Testimony before the House Science Committee on Advancing American Leadership in Quantum Technology, June 07, 2023
- C. TAHAN, "Why Quantum Matters to You", NQCO Director's Letter, May 31, 2023
- C. TAHAN, "A Pivotal Year for National Quantum Policy", NQCO Director's Letter, April 13, 2023
- C. TAHAN, "Quantum Industry and Society", NQCO Director's Letter, May 4, 2022
- C. TAHAN, "A Quantum Wish", NQCO Director's Letter, February 1, 2022
- C. TAHAN, "The State of Quantum", NQCO Director's Letter, April 6, 2021
- C. TAHAN, "The Quantum Questions", NQCO Director's Letter, December 3, 2020
- C. TAHAN, "Strengthening U.S. Leadership in Quantum Information Science," NQCO Director's Letter, October 20, 2020
- C. TAHAN, "Quantum Information Technology and Industry," *The Quantum Times, newsletter of the American Physical Society's Topical Group on Quantum Information*, Winter Issue 2008
- C. TAHAN, "Spookytechnology and Society," (12 October 2007), http://arxiv.org/abs/0710.2537
- C. TAHAN, "Identifying Nanotechnology in Society," Chapter in *Advances in Computers **71**: Nanotechnology*, edited by Marvin Zelkowitz (Elsevier, 6 July 2007, ISBN: 978-0-12-373746-5). arxiv.org/abs/physics/0612080
- C. TAHAN, "The Nanotechnology R(evolution)," Chapter in *Nanoethics: Examining the Societal Impact of Nanotechnology*, edited by Fritz Allhoff, Patrick Lin, James Moor, and John Weckert (Wiley-Interscience, 10 August 2007, ISBN: 978-0470084175), arxiv.org/physics/0612229 (2006)
- C. TAHAN, "A Physics Walkabout," *Nature* **441**, 904 (June 2006)

PROFESSIONAL SCIENCE ACTIVITIES

- Elected Vice-Chair, Division of Quantum Information, American Physical Society (2025 – pres.)
- NSF SECURE Analytics Advisory Board (2025 – pres.)
- American Physical Society, Public Policy Committee (2025 – pres.)
- Co-Chair, National Quantum Initiative Advisory Committee (2020-2024)
- Co-Chair, National Security Council Small Group on NSM-10 (2020-2024)
- OSTP Co-Chair, NSTC Subcommittee on Quantum Information Science (2020-2024)
- OSTP Co-Chair, NSTC Economic and Security Implications of Quantum Science (2020-2024)
- Government Member, Defense Science Board Quantum Task Force (completed)
- Executive Secretary, Subcommittee on Economic and Security Implications of Quantum Science, National Science and Technology Council, Office of Science and Technology Policy, U.S. (2018-2020)
- Executive Secretary, Subcommittee on Quantum Information Science, National Science and Technology Council, Office of Science and Technology Policy, U.S. (2018-2020)
- Member, NSTC Subcommittee on Research Protections, OSTP (completed)
- Panel Member, National Academy of Sciences (completed)

- LPS Liaison to the Joint Quantum Institute (JQI)
- Reviewer for Vannever Bush Faculty Fellowship program, 2016 (completed)
- Member-at-Large (2-year term), Topical Group on Quantum Information, American Physical Society, 2014
- Regularly serve on source selection committees for DARPA, IARPA, LPS, ARO, AFOSR, NSF, DOE (completed)
- Directly conceived or influenced (in program manager or technical consultant role) creation of multiple quantum information science and technology programs including, e.g., DARPA's Quantum Entanglement Science and Technology (QuEST) and QIS programs, the ARO/LPS Quantum Computing BAA's of 2010 and 2012, the ARO/LPS Quantum Characterization, Verification, and Validation (QCVV) program of 2013, the ARO/LPS New and Emerging Qubit Science and Technology (NEQST) program, the Quantum Computing Graduate Research (QuACGRs) Fellowship program, the ARO/LPS Next New and Emerging Qubit Science and Technology (nextNEQST) program
- Organized workshop on quantum characterization, verification, and validation, Bethesda, MD 2012.
- Organized focus session on quantum nanomechanical and optomechanical systems for APS March Meeting.
- Organized focus session on quantum characterization, verification, and validation for APS March meeting 2012-2016.
- Nominating Committee, Topical Group on Quantum Information, American Physical Society, 2011
- Regular sorter for APS March Meeting for Group on Quantum Information (2010, 2011, 2012, 2013).
- Referee for Science, Nature Physics, Nature Communications, Physical Review Letters, Physical Review B
- Serve on inter-agency committees on quantum information science.
- Advisory Board Member, Sandia National Labs, 2010
- 12/09 – pres: **Affiliate** Member, Center for Nanophysics and Advanced Materials, UMD
- 12/06 – 10/07: **Founding Member**, *Nanotechnology Task Force*, University of Surrey (UK), chaired by Dr. Ian Gibson MP (Advising UK government on nanotech.)
- 05/06 – 08/09: **Founding Member**, *Nanoethics Network*, Aarhus University (Denmark)
- 01/06 – 08/09: **Advisory Board Member**, *The Nanoethics Group* (Santa Barbara, CA)

PUBLIC OUTREACH and MENTORSHIP

- Quantum Intuition XR, Quantum + Arts project
- Q12 Education Partnership and World Quantum Day (many activities)
- LPS Qubit Collaboratory, http://qubitcollaboratory.org (many activities)
- Creator of the Qubit Zoo, http://qubitzoo.com
- Creator of MEQANIC (http://appstore.com/meqanic), a quantum physics based puzzle game for iOS (iPhone, iPad) designed to build intuition about quantum mechanics, released on the Apple App Store April 2014 (via tareso.org, an educational benefit LLC)
- IC Community advisor for 9 Intelligence Community Postdoctoral Fellows, 5 National Physical Sciences Consortium (NPSC) graduate fellows
- Initiated Booz Allen Hamilton Distinguished Speaker Series, 2008 (Notable guest: Math consultant for CBS's "Numb3rs" program)

- Ballston Science and Technology Alliance (BSTA) member and organizer, 2007-2009
- Science Café organizer at NSF/BSTA (organized "Physics and 21st century technology: faster, smaller, and weirder

TEACHING/OTHER EDUCATION

- Front-line, mid-level, and senior leader programs (management training), 2011-2019.
- **Teaching Fellow/Lecturer** (Spring 2005); Science and Technology Studies 201: *Nanotechnology and Society*, 3 credits
    - Created new undergraduate course on nanotechnology and its societal implications. Find the syllabus and complete coursework and textbook at http://tahan.com/charlie/nanosociety/
- DELTA certificate program in research, teaching, and learning (http://delta.wisc.edu/), University of Wisconsin-Madison