AMW52

The Fifty-Second Asilomar Microcomputer Workshop

May 6-8, 2026

Dealing winning chips for 52 years.

Wednesday, May 06 (All Times Pacific!)

01:30PM: Welcome to AMW #52 - Tim Požar*, TwoP LLC*

- *on-site* Welcome to AMW! - Tim Požar, *TwoP LLC*

01:45PM: The Climate and Space Above Us - Brian Berg*, Berg Software Design*

- *remote* Beta-VOR: Economical Betavoltaic Electrical Power for Deep Space Applications - Robert G. Kennedy III, *Institute for Interstellar Studies-US*
- *on-site* Don't Look Up: There Are Sensitive Internal Links in the Clear on GEO Satellites - Nadia Heninger, Wenyi Morty Zhang, *University of California, San Diego*
- *on-site* When Science Becomes a Target: Communicating Climate in the Age of Disinformation - Chris Gloninger, *Woods Hole Group*

03:15PM: Break

03:30PM: Rewriting Reality: Film, Media, and the New Creative Economy - Nancy Blachman*, G4G*

- *on-site* From Dog Videos to Diamond Electrons: A Year Inside the AI Video Pipeline - Jamie Thompson, *Google X*
- *remote* Attention Economics 101: Film & Other Cultural Works in the Age of AI - Nina Paley, *Independent Animator*
- *on-site* Raising Awareness and Motivating People to Take Action - Nancy Blachman*, G4G* & Chris Gloninger, *Woods Hole Group*

05:00PM: Meet the New Minds! - Eric Allman*, UC Berkeley (retired)*

- *on-site* Please welcome these 23 in-person first-timers: Raines Cohen, Duncan Crombie, Adrian Cucoș, Andres Erbsen, Stephanie Frank Singer, Chris Gloninger, Alex Glow, Stu Grossman, Nadia Heninger, Nursultan Kabylkas, David Marsh, Tori Noquez, Jade Philipoon, Curtis Prem, David Relman, Jose Renau-Ardevol, Peter Schwabe, Roman Snytsar, Charles Sobey, Camille Stavrakas, Giacomo Vacca, Morgan Whitlow, and Morty Zhang
- *remote* Please welcome these 2 remote first-timers: Daniel Palanker and Nina Paley

05:15PM: Welcome Reception & Room Check-In

06:00PM: Dinner (Seascape Dining Room)

07:30PM: Athematic (Short) Talks #1 - Ken Shoemaker*, Intel Corp. (retired)*

- *on-site* Publishing in the Age of AI - Bill Pollock, *No Starch Press*
- *on-site* AI x Law - Katy Levinson, *Sidesolve*
- *on-site* Convivial AI: Community-Scoped Infrastructure Beyond the Hegemonic Cloud - Adam Smith*, UC Santa Cruz*
- *on-site* Electronics and Prototyping - Alex Glow, *Hackster.io*
- *on-site* The Electrification of (Almost) Everything - Rob Poor, *Energy Horizons*

- *on-site* If you have the WILL, there is a way… - Paul Monus, *BP (retired)*
- *on-site* A Heart to Heart with Jon Steinhart - Jon Steinhart, *Four Winds Vineyard*
- *on-site* Ethernet's 50-Year Bug - Paul Borrill, *DÆDÆLUS*
- *on-site* Last 20 Years in SDR Technology - Matt Ettus, *Ettus Research*
- *on-site* Social Consequences of GPS Jamming - Chuck McManis, *Independent*
- *remote* From BEHEMOTH to Bionode: 40 years of Mobile Computing - Steven K. Roberts, *Harbor Digitizing*

Thursday, May 07 (All Times Pacific!)

08:30AM: "Safe & Sound" Is Not Enough - A Complete & Formally Verified Session - Thaís "barbie" Hamasaki*, Intel*

- *on-site* Cryptographic Constant-Time and Beyond - Peter Schwabe, *Max Planck Institute*
- *on-site* Software-Verification Techniques for Verification of RTL Against Sophisticated Specifications - Andres Erbsen, *Google*
- *on-site* Information-Flow Analysis for a Custom Processor - Jade Philipoom, *Independent*

10:00AM: Break

10:15AM: Entangled Insights - Thaís "barbie" Hamasaki*, Intel*

- *on-site* The Collaborations of Quantum Computing, AI/Machine Learning, and Semiconductors - Wei-Ti Liu, *Quantum Technology, LLC*
- *on-site* Building a Photonics-Based Quantum Computer: From Qubit to Fault Tolerance - Camille Stavrakas, *PsiQuantum*
- *on-site* Project Chapel - One of the World's Only Quantum Computers Installed at a University for the First Time in History - Curtis Priem, *RPI*

NOON: Lunch (Seascape Dining Room)

01:30PM: THE Eponymous Microprocessor Session - Ken Shoemaker*, Intel Corp. (retired)*

- *remote* Trustworthiness: Reflections on My 73 Years of R&D - Peter G. Neumann, *SRI International Computer Science Lab* given by Robert N. M. Watson, *University of Cambridge*
- *on-site* Programming Living Systems: The CL1 Platform for Biological Microcomputing - Dr. Duncan Crombie, *Cortical Labs*
- *on-site* The Story Behind Kazakhstan's First Microprocessor - Nursultan Kabylkas

03:00PM: Break

03:15PM: Athematic (Longer) Talks #2 - Ken Shoemaker*, Intel Corp. (retired)*

- *on-site* A Primer on UltraEthernet - Rip Sohan, *AMD*
- *on-site* Digital Archaeology: Lessons for Emerging Archive Technologies - Chuck Sobey, *ChannelScience*
- *on-site* Theorem Proving vs. AI *or* Engineering vs. the Hype Machine - James Gosling, *JustMe*
- *drive-by* Research Mathematics and the Magical Arts: An Unexpected Overlap - Tori Noquez, *Saint Mary's College of California*

05:05PM: Reception

06:00PM: Dinner (Seascape Dining Room)

07:30PM: Open Discussion: A *RICH* Asilomar Tradition (RATS) - Kathleen Tuite*, ODK*

Friday, May 08 (All Times Pacific!)

08:30AM: MedTech Madness: From Nano to Neural and Beyond - David Shier*, DIT-MCO*

- *drive-by* What is Havana Syndrome and Why Does It Matter? - David Relman, *Stanford University*
- *on-site* Warm Salt Water and Firmware Updates: Engineering Active Implantable Medical Devices - David Marsh, *Independent*
- *drive-by* Photovoltaic Restoration of Sight in Retinal Degeneration - Daniel Palanker, *Stanford University: Department of Ophthalmology and Hansen Experimental Physics Laboratory*
- *drive-by* Size Really Does Matter: Biological Nanoparticles Are Changing Biomedicine - Giacomo Vacca, *Kinetic River Corp*.

10:30AM: Break & Room Check-Out (Please, turn in your room key at the Registration Table)

10:40AM: Cyber Cyber: Secrets, Surveillance, and the Fight for Privacy - Mark Seiden*, Internet Archive*

- *on-site* Challenges in Software Verification - Falcon Darkstar-Momot, *Dartmouth College*
- *on-site* Covert Communications - Chuck McManis, *Independent*
- *on-site* Legislative Sausage in Sacramento - Lou Katz, *Metron Computerware*

11:45AM: Workshop Wrap-Up - Tim Požar*, TwoP LLC*

Participants' Assistance Needed for A/V Equipment Breakdown!

NOON: BBQ Lunch at Fred Farr Forum

Organizing Committee

Eric Allman	Thaís Moreira Hamasaki	David S H Rosenthal
Brian Berg	Lou Katz	Mark Seiden
Nancy Blachman	Robert G. Kennedy III	Shevek
Christine Cockey	Chuck McManis	David Shier
Mary Eisenhart	Tim Požar	Ken Shoemaker
Janet Guns		Kathleen Tuite

Mark Your Calendars for AMW53: May 5-7, 2027

May 6 Anniversaries:

- 499 years ago: Spanish and German troops sacked Rome; scholars consider it the end of the Renaissance.
- 77 years ago: EDSAC, the first practical electronic digital stored-program computer, ran its first operation.
- 28 years ago: Steve Jobs unveiled the first iMac (the iMac G3) at the Flint Center in Cupertino, CA

May 7 Anniversaries:

- 232 years ago, during the Reign of Terror: Robespierre introduced the Cult of the Supreme Being
- 74 years ago: integrated circuit concept, basis for all modern computers, first published by Geoffrey Dummer

May 8 Anniversaries:

- 232 years ago, during the Reign of Terror: Antoine Lavoisier tried, convicted and guillotined in one day in Paris
- 54 years ago: Nixon orders the mining of seaports in North Vietnam

Bios of AMW Speakers and Session Chairs

Adam Smith is an Associate Professor of Computational Media at UC Santa Cruz, where he applies Artificial Intelligence techniques to interactive media design and pedagogy. He operates BayLeaf, an open-weight AI service for the UCSC campus community, as an exercise in prefigurative computing.

Alex Glow creates electronic projects, tutorials, unboxings, and video interviews with hardware luminaries as the first independent Pro Partner at Hackster.io[1] - the online community for hardware developers. She also produces videos and assists with events for other organizations, such as Arduino[2] and Edge Impulse[3]. [1] http://hackster.io/glowascii, [2] http://arduino.cc/, [3] http://edgeimpulse.com.

Andres Erbsen leads the ISE Formal team at Google. Previously, Andres was a PhD student in the lab of Adam Chlipala at MIT CSAIL. He works on building reliable and trustworthy computer systems using computer-checked proofs. The aim is to virtually eliminate bugs by mechanizing the engineering disciplines behind computer infrastructure along with the justification of their adequacy and compatibility, evolving proofs and code in tandem. The challenge lies in explicating domain-expert intuition into workable and appropriate formal models that help rather than hinder development. Andres sees his efforts as applied work with a long time horizon, sometimes showing off parts of the stack in separate large-scale deployments: Code generated and verified using our research artifacts was likely used by your web browser to secure the connection to this site!

Bill Pollock left New York after being fired from Freeman for Osborne/McGraw-Hill where he published some big and boring manuals, computer game books (fun, in the early days of Maxis and Sierra Online), and books about things like SoundBlaster. His managers would pull books out of his hands because he kept working on them. After being fired from Osborne, Pollock founded No Starch Press where he remains an active editor and works closely with many of their authors.

Brian Berg has been consulting for over 40 years, specializing in data storage including flash memory. He is Past Technical Chair of the FMS: the Future of Memory and Storage conference. His AMW attendance and Program Committee work since 1987 has expanded his circle of friends and knowledge base. His IEEE officer activities include IEEE Milestones, and he has been involved in proposing and officiating at dedications for Milestones in the US and UK, including the EEPROM and Flash Memory, CP/M, SHAKEY the Robot, the Mother of All Demos, CDMA, DIALOG, the Lunar Laser Ranging Experiment (LURE), Gravitational Wave Antenna, Manchester “Baby” and Atlas computers, the Univ. of Utah's Computer Graphics and Visualization Inventions, IEEE 754 FP Standard, Pixar's RenderMan, Intel 4004, Xerox Alto, Laser Printer, Ethernet, TCP/IP, IEEE 802 Networking Standards, Google's PageRank Algorithm, FFT, Mauna Kea 88” Telescope, USB, 8087, BELLMAC-32, FPGA, Manchester Code, Medical Informatics, Colossus Computer, Mouse, and Telepresence Surgery.

Camille Stavrakas is a Research and Development engineer at PsiQuantum, a photonics-based quantum computing startup company (Palo Alto, California). Since joining the company in 2021 she has been working on integrated quantum photonics for error-corrected linear quantum computing. She earned her degrees in different fields of physics from universities in Paris, Singapore, Uppsala and Cambridge. She completed her PhD in Physics in 2019 at the Cavendish Laboratory, University of Cambridge. She then carried out postdoctoral research at the Molecular Foundry (Lawrence Berkeley National Laboratory, Berkeley, California). While pursuing her PhD research, she worked as a free-lance consultant in emerging technologies with clients such as BAE Systems and the British Ministry of Defense. Outside of the lab she is an amateur violin-maker, beekeeper, scuba-diver, traveler, glider pilot, motorcyclist and more recently circus aerialist.

Chris Gloninger is a Certified Consulting Meteorologist and Senior Scientist in Risk and Climate Communication at Woods Hole Group, and the subject of the documentary The Weatherman (Campfire Studios, executive producer Leonardo DiCaprio). A former television chief meteorologist who left broadcast news after being directed not to say "climate change" on air, he now reaches millions through science communication, and advocacy for evidence-based climate policy.

Chuck McManis In the early 2000's a group from the Air Force Research Laboratory demonstrated to the Dept of Defense that a small group, with off the shelf ("COTS") drones, could defeat a much larger and "better" equipped opponent. This set off something of a fire alarm inside the DOD. In 2016 I joined a small startup in Sunnyvale working on Electronic Warfare R&D for the Army's Science and Technology Directorate C5ISR. Over the next 7 years I worked on systems both classified and unclassified that are designed to detect, deflect, and defend against these threats.

Chuck Sobey is Founder and Chief Scientist of ChannelScience, where he leads the design and commercialization of AI-enabled, high-resolution magnetic scanning technology for recovering rare data sets from legacy tape formats for AI/ML training. His work with these “accidental archives” provides a unique view of the long-term fragility of digital information and what is required for new archival technologies to remain recoverable decades or centuries into the future. Chuck is an expert in signal processing and error-correction architectures for advanced memory and storage technologies. He is co-founder and General Chair of Chiplet Summit, the leading conference focused on advancing hardware through chiplet-based architectures. He has over ten patents, is a four-time SBIR award winner from the U.S. Department of Energy, and is a recipient of the inaugural Texas Innovation Award. He is an IEEE Senior Member and holds ECE degrees from the University of California, Santa Barbara and Carnegie Mellon University.

Curtis Priem is the guy that proposed we stop trying to make the CPUs run faster and we should follow Moore’s Law: use transistors to change the way computing is done. IEEE and Sequoia Capital rejected the idea. Curtis ignored them.

David Marsh has been designing embedded systems for implantable medical devices since 1991 - starting with glucose sensors at the Alfred Mann Foundation, continuing with insulin pumps at Medtronic MiniMed, drug pumps and spinal cord stimulators with Boston Scientific, and nearly two decades at Second Sight Medical Products making devices to help blind people see. More recently he’s been working as a consultant bringing early-stage prototypes to production-ready devices.

David Relman, MD is the Thomas C. and Joan M. Merigan Professor in medicine and in microbiology & immunology at Stanford University. An early pioneer in the study of the human microbiome (the microbes that inhabit the human body and contribute to health and disease), Relman has also spent several decades advising the US government on current and future biological threats, including a 10-month stint in 2024 as a senior advisor in the Office of Pandemic Preparedness and Response in the White House. Of relevance to this presentation, he has led two studies in recent years, one for the US National Academies of Science and the other for the US intelligence community, on the potential cause of an enigmatic syndrome affecting US government employees working overseas, known as Havana Syndrome.

David Shier is president of DIT-MCO International, a leading provider of wiring harness test equipment for the aerospace industry. David's experience in this very niche industry started as what was supposed to be a summer job that resulted in a life-long career (with a couple of entrepreneurial detours along the way). One of those detours into handheld computing led to his introduction to AMW more than 20 years ago. He is a member of the AMW Program Committee.

Dr. Duncan Crombie is Cortical Labs' scientific application specialist, he works at the intersection of science and application, translating advances in biological computing into tools people can meaningfully engage with. With over 20 years' experience in stem cell biology and disease modelling, he brings a practical perspective to how living neural systems can be harnessed as programmable, adaptive technologies.

Falcon Darkstar-Momot is a PhD student at Dartmouth working on ways to reduce software vulnerabilities using an approach that combines LangSec principles, engineering ethics, and formal methods. Falcon does a variety of other things too, including managing product security at Aiven, and in their spare time, flying planes and using radios.

Giacomo Vacca Ph.D., earned B.A. and M.A. degrees in physics from Harvard University and a doctorate in applied physics from Stanford University. With Nobel Prize winner Bob Laughlin as advisor, he developed a novel ultrafast light scattering technique for his dissertation. He worked at Exxon Research, Abbott Laboratories, and telecom and optics startups; he also cofounded BeamWise, a provider of optical system design tools, acquired in 2023 by Design Power. In 2010 Vacca founded Kinetic River, a biophotonics design and product development company focused on particle analysis. He has been issued 82 patents, several research awards, and seven SBIR grants. He is a past Abbott Research Fellow, a senior member of both SPIE and Optica, a member of the Editorial Advisory Board of BioPhotonics magazine, and a scientific reviewer for the NIH.

Jade Philipoom is interested in improving the security of low-level embedded systems. She worked on the OpenTitan[0] project, an open-source silicon root of trust, where her focus was cryptographic code as well as more general security design. She has also done some formal methods projects, most notably Fiat Cryptography [1], a verified compiler written in Rocq [2] for optimized elliptic-curve cryptography. [0] https://opentitan.org/, [1] https://github.com/mit-plv/fiat-crypto, [2] https://rocq-prover.org/.

James Gosling is best known for Gosling Emacs, as the designer of the Java language at Sun Microsystems, and after that, stints at Liquid Robotics and Amazon AWS. He has a PhD from CMU and has numerous awards including the IEEE John von Neumann Medal. His much more detailed bio is at https://nighthacks.com/jag/bio.

Jamie Thompson is a materials scientist trained at Imperial College London who has worked at NASA Ames and Xerox PARC on advanced manufacturing and zero-gravity systems. Today he builds AI-augmented production pipelines in Los Altos, exploring what happens when the experimental mindset of a laboratory scientist is applied to generative media.

Jon Steinhart is a born geek who was in the right place at the right time to be employed by Bell Labs starting in high school. He's done a large variety of hardware and software design but is now a geezer with failing body parts hence the talk. He's also a farmer and an author.

Kathleen Tuite has a PhD from University of Washington where she connected citizen science and 3D computer vision via the games Foldit and PhotoCity. She now works for GetODK, architecting the open source mobile offline data collection platform ODK, which is used for humanitarian purposes around the globe. Kathleen inherited the RAT timekeeper position from Mary Eisenhart in 2018. She is a member of the AMW Program Committee.

Katy Levinson is a co-founder of Sidesolve, a company which uses data science to fight corporate fraud and which has had significant success pursuing pandemic paycheck protection loan fraud through the federal civil court system. She likes to cook, bike, computer, learn, and organize in her local community.

Ken Shoemaker spent nearly 40 years at Intel where he had the privilege of developing the microarchitectures of some of Intel's famous microprocessors (e.g., the Pentium) and some infamous ones (e.g., the Itanium). He had the honor of being recruited into Intel by AMW's long time chairman, John Wharton, who then invited Ken to attend his first AMW in 1985 where he presented the architecture and microarchitecture of the (then-new) i80386. Since retiring in the midst of the Covid pandemic at the end of 2020, his brain has turned to mush but he still relishes every opportunity to mingle with folks in the real world doing cool stuff. He is a member of the AMW Program Committee.

Lou Katz, Ph.D. was a molecular biologist at MIT studying the structure of nucleic acids and bacterial viruses with X-ray crystallography, He then set up the interactive computer graphics lab at Columbia University to do realtime displays of nucleic acid structure. In his copious spare time he started the USENIX association by organizing the first meeting of those who had obtained copies of Unix. He served as the first president of the Usenix Association and then as a director, and later served on the board of ACM SIGGRAPH. He is now a Director at Oakland Privacy, a citizen's coalition that works regionally to defend the right to privacy, enhance public transparency, and increase oversight of law enforcement, particularly regarding the use of surveillance techniques and equipment. He throws OpenHouse parties.

Mark Seiden has done security, network, and software research/engineering at Internet Archive, Yahoo!, IBM Research, Lucasfilm, *et al*., and taught at Columbia and UC Berkeley. He has done Multiple National Academies studies, and was an expert witness in over 50 civil and criminal cases. Seiden has also had parallel careers in words (editing books and magazines) and in music (as a recording engineer, and on infrastructure for digital audio). His Erdős number is 3.

Matt Ettus is the founder of Ettus Research, a company known for developing the Universal Software Radio Peripheral (USRP), a family of Software Defined Radio (SDR) hardware devices which are widely used in SDR applications. He has been influential in the open-source community, particularly through his contributions to the GNU Radio project.

Morty Zhang is a CSE PhD student at UC San Diego, with research interests in real-world wireless and network security, including satellite, Bluetooth Low Energy (BLE), and cellular systems. He is a clueless Morty aiming to become a brilliant Rick, while a contrarian Rick trying to stay less cynical like Morty.

Nadia Heninger is a Professor of Computer Science and Engineering at UC San Diego. Her research is mostly in mathematical and real-world cryptanalysis.

Nancy Blachman has been working the past 20 years with filmmakers to raise awareness about issues, people, & situations that might otherwise go unnoticed, uplift marginalized voices, humanize and make their stories accessible, and encourage viewers to take action. Documentaries she has supported include Julia Robinson and Hilbert's Tenth Problem, The Grab, Stripped for Parts, Counted Out, Dark Money, Free for All: The Public Library, and The Social Dilemma. Nancy often watches documentary films at home while rowing on her indoor rower. She has been a judge for the News & Documentary Emmys for 5 years and this year is a member of the AMW Program Committee.

Nina Paley is an American cartoonist, animator, and free culture activist. She was the artist and often the writer of the comic strips Nina's Adventures and Fluff, after which she worked primarily in animation. She is perhaps best known for creating the 2008 animated feature film Sita Sings the Blues, based on the Ramayana, with parallels to her personal life.

Nursultan Kabylkas Teacher, engineer, and researcher curiously exploring problems at the intersection of education, computing, hardware, and emerging technologies.

Paul Borrill is President and CEO of DÆDÆLUS Inc. and an independent researcher into the nature of time, causality, and reliable computation. Previously he was Distinguished Engineer, Director of Advanced Systems, and Chief Scientist for IR at Sun Microsystems, VP/CTO at VERITAS Software, VP/Chief Architect for Storage Systems at Quantum, was on the infrastructure team at Apple, and designed the onboard computer system for the CHASE experiment on Spacelab-2 (STS-51F, Challenger, 1985). Paul is Founding Chairman of SNIA, past VP of Standards and VP of Technical Activities for the IEEE Computer Society, and Chair of the IEEE Futurebus working groups (P896.1/.2). His PhD in Physics is from University College London. Ethernet has been annoying him since about 1985.

Peter G. Neumann has been a computer professional since 1953, including 10 years at Bell Labs in Murray Hill in the 1960s. He is in his 55th year at not-for-profit SRI International (formerly Stanford Research Institute). After being a Fulbright Scholar for 2 years in Darmstadt, he taught courses at Stanford, Berkeley, and Maryland, and then wound up with doctorates in both 1960 and 1961. He was in four National Academies study groups, and is a Fellow of ACM, IEEE, and AAAS.

Peter Schwabe is a scientific director at MPI-SP and a professor at the Institute for Computing and Information Sciences at Radboud University, Nijmegen, The Netherlands. His research is in cryptography, specifically the design and secure implementation of cryptographic primitives. In recent years he is working on post-quantum cryptography, i.e., cryptographic primitives that run on standard hardware, but remain secure even against attackers equipped with a large universal quantum computer. He was awarded an ERC Starting Grant for this work on engineering post-quantum cryptography. Peter is interested in high-assurance cryptography, an area that brings together techniques and tools from formal methods and research into cryptographic software to improve the quality of cryptographic systems we use every day to protect our digital assets.

Rip Sohan is a senior systems architect at AMD, focused on high-performance networking, SmartNIC architecture, and hardware–software co-design. Lead end-to-end system architecture spanning NIC micro-architecture, firmware, kernel networking, and user-space acceleration, with deep expertise in RDMA, multipath transport, and emerging UET/UEC ecosystems. Previously, he held architecture leadership roles at Xilinx and Solarflare Communications, and was a senior researcher at the University of Cambridge, where he led work in reproducible computing systems and low-latency networking. He holds a PhD in Computer Science from Cambridge, with research spanning operating systems, storage architecture, and endpoint networking architecture.

Robert G. Kennedy III, P.E., callsign K3TVO, is a polyglot systems engineer with 40 years' experience who does green energy for interesting people all over the world. His family background is nautical and nuclear, being the proud son of Robert Kennedy Jr, third-assistant engineer on NS *Savannah*, the only atomic ship this country ever built. Many moons ago, he designed a transmutation facility for producing gram-quantities of californium-252 for the (never-built, alas) Advanced Neutron Source. This work was presented at AMW20 in 1994. He spent that year in Washington DC working in the U.S. House Subcommittee on Space as ASME's Congressional Fellow. Among other adventures up there, he obtained a high-resolution photograph of Capitol Hill and the Pentagon from a Soviet spy satellite for the remote sensing hearing with the intelligence committee that led to the Presidential Decision Directive-23, Commercial Remote Sensing Policy, which is why you have near-real-time military-grade imagery on your smartphone today. From 2016-2023, he served as the general chair of AMW, having been importuned by the late great John Wharton. In his copious free time, he moonlights as co-founder / president of two grass-roots community-scale space non-profits: Tennessee Valley Stellar Corporation [0] building a prototype trillionth-scale Cubesat-based sunshade to fly @ SEL1. They make sub-$1K open-source 1-U Cubesat, which all y'all have seen before at AMW48-51. The Institute for Interstellar Studies-US [1], co-investigator of NASA Innovative Advanced Concepts (NIAC) award-winning grant "Swarming Proxima Centauri" [2]. In this capacity, he was invited to join NASA's mission team at Goddard Space Flight Center putting together an ultralightweight flyby in the mid-2040s of Neptune's big moon Triton. BetaVOR technology is the baselined power source for this mission. [0] www.stellarcorp.tv, [1] www.i4is.us, [2] https://youtu.be/XXW_keR5OIM.

Robert N. M. Watson is a FreeBSD developer, and founder of the TrustedBSD Project. He is currently employed as a Professor of Systems, Security, and Architecture in the Security Research Group at the University of Cambridge Computer Laboratory.

Thaís "barbie" Moreira Hamasaki is a former ballerina, physics researcher, and reverse engineer, who shifted to offensive security research at Intel in order to conquer the world (of CPUs). Currently, she spends an unusual amount of time (speculatively) looking at CPU (micro-)architecture performance features and security implications… and ppts. Previously, she worked in the threat detection industry as a malware reverse engineer, was the lead systems engineer at the University of Hamburg, while being a physics research scientist at DESY. Outside Intel, barbie serves at the board of BlackHoodie, a hacker bootcamp for women as well as at the board of Open Security Training. She is a member of the AMW Program Committee.

Tim Požar, KC6GNJ. Long time engineering the Internet in particular for low income and digital isolated communities.

Victoria "Tory" Noquez, Dr., is a professor of mathematics at Saint Mary's College of California. Her research is in formal logic, she is particularly interested in connections between category theory and fractals. During her free time, she is an accomplished professional magician who has performed all over the world, and is a favorite at the World Famous Magic Castle in Hollywood, CA.

Wei-Ti Liu was Co-Founder, General Manager, and Vice President of Engineering at PLX Technology, where he oversaw operations, engineering, and foundry relationships. He became President and CEO of NetChip Technology (now Broadcom) Inc. Wei-Ti brings experience in ASIC and VLSI chip design, with prior roles as a design engineer at IBM, AMD, and Intel.

Abstracts of Assorted AMW52 Talks

A Heart to Heart with Jon Steinhart - Jon Steinhart This is a talk about modern heart surgery as it affected the speaker. It covers the process of getting a set of heart issues diagnosed and treated. It's amazing how routine it has become. Being me, I acquired all of my imaging. The state of the art in open source DICOM tools has improved dramatically over the last decade and in many cases better than commercial products. The talk will include a survey of tools and lots of cool imaging.

A Primer on UltraEthernet - Rip Sohan UltraEthernet is an emerging industry effort to evolve Ethernet into a fabric capable of supporting large-scale, latency-sensitive, and loss-intolerant workloads such as AI and HPC. This talk will be a concise primer on UltraEthernet, covering the motivation for the initiative, the architectural gaps in traditional Ethernet that it addresses, and the core concepts introduced by the UltraEthernet specification. It will outline the control and data plane building blocks, congestion control and reliability mechanisms, and how UltraEthernet integrates with existing Ethernet and RDMA ecosystems. The goal is to equip attendees with a clear mental model of what UltraEthernet is, what problems it is designed to solve, and how it fits into next-generation data center networks.

AI x Law - Katy Levinson We're going to examine some current questions about AI and how things seem to be currently shaking out in terms of case law, settlements, and recent events. I am not a lawyer and this is not legal advice.

Attention Economics 101: Film & Other Cultural Works in the Age of AI - Nina Paley I will discuss free culture, free distribution, and how much has changed since my film Sita Sings the Blues. [0] https://bit.ly/4ur9fuV

Beta-VOR: Economical Betavoltaic Electrical Power for Deep Space Applications - Robert G. Kennedy III In "deep space" (beyond Jupiter), the power of sunlight is too weak (<4% of Earth's) for solar cells to generate electricity. Nuclear fuel is the only primary energy source that will work farther out. For the past 60 years, NASA has utilized plutonium-238 in radioisotope thermoelectric generators (RTGs), which transform the heat of 5-MeV alpha decay into electricity via a low-efficiency (~5%) process called the Seebeck Effect. About 40 missions have used RTGs, each generating a few hundred watts of electrical power, including the two famous Voyager space probes launched in 1977. Pu-238 is rare and expensive ($7,000-$50,000/gram); an RTG fueled with it costs about $1 million per electrical watt. The essential precursor, Np-237 has not been produced since the end of the Cold War. Many scientifically worthy missions cannot fly because of the lack of Pu-238 – all stock on hand will be used for the *Dragonfly* mission to Saturn's moon Titan, after which there will be no more. Last summer the White House cancelled the RTG program, zeroing it out in FY29. As of this moment, this decision means no more spacecraft will fly beyond Jupiter. Fortunately, there appears to be a feasible replacement using the cheap ($20/gram) and abundant radioisotope strontium-90 sandwiched with cheap, simple, silicon photovoltaic material. Powerful ~3-MeV beta particles (fast electrons) from Sr-90 are captured by the semiconductor, generating electron-hole pairs that become electrical current in the presence of an applied voltage (hence the name betavoltaic) and at much higher efficiency (~20%) than RTGs. Furthermore, this technique can be scaled downward in size to the tiniest gram-scale spacecraft, which cannot be achieved using RTGs. In honor of Our Fair City of Oak Ridge, the authors dubbed their innovation "Beta-VOR" (βV), which could rescue this country's endangered Outer Planets portfolio. Robert will discuss the advantages of βV, as well as exhibit a conceptual design that he presented to the American Nuclear Society's Winter Meeting last November in Washington, D.C.

Building a Photonics-Based Quantum Computer: From Qubit to Fault Tolerance - Camille Stavrakas In this talk we will introduce PsiQuantum’s approach to quantum computing and the challenges the company is facing. We will motivate the use of photons as qubits and how to generate them, before introducing the building blocks of our error-corrected architecture. Finally, we will give an overview of the technical obstacles that are yet to overcome, from ultra-low-loss optical interconnects to cryoplant facilities in order to build such a machine.

Challenges in Software Verification - Falcon Darkstar-Momot We continue gradient descent through the body of extant computer code for software bugs and vulnerabilities. To find them, we apply pattern matching, manual search, and exhaustive testing, with a growing variety of technologies from unit testing to symbolic execution. In this presentation we will go through some simple code that defies these approaches to software security testing: Peterson's 2-process mutex algorithm, and a minor variant of it. Then we will discuss how in the past we have lifted code to theory to root out such bugs, but also why developers don't do this. But it can be done: the reduction of a described algorithm to practice in the form of extracted callable code in widely-used general purpose languages like Rust and C offers a path forward for code we can prove doesn't have any security bug we state.

Convivial AI: Community-Scoped Infrastructure Beyond the Hegemonic Cloud - Adam Smith Dominant generative AI platforms share a common architecture: trillion-parameter models, opaque system prompts, subscription pricing, and data harvesting, all optimized for a global audience of generic consumers. I argue that most communities don't need any of this. Combining Illich's convivial tools, Schumacher's appropriate technology, Bookchin's municipalism, and Lenin's dual power, I describe BayLeaf, a lightweight AI service I built for UC Santa Cruz using medium-sized open-weight models, pay-per-token routing through zero-data-retention providers, and institutional single sign-on. The design is deliberately non-scalable: scoped to one campus community of 25,000, it can integrate with local systems (course schedules, email, LMS) in ways no global platform ever could. Rather than a product to adopt, BayLeaf is a pattern to copy and remix.

Covert Communications - Chuck McManis Need to communicate but don't want to use your phone? Wondering if that Cessna flying overhead is capturing your IMEI? How about checking on people you care about who are potential targets for over aggressive federal action? All of these benefit from having ways to communicate and get status updates that are "off the beaten path" and so less likely to be a source of problems. I'll talk about MeshCore, MeshTastic, and some fun ways that an off the shelf SDR can get the message out with nobody the wiser.

Cryptographic Constant-Time and Beyond - Peter Schwabe The "constant-time" programming paradigm is widely accepted as a first-line defense against microarchitectural attacks. The idea is that programs avoid all data flow from secrets into branch conditions and memory addresses. Unfortunately, multiple recent works have shown that even code that is carefully written to follow this paradigm in C, Rust, or other high-level general-purpose programming languages, may compile to binaries that do not follow the property. Also, while the paradigm was originally believed to systematically protect against timing attacks, it has become clear that more advanced microarchitectural attacks are able to obtain software-visible leakage even from constant-time code. In my talk, I will show that we do not have to give up hope to systematically protect cryptographic software against microarchitectural attacks. However, such protections will require updating the tooling we use to write and compile such code.

Digital Archaeology: Lessons for Emerging Archive Technologies - Chuck Sobey Magnetic tapes from the 1960s through early 2000s store rare datasets that have renewed value for AI/ML training and sovereign AI initiatives. For nonproliferation initiatives, irreproducible nuclear test data stored on thousands of obsolete magnetic tapes can be used to improve the accuracy of worldwide seismic monitoring. The industry's method for recovering such legacy data is to reconstruct vintage tape drives from scavenged components. This relies on fragile hardware, diminishing domain expertise, and media that has deteriorated over decades. ChannelScience is developing a modern magnetic scanning system to read legacy tape formats without using any components from the original drives. Recovering data from these "accidental archives" provides a blueprint for what has made past data recoverable. Design principles are proposed for emerging purpose-built archival technologies, such as optical and DNA-based storage, to keep data accessible and understandable for digital archeologists of the future.

Don't Look Up: There Are Sensitive Internal Links in the Clear on GEO Satellites - Nadia Heninger, Wenyi Morty Zhang We pointed a commercial-off-the-shelf satellite dish at the sky and examined all of the geostationary satellite communications visible from our vantage point. A shockingly large amount of sensitive traffic is being broadcast unencrypted, including critical infrastructure, internal corporate and government communications, private citizens' voice calls and SMS, and consumer Internet traffic from in-flight Wi-Fi and mobile networks.

Ethernet's 50-Year Bug - Paul Borrill Every Ethernet frame is fire-and-forget. The sender has no mechanism to distinguish "not delivered" from "delivered but unacknowledged" – a 50-year-old omission that the industry has papered over at every higher layer (TCP retransmits, storage journals, distributed consensus) without ever fixing at the wire. This talk names the category mistake (FITO – Forward-In-Time-Only), shows why "adding reliability on top" cannot close the loop, and sketches the bilateral alternative: Open Atomic Ethernet, a NIC-level Reliable Link Failure Detector that makes both endpoints agree on link state in sub-millisecond time. A live demo will be in the Demo Room.

From BEHEMOTH to Bionode: 40 years of mobile computing - Steven K. Roberts For decades I have built integrated technomadic systems - from the BEHEMOTH computerized bicycle that covered 17,000 miles through the 1980s to the geeked-out Microship trimaran. Bionode is the latest: a doorway-sized, rollable personal lab that combines local AI, archival storage, networking, media production tools, power, development systems, comms, and environmental awareness into a single coherent platform on a hand truck. Designed as a grab-and-go cognitive prosthesis rather than a computer, it serves as a conversational docent, survival knowledge seed, and mobile research environment. Although functionally stand-alone, it travels on a shock isolation platform in a 24-foot mobile laboratory with machine shop, electronics lab, 3D printing, and life support facilities (out in the parking lot at AMW). The BEHEMOTH bicycle may be seen at the Computer History Museum, along with my Homebrew 8008 from 1974.

From Dog Videos to Diamond Electrons: A Year Inside the AI Video Pipeline - Jamie Thompson When a materials scientist encounters a new instrument, the first thing they do is characterize it - not use it for its intended purpose, but rather discover what it actually does, where it fails, and what it's secretly good at. That's how I've spent the past year with AI video tools. None of them work the way the marketing suggests. But if you approach them with an engineer's mindset, production workflows start to emerge. Once they do, the engineering gets out of the way and the tool becomes a paintbrush. Workflows that used to take studios weeks with hundreds of people now fit in one person's hands, and the interesting part isn't the technology itself -- it's the gap between what these tools can theoretically do and what you can actually finish; that gap is where the engineering lives. On the other side is creative work that didn't used to be accessible to people like me. This talk walks through what I found and shows some of the work.

Information-Flow Analysis for a Custom Processor - Jade Philipoom Sometimes I write cryptography for a custom processor, and at some point I wished for a way to statically ensure that my code was constant-time relative to secret values. Since this was assembly code with a custom ISA, I couldn't really use existing tools, so I ended up writing a custom information-flow analysis script that now runs as part of the standard CI suite for the OpenTitan root of trust. I'll walk through the design choices and the challenges I encountered along the way, with demos and examples. All the code is open-source.

Legislative Sausage in Sacramento - Lou Katz This year there are about 3000 bills in the California legislative hopper. They traverse a twisty path until some wind up on the Governor's desk while others self-destruct or just vanish. Some are important bills which can impact technology, privacy and surveillance, which will be of particular interest here. The areas into which Sacramento is putting significant effort contain technical details that often show a complete ignorance about how things really work. In some cases the legislation requires or specifies the creation of magic software or imaginary hardware that cannot possibly exist. Data collection mechanisms often do not take into account whether more actual information and metadata were recorded than were needed, whether the acquisition was permitted or allowed, and what happens to the data after it is used for its intended purpose. Much concern has been focused on the consequences of programmatic/automatic generation of outcomes and the interaction of machine-directed action with the real world (driverless vehicles, surveillance pricing). There are ways to exert effective influence on the details of the bills as well as whether a bill is passed or not. All will be revealed.

Photovoltaic Restoration of Sight in Retinal Degeneration - Daniel Palanker Photovoltaic arrays implanted instead of the lost photoreceptors in patients blinded by macular degeneration provide monochromatic form vision perceived simultaneously with the remaining peripheral natural vision, and with acuity matching their 100um pixel size (20/400). Electronic zoom enables patients to read and write smaller fonts (down to 20/63), improving visual acuity, on average, by 5 lines, compared to baseline. The next-generation implant with 20um pixels may increase acuity up to 20/80 without zoom, and to 20/20 with zoom. Science inc. in Alameda: https://science.xyz

Programming Living Systems: The CL1 Platform for Biological Microcomputing - Dr. Duncan Crombie In vitro neural systems are beginning to challenge conventional computing by offering adaptive, energy-efficient information processing grounded in biology. The CL1 platform is a scalable closed-loop system that integrates stem cell–derived human neural cultures with electrophysiological hardware and real-time software, enabling dynamic interaction with living networks. Built on MEA-based recording, integrated perfusion for long-term stability, and FPGA/ASIC architectures achieving sub-millisecond latency, the system supports precise stimulation, feedback, and continuous observation of neural activity. A programmable Python API and remote interface enable reproducible experimental design, supporting investigation of spontaneous activity, evoked responses, and network-level adaptation. These systems reveal rich electrophysiological signatures, from drug responses to disease phenotypes, that static assays cannot capture, while also enabling exploration of learning, plasticity, and emergent computation in living substrates. Positioned as a biological computing platform, CL1 reframes neuronal cultures not just as models of the brain, but as programmable, adaptive components in hybrid computational systems, opening new pathways for both neuroscience and unconventional computing.

Project Chapel - One of the World's Only Quantum Computers Installed at a University for the First Time in History - Curtis Priem My life journey started rooted in religion and is now trying to convince everyone to take the Red Pill. I had been doing graphics all the way back to high school in the 70's, which led to me being the architect of the first graphics accelerator for the personal computer which was based on an 8088 CPU. This was fine when paired with the 8088 or 80286 PC's. But it slowed the system down when paired with the 80386 PC. Taking this failure to Sun Microsystems, I decided to not use a programmable device in the GX graphics accelerator. The Motorola and RISC processors could never run faster than the GX. This led to the creation of NV Architecture that gave structure to creating chips that could handle any number of transistors in the future. The NV Architecture is now a third of a century old and is used by all of Nvidia's chips. The original version of the architecture will hit a wall when four billion CUDA cores are implemented on a single chip. As a side hobby I've been trying to work out how to use memory for computation. When I started a decade ago I could prove it would not be more than 50,000 times faster than an Nvidia chip. Then there is quantum. Instead of Nvidia's chips doubling performance every two years, quantum will double performance every 19 hours. Everything is happening exactly like it did with Nvidia, history is repeating itself, but a whole generation has come and gone and has not learned what will be needed for quantum. My goal over the next 18 years is to prepare everything that is needed for the quantum event, when we have noise free, coherent calculations. The first step is to question everything that has been proposed to us over the last century and create a new architecture that doesn't have the flaws like the original CPU/OS did. This includes creating a workforce that is quantum ready across a dozen industries that can create the software stacks that are required to make quantum useful. As a prerequisite, watch the movie Project Chapel that drops on March 31st on PBS.

Publishing in the Age of AI - Bill Pollock I run No Starch Press, a technical book publisher in San Francisco. Over the past two years I've been using AI across basically every part of the business -- fixing long-standing infrastructure problems on our website, building internal tools to replace expensive legacy software, evaluating book proposals, drafting contracts and marketing copy, and automating customer service. I'll talk about what's actually worked and what hasn't. There's also a harder conversation worth having: AI is disrupting the market I publish for. I now evaluate every incoming proposal against a simple filter -- could a model reproduce most of this with a good prompt? If yes, it's a weak project. That's changed what I'm willing to publish. And I'll mention something more personal: I'm on the spectrum, and AI has turned out to be surprisingly useful as a communication layer. I suspect some people in this room will relate.

Raising Awareness and Motivating People to Take Action - Nancy Blachman & Chris Gloninger Films are a great way to raise awareness about issues, people, and situations that might otherwise go unnoticed. In this session, Nancy will share select documentary clips, culminating with the introduction of Chris Gloninger, the meteorologist featured in THE WEATHERMAN. This film chronicles his battle against life-threatening extreme weather and the misinformation campaigns that attempt to obscure the truth from the American public.

Research Mathematics and the Magical Arts: An Unexpected Overlap - Victoria "Tory" Noquez In this presentation, Dr. Noquez will present some of her favorite close up magic and share some surprising connections between her work as a research mathematician and as a professional magician. She will highlight the steps in her creative process both as a mathematician and a magician, and share the surprising connections she has made as a working professional in both fields.

Size Really Does Matter: Biological Nanoparticles Are Changing Biomedicine - Giacomo Vacca The holy grail of medical diagnostics is a test that is accurate, sensitive, non-invasive, and inexpensive. For solid tumors such as pancreatic cancer and for many neurological diseases, current diagnostics come too little, too late. An exciting direction of research in this field relates to exosomes, tiny biological nanoparticles around 100 nm in size. There are trillions of them in our body, carrying a massive amount of valuable information about the health—or disorder—of our organs. They are, however, so small that they had eluded detection until quite recently. In this talk, Dr. Giacomo Vacca will discuss the challenges, and the promise, of exosomes in biomedical diagnostics. He will show how their abundance is a fantastic opportunity to use them as biomarkers—if you can detect them. As the attention of both technologists and researchers has focused on them, new tools have emerged, enabling new scientific findings—and the tantalizing possibility of much more powerful biomedical diagnostics. https://californiaconsultants.org/event/size-really-does-matter-biological-nanoparticles-are-changing-biomedicine/

Software-Verification Techniques for Verification of RTL against Sophisticated Specifications - Andres Erbsen Modern microarchitectural optimizations do not preserve confidentiality of data manipulated by cryptographic-constant-time code that was systematically secured for execution on simpler processors. Identifying and mitigating unintended information flows continues to provide for a thrilling cat-and-mouse game of security research. Recently, strategies based on register-level tracking of taint (or rather lack thereof) within the core have arisen as promising in terms of both security and performance (e.g. ProSpeCT and extensions). While conceptually simple, verifying that implementations of these defenses achieve the desired confidentiality guarantee appears to be out of reach for established formal-verification techniques. A key challenge is that observable consequences of speculative execution are allowed to depend even on data accessed by instruction instances that may never commit. Instead, it is critical to check that the information revealed is computed (perhaps speculatively) through some chain of public operations starting from data that a committed instruction marked as public. This talk will briefly review this defense strategy and a particular hardware-software contract for confidentiality for constant-time code, and then focus on avenues for formal verification. These verification techniques are inspired by successful approaches for verifying similar properties about low-level software and compilers. The work presented is a continued collaboration with the PLV and MATCHA groups at MIT.

The Collaborations of Quantum Computing, AI/Machine Learning, and Semiconductors - Wei-Ti Liu Artificial intelligence (AI) and machine learning (ML) hardware are fundamentally built on conventional semiconductor process technologies and circuit design, meaning that progress in semiconductors directly drives advances in AI and ML computing. Likewise, quantum computers depend on traditional semiconductor engineering for their control, readout, and interconnect circuitry that links the quantum processing unit (QPU) to external systems. The key difference between quantum computers and classical computers running AI algorithms lies in how performance is improved: classical systems benefit from transistor scaling and faster semiconductor devices, while quantum systems rely on advances in underlying physical principles. As a result, improving quantum computer performance requires scaling and optimizing the entire system architecture rather than simply increasing component density.

The Electrification of (Almost) Everything - Rob Poor A Pragmatist's Guide to the Energy Transition.

The Story Behind Kazakhstan's First Microprocessor - Nursultan Kabylkas This talk tells the story of building Kazakhstan’s first microprocessor, not as a standalone technological achievement, but as a catalyst for developing local talent, research, and industry around chip design and verification. It highlights how education, global collaboration, and persistence turned a small initiative into a pipeline of engineers and startups shaping the country’s future in hardware.

Theorem Proving vs. AI or Engineering vs. the Hype Machine - James Gosling My last project at AWS involved leading the development of a tool to make it easier to build cloud applications. AWS has many services, and each service has extensive documentation, but finding help to compose systems from multiple services was (and still is) hard. The tool focused on generating correct applications using a variety of search, theorem-proving-ish, and refactoring techniques. (Preconditions and postconditions to guide search.) It was starting to look pretty cool. But then the AI apocalypse happened: projects that didn't use AI got canned, and folks started "AI washing" their projects to stay alive. The hallucinatory aspect of the king of the AI circus, LLMs, didn't fit with my personal belief in building systems that worked. After everyone working in the area got laid off or reassigned, I headed out the door.

Trustworthiness: Reflections on my 73 Years of R&D - Peter Neumann via Robert N. M. Watson I have been involved in three clean-slate hardware-software development efforts. Some of that is worth re-examining.

Warm Salt Water and Firmware Updates: Engineering Active Implantable Medical Devices - David Marsh Active implantable medical devices operate under constraints that would be absurd in other engineering domains: sealed in welded titanium against a corrosive saline environment, many powered by batteries that can never be replaced, wirelessly accessible but acting on vital bodily functions, and regulated under multiple disjointed frameworks that can add years and hundreds of millions in cost. What does it take to put a circuit board inside a human body and have it work effectively to improve a health condition for ten or more years? This talk draws on 32 years of experience building glucose sensors, drug pumps, spinal cord stimulators, and retinal prostheses to explain why these devices are so expensive and take so long to reach patients. We'll dive into hermeticity, microwatt power budgets where every feature competes for the same tiny battery capacity, the security challenges of implants you can't easily patch, and the impact of 'adverse events' on the regulatory frameworks. The talk closes with the cautionary story of Second Sight's Argus II retinal implant: what happens when patients are left with orphaned hardware in their eyes and no company to support it, and whether any possible solutions could prevent it happening again.

What is Havana Syndrome and Why Does It Matter? - David Relman In 2016, a set of troubling neurological symptoms was reported through confidential channels by US government personnel based at the US Embassy in Havana, Cuba. As the number of cases escalated and spread over the next 5 years to other locations around the globe, efforts to understand this syndrome were hampered by their unusual features, incomplete information, nonstandardized clinical testing, delayed reporting, and the sensitive nature of the circumstances, affected individuals, and their work. A subset of individuals described the abrupt onset, sometimes in the middle of the night, of a loud, grinding, clicking, buzzing, or high-pitched piercing sound inside the head, occasionally likened to a slide whistle, and a sensation of pressure or pain, sometimes in one ear, on one side of the head, or in the face or chest. Most strikingly, these phenomena often displayed strong location dependence, in that they quickly dissipated when the individuals vacated their initial location and then returned when the location was revisited. In some cases, this location dependence was reported to occur repeatedly by the same individual or by multiple individuals as they moved away from and then returned within minutes to a specific location, such as part of a room. These abrupt-onset sensory phenomena were followed by a mix of vertigo, dizziness, imbalance, blurry vision, tinnitus, headache, nausea, and cognitive dysfunction, sometimes leading to chronic disability. In 2020, a committee convened by the US National Academies of Science, and in 2022, an independent panel of experts convened by the US intelligence community, each concluded that the most plausible explanation for a subset of these cases was exposure to a form of directed, pulsed radiofrequency energy. In this talk, some of the key findings from each of these studies will be presented, as well as the broader implications of these events for science, medicine, and international security.

When Science Becomes a Target: Communicating Climate in the Age of Disinformation - Chris Gloninger Climate science has never been more urgent or more contested. This talk explores what happens when a meteorologist steps off the broadcast set and into the arena of public science communication, only to find that the biggest storm isn't meteorological. Drawing on 18 years in television, a documentary in production, and daily engagement with millions of social media followers, Chris Gloninger examines how disinformation campaigns are weaponized against scientists, why trusted messengers matter more than ever, and how to reach skeptical audiences without losing your integrity.