



Amin Arbabian

Professor of Electrical Engineering

Bio

ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance

HONORS AND AWARDS

- Tau Beta Pi Award for Excellence in Undergraduate Teaching, Stanford University (June 2016)
- IEEE 2021 SSCS-Brain best paper award, IEEE (2022)
- Best Paper Award, IEEE Transactions on BioCAS (T-BioCAS) (2020)
- Best Paper Award, IEEE Conference on Biomedical Wireless Technologies, Networks, and Sensing Systems (2016)
- Best Paper Award, Progress in Electromagnetic Research Symposium (PIERS) (2015)
- NSF CAREER Award, National Science Foundation (2015)
- Best Paper Award, IEEE VLSI Circuits Symposium (2014)
- Faculty Research Award, Google (2014)
- Young Faculty Award (YFA), DARPA (2014)
- Best Paper Award, IEEE International Conference in Ultra-Wideband (2013)
- Hellman Faculty Scholar, Hellman Family Faculty Fund; Stanford University (2013)
- School of Engineering Terman Fellow, Stanford University (2012)
- Best Paper Award (2nd Place), IEEE Radio Frequency Integrated Circuits (RFIC) Symposium (2011)
- Jack Kilby Outstanding Student Paper Award, IEEE International Solid-State Circuits Conference (2010)
- Best Paper Award (2nd Place), IEEE Radio Frequency Integrated Circuits (RFIC) Symposium (2008)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate Editor, IEEE Solid-State Circuits Letters (2018 - present)
- Associate Editor, IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology (2017 - present)
- Member of steering committee, IEEE RFIC Symposium (2017 - present)

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- BSc, Sharif University of Technology , Electrical Engineering (2005)
- MSc, UC Berkeley , Electrical Engineering and Computer Sciences (2007)
- PhD, UC Berkeley , Electrical Engineering and Computer Sciences (2011)

LINKS

- Arbabian Lab at Stanford: <https://arbabianlab.stanford.edu/>
- <https://web.stanford.edu/~arbabian>: <https://web.stanford.edu/~arbabian>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My group's research covers circuit and system design for (1) biomedical, (2) sensing, and (3) Internet of Things (IoT) applications.

On the biomedical front we explore the design of emerging and hybrid medical imaging modalities and investigate new technologies for wireless implants, including ultrasonic power and data links.

Our work in sensing includes methods to enable next-generation interfaces (e.g., radar system design for human-computer interfaces), as well as methods of remote detection and imaging.

In the IoT area, we work on architectural solutions that enable radically miniaturized sensors for a trillion-sensor (tera-scale) future, including wireless power and wake-up radios. On the other end of the IoT space, we also work on next-generation extremely-high-throughput wireless and wireline "pipelines" that facilitate information flow on the network.

Teaching

COURSES

2025-26

- 3D+ Imaging Sensors: EE 119, EE 219 (Spr)
- Fundamentals of Analog Integrated Circuit Design: EE 114, EE 214A (Aut)
- Understanding the Sensors in your Smartphone: EE 117, EE 217 (Win)

2024-25

- 3D+ Imaging Sensors: EE 119, EE 219 (Spr)
- Understanding the Sensors in your Smartphone: EE 292S (Aut)

2023-24

- 3D+ Imaging Sensors: EE 119, EE 219 (Spr)
- Fundamentals of Analog Integrated Circuit Design: EE 114, EE 214A (Aut)
- Understanding the Sensors in your Smartphone: EE 292S (Aut)

2022-23

- 3D+ Imaging Sensors: EE 292Q (Spr)
- Fundamentals of Analog Integrated Circuit Design: EE 114, EE 214A (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Can WANG, Yujia Yuan

Doctoral Dissertation Advisor (AC)

Saner Baskaya, William Meng, Nikhil Poole, Marina Qian, Shubo Yang, Megan Zeng

Master's Program Advisor

Newton Chen, Alexis Hernandez, Kaitlyn Leitherer, Kendall Millett, Charlie Plonski, Raina Song, Jason Su, Manjari Talasila

Doctoral (Program)

Deepak Gopalan, Thomas Horton King, Syamantak Payra, Kamyar Rajabali Fardi, Shubo Yang, Brion Ye, Steven Yee, Megan Zeng

Publications

PUBLICATIONS

- **A Wireless Implantable Closed-Loop Electrochemical Drug Delivery System** *IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS*
Wang, M. L., Yeon, P., Mofidfar, M., Chamberlayne, C., Xu, H., Annes, J. P., Zare, R. N., Arbabian, A.
2025; 19 (4): 777-790
- **A W-Band TX/RX Chipset With 2.4-GHz LO Synchronization Enabling Full Scalability for FMCW Radar** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Zhang, J., Ahmed, S. S., Arbabian, A.
2024
- **Birefringence-free photoelastic modulator with centimeter-square aperture operating at 2.7 MHz with sub-watt drive power** *OPTICS LETTERS*
Atalar, O., Arbabian, A.
2024; 49 (18): 5051-5054
- **Anchor-Based, Real-Time Motion Compensation for High-Resolution mmWave Radar** *IEEE JOURNAL OF MICROWAVES*
Poole, N., Arbabian, A.
2024
- **Polarization-insensitive wide-angle resonant acousto-optic phase modulator** *OPTICS LETTERS*
Atalar, O., Arbabian, A.
2024; 49 (8): 2141-2144
- **CM-ASAP: Cross-Modality Adaptive Sensing and Perception for Efficient Hand Gesture Recognition**
Hor, S., El-Khamy, M., Zhou, Y., Arbabian, A., Lim, S., IEEE COMPUTER SOC
IEEE COMPUTER SOC.2024: 207-213
- **Optically isotropic longitudinal piezoelectric resonant photoelastic modulator for wide angle polarization modulation at megahertz frequencies.** *Journal of the Optical Society of America. A, Optics, image science, and vision*
Atalar, O., Arbabian, A.
2023; 40 (12): 2249-2258
- **A 130-nm Fusion-Based Deconvolution Kernel Generator IC for Real-Time mmWave Radar Motion Compensation** *IEEE ACCESS*
Poole, N., Arbabian, A.
2023; 11: 132223-132238
- **MVDoppler: Unleashing the Power of Multi-View Doppler for MicroMotion-Based Gait Classification**
Hor, S., Yang, S., Choi, J., Arbabian, A.
edited by Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023

- **Gut Microbiome Redox Sensors With Ultrasonic Wake-Up and Galvanic Coupling Wireless Links** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
Baltsavias, S., Van Treuren, W., Sawaby, A., Baker, S. W., Sonnenburg, J. L., Arbabian, A.
2023; 70 (1): 76-87
- **A W-Band Spillover-Tolerant Mixer-First Receiver for FMCW Radars**
Zhang, J., Ahmed, S. S., Arbabian, A., IEEE
IEEE.2023: 241-244
- **Y-Z cut lithium niobate longitudinal piezoelectric resonant photoelastic modulator** *OPTICS EXPRESS*
Atalar, O., Yee, S., Safavi-Naeini, A., Arbabian, A.
2022; 30 (26): 47103-47114
- **An RF-Ultrasound Relay for Adaptive Wireless Powering Across Tissue Interfaces.** *IEEE journal of solid-state circuits*
So, E., Yeon, P., Chichilnisky, E. J., Arbabian, A.
2022; 57 (11): 3429-3441
- **On-demand electrochemically controlled compound release from an ultrasonically powered implant.** *RSC advances*
Wang, M. L., Chamberlayne, C. F., Xu, H., Mofidfar, M., Baltsavias, S., Annes, J. P., Zare, R. N., Arbabian, A.
2022; 12 (36): 23337-23345
- **On-demand electrochemically controlled compound release from an ultrasonically powered implant** *RSC ADVANCES*
Wang, M. L., Chamberlayne, C. F., Xu, H., Mofidfar, M., Baltsavias, S., Annes, J. P., Zare, R. N., Arbabian, A.
2022; 12 (36): 23337-23345
- **An RF-Ultrasound Relay for Adaptive Wireless Powering Across Tissue Interfaces** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
So, E., Yeon, P., Chichilnisky, E. J., Arbabian, A.
2022
- **A Thermoacoustic Imaging System for Noninvasive and Nondestructive Root Phenotyping** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II-EXPRESS BRIEFS*
Singhvi, A., Fitzpatrick, A., Scharwies, J., Dinneny, J. R., Arbabian, A.
2022; 69 (5): 2493-2497
- **Longitudinal piezoelectric resonant photoelastic modulator for efficient intensity modulation at megahertz frequencies.** *Nature communications*
Atalar, O., Van Laer, R., Safavi-Naeini, A. H., Arbabian, A.
2022; 13 (1): 1526
- **Multi-Watt-Level 4.9-GHz Silicon Power Amplifier for Portable Thermoacoustic Imaging** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Sutardja, C., Singhvi, A., Fitzpatrick, A., Cathelin, A., Arbabian, A.
2022
- **A Data-Driven Waveform Adaptation Method for Mm-Wave Gait Classification at the Edge** *IEEE SIGNAL PROCESSING LETTERS*
Hor, S., Pilanci, M., Arbabian, A.
2022; 29: 26-30
- **Laser Scanning for Single-Shot Frequency Diverse Photoacoustic Excitation**
Meng, W. L., Fitzpatrick, A., Singhvi, A., Arbabian, A., IEEE
IEEE.2022
- **Adaptive Beamforming for Wireless Powering of a Network of Ultrasonic Implants**
Wang, M. L., Singhvi, A., Nyikayaramba, G., Murmann, B., Arbabian, A., IEEE
IEEE.2022
- **Dynamic Tuning of Sensitivity and Bandwidth of High-Q Transducers via Nested Phase Modulations**
Fitzpatrick, A., Singhvi, A., Arbabian, A., IEEE
IEEE.2022: 876-880
- **Single-Snapshot Pedestrian Gait Recognition at the Edge: A Deep Learning Approach to High-Resolution mmWave Sensing**

- Hor, S., Poole, N., Arbabian, A., IEEE
IEEE.2022
- **A 56 GS/s 8-bit 0.011 mm(2) 4x Delta-Interleaved Switched-Capacitor DAC in 16 nm FinFET CMOS**
Caragiulo, P., Ramkaj, A., Arbabian, A., Murmann, B., IEEE
IEEE.2022: 329-332
 - **A 2x Time-Interleaved 28-GS/s 8-Bit 0.03-mm(2) Switched-Capacitor DAC in 16-nm FinFET CMOS** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Caragiulo, P., Mattia, O., Arbabian, A., Murmann, B.
2021; 56 (8): 2335-2346
 - **CRADLE: Combined RF/Acoustic Detection and Localization of Passive Tags** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*
Rekhi, A. S., So, E., Gural, A., Arbabian, A.
2021; 68 (6): 2555-2568
 - **Effects of Reference Frequency Harmonic Spurs in FMCW Radar Systems**
Zhang, J., Ahmed, S. S., Arbabian, A., IEEE
IEEE.2021
 - **A Flexible Non-Radiative Dielectric Waveguide with a 1-dB Loss PCB-to-NRD Coupler for mm-Wave Array Applications**
Zhang, J., Arbabian, A., IEEE
IEEE.2021: 507-510
 - **A Real-Time, Frame-Level Platform Vibration Compensation Approach for mmWave Radar Systems**
Poole, N., Hor, S., Arbabian, A., IEEE
IEEE.2021: 181-184
 - **A Wireless Implantable Potentiostat for Programmable Electrochemical Drug Delivery** *IEEE Biomedical Circuits and Systems (BIOCAS)*
Wang, M. L., Yeon, P., Chamberlayne, C. F., Mofidfar, M., Xu, H., Annes, J. P., Zare, R. N., Arbabian, A.
2021
 - **Multi-Task Learning for Simultaneous Speed-of-Sound Mapping and Image Reconstruction Using Non-Contact Thermoacoustics**
Singhvi, A., Wang, M. L., Fitzpatrick, A., Arbabian, A., IEEE
IEEE.2021
 - **Design and Analysis of a Sample-and-Hold CMOS Electrochemical Sensor for Aptamer-Based Therapeutic Drug Monitoring** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Chien, J., Baker, S. W., Soh, H., Arbabian, A.
2020; 55 (11): 2914-29
 - **Design and Analysis of a Sample-and-Hold CMOS Electrochemical Sensor for Aptamer-based Therapeutic Drug Monitoring.** *IEEE journal of solid-state circuits*
Chien, J. C., Baker, S. W., Soh, H. T., Arbabian, A.
2020; 55 (11): 2914-2929
 - **Inverse-designed non-reciprocal pulse router for chip-based LiDAR** *NATURE PHOTONICS*
Yang, K., Skarda, J., Cotrufo, M., Dutt, A., Ahn, G., Sawaby, M., Verduyck, D., Arbabian, A., Fan, S., Alu, A., Vuckovic, J.
2020
 - **Time-of-flight imaging based on resonant photoelastic modulation (vol 58, pg 2235, 2019)** *APPLIED OPTICS*
Atalar, O., Van Laer, R., Sarabalis, C. J., Safavi-Naeini, A. H., Arbabian, A.
2020; 59 (5): 1430
 - **Assessment of miniaturized ultrasound-powered implants: an in vivo study.** *Journal of neural engineering*
Vo, J. n., Chang, T. C., Shea, K. I., Myers, M. R., Arbabian, A. n., Vasudevan, S. n.
2020
 - **Spatial Reconstruction of Soil Moisture Content using Non-Contact Thermoacoustic Imaging**
Fitzpatrick, A., Singhvi, A., Arbabian, A., IEEE

IEEE.2020

- **A 10-Gbps Continuous-Time Linear Equalizer for mm-Wave Dielectric Waveguide Communication** *IEEE SOLID-STATE CIRCUITS LETTERS*
Mattia, O. E., Sawaby, M., Zheng, K., Arbabian, A., Murmann, B.
2020; 3: 266-269
- **Resolution Enhanced Non-Contact Thermoacoustic Imaging using Coded Pulse Excitation**
Singhvi, A., Fitzpatrick, A., Arbabian, A., IEEE
IEEE.2020
- **An Airborne Sonar System for Underwater Remote Sensing and Imaging** *IEEE ACCESS*
Fitzpatrick, A., Singhvi, A., Arbabian, A.
2020; 8: 189945–59
- **A Fully Integrated 32 Gbps 2x2 LoS MIMO Wireless Link with UWB Analog Processing for Point-to-Point Backhaul Applications**
Sawaby, M., Grave, B., Jany, C., Chen, C., Kananian, S., Calascibetta, P., Gianesello, F., Arbabian, A.
edited by Hueber, G., Wang, H.
IEEE.2020: 107–10
- **Lithium Niobate Resonant Photoelastic Modulator for Time-of-Flight Imaging**
Atalar, O., Van Laer, R., Sarabalıs, C. J., Safavi-Naeini, A. H., Arbabian, A., IEEE
IEEE.2020
- **A Cell-Capacitance-Insensitive CMOS Sample-and-Hold Chronoamperometric Sensor for Real-Time Measurement of Small Molecule Drugs in Whole Blood**
Chien, J., Soh, H., Arbabian, A., IEEE
IEEE.2020: 406-+
- **A Compact 14 GS/s 8-bit Switched-Capacitor DAC in 16 nm FinFET CMOS**
Caragiulo, P., Mattia, O., Arbabian, A., Murmann, B., IEEE
IEEE.2020
- **Design of Large Effective Apertures for Millimeter Wave Systems Using a Sparse Array of Subarrays** *IEEE TRANSACTIONS ON SIGNAL PROCESSING*
Gupta, A., Madhow, U., Arbabian, A., Sadri, A.
2019; 67 (24): 6483–97
- **A Microwave-Induced Thermoacoustic Imaging System With Non-Contact Ultrasound Detection** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Singhvi, A., Boyle, K. C., Fallahpour, M., Khuri-Yakub, B. T., Arbabian, A.
2019; 66 (10): 1587–99
- **On-demand drug release from polypyrrole nanoparticulate films**
Chamberlayne, C., Baltasvias, S., Xu, H., Arbabian, A., Annes, J., Zare, R.
AMER CHEMICAL SOC.2019
- **MINI-SPECIAL ISSUE ON 2018 INTERNATIONAL WORKSHOP ON INTEGRATED NONLINEAR MICROWAVE AND MILLIMETRE-WAVE CIRCUITS** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*
Arbabian, A.
2019; 67 (7): 2521–22
- **Non-Invasive Remote Temperature Monitoring Using Microwave-Induced Thermoacoustic Imaging.** *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference*
Nan, H., Fitzpatrick, A., Wang, K., Arbabian, A.
2019; 2019: 6375–78
- **Non-Invasive Remote Temperature Monitoring Using Microwave-Induced Thermoacoustic Imaging.** *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference*
Nan, H., Fitzpatrick, A., Wang, K., Arbabian, A.

2019; 2019: 6375–78

- **Ultrasonic Wake-Up With Precharged Transducers** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Rekhi, A. S., Arbabian, A.
2019; 54 (5): 1475–86
- **Time-of-flight imaging based on resonant photoelastic modulation** *APPLIED OPTICS*
Atalar, O., Van Laer, R., Sarabalıs, C. J., Safavi-Naeini, A. H., Arbabian, A.
2019; 58 (9): 2235–47
- **An Aptamer-based Electrochemical-Sensing Implant for Continuous Therapeutic-Drug Monitoring in vivo**
Chien, J., Mage, P. L., Soh, H., Arbabian, A., IEEE
IEEE.2019: C312–C313
- **Ultrasonic Implant Localization for Wireless Power Transfer: Active Uplink and Harmonic Backscatter**
Wang, M. L., Chang, T., Arbabian, A., IEEE
IEEE.2019: 818–21
- **Multi-Access Networking with Wireless Ultrasound-Powered Implants**
Chang, T., Wang, M., Arbabian, A., IEEE
IEEE.2019
- **Chromatic Properties of Blood During Coagulation**
Razavi, J., Arbabian, A., IEEE
IEEE.2019: 4733–36
- **Non-Invasive Remote Temperature Monitoring Using Microwave-Induced Thermoacoustic Imaging**
Nan, H., Fitzpatrick, A., Wang, K., Arbabian, A., IEEE
IEEE.2019: 6375–78
- **Non-Contact Thermoacoustic Sensing and Characterization of Plant Root Traits**
Singhvi, A., Ma, B., Scharwies, J., Dinnyeny, J. R., Khuri-Yakub, B. T., Arbabian, A., IEEE
IEEE.2019: 1992–95
- **In Vivo Wireless Sensors for Gut Microbiome Redox Monitoring.** *IEEE transactions on bio-medical engineering*
Baltsavias, S. n., Van Treuren, W. n., Weber, M. n., Charthad, J. n., Baker, S. n., Sonnenburg, J. L., Arbabian, A. n.
2019
- **Beamforming Microwave-Induced Thermoacoustic Imaging for Screening Applications** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*
Nan, H., Liu, S., Buckmaster, J., Arbabian, A.
2019; 67 (1): 464–74
- **Ultrasonic Implant Localization for Wireless Power Transfer: Active Uplink and Harmonic Backscatter.** *IEEE International Ultrasonics Symposium : [proceedings]. IEEE International Ultrasonics Symposium*
Wang, M. L., Chang, T. C., Arbabian, A. n.
2019; 2019: 818–21
- **Multi-Access Networking with Wireless Ultrasound-Powered Implants.** *IEEE Biomedical Circuits and Systems Conference : healthcare technology : [proceedings]. IEEE Biomedical Circuits and Systems Conference*
Chang, T. C., Wang, M. n., Arbabian, A. n.
2019; 2019
- **Communication With Crystal-Free Radios** *IEEE TRANSACTIONS ON COMMUNICATIONS*
Shaviv, D., Ozgur, A., Arbabian, A.
2018; 66 (10): 4513–20
- **End-to-End Design of Efficient Ultrasonic Power Links for Scaling Towards Submillimeter Implantable Receivers** *IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS*
Chang, T., Weber, M. J., Charthad, J., Baltsavias, S., Arbabian, A.
2018; 12 (5): 1100–1111

- **Long-term in vivo performance of novel ultrasound powered implantable devices.** *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference*
Kang, C., Chang, T. C., Vo, J., Charthad, J., Weber, M., Arbabian, A., Vasudevan, S.
2018; 2018: 2985–88
- **Thermal analysis of ultrasound-powered miniaturized implants: A tissue-phantom study.** *The Journal of the Acoustical Society of America*
Walden, C., Sonesson, J., Weber, M. J., Charthad, J., Chia Chang, T., Arbabian, A., Myers, M.
2018; 143 (6): 3373
- **Thermal analysis of ultrasound-powered miniaturized implants: A tissue-phantom study** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*
Walden, C., Sonesson, J., Weber, M. J., Charthad, J., Chang, T., Arbabian, A., Myers, M.
2018; 143 (6): 3373-3382
- **A mm-Sized Wireless Implantable Device for Electrical Stimulation of Peripheral Nerves** *IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS*
Charthad, J., Chang, T., Liu, Z., Sawaby, A., Weber, M. J., Baker, S., Gore, F., Felt, S. A., Arbabian, A.
2018; 12 (2): 257–70
- **A Miniaturized Single-Transducer Implantable Pressure Sensor With Time-Multiplexed Ultrasonic Data and Power Links**
Weber, M. J., Yoshihara, Y., Sawaby, A., Charthad, J., Chang, T., Arbabian, A.
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2018: 1089–1101
- **A mm-sized wireless implantable device for electrical stimulation of peripheral nerves** *IEEE Trans. Biomedical Circuits and Systems*
Charthad, J.
2018
- **A Dual-Element VNA Electronic Calibration in CMOS**
Chien, J., Arbabian, A., Niknejad, A. M., IEEE
IEEE.2018: 71–74
- **A Single-Element VNA Electronic Calibration in CMOS**
Chien, J., Arbabian, A., Niknejad, A. M., IEEE
IEEE.2018: 1304–7
- **A Programmable RF Transmitter for Wideband Thermoacoustic Spectroscopic Imaging**
Nan, H., Arbabian, A., IEEE
IEEE.2018: 1405–8
- **Array Location Uncertainty in Imaging Radar: SAR vs. MIMO-SAR**
Mamandipoor, B., Teisberg, T., Kananian, S., Arbabian, A., IEEE
IEEE.2018: 150–53
- **A 14.5mm(2) 8nW-59.7dBm-Sensitivity Ultrasonic Wake-Up Receiver for Power-, Area-, and Interference-Constrained Applications**
Rekhi, A., Arbabian, A., IEEE
IEEE.2018: 454-+
- **A 14.5mm(2) 8nW-59.7dBm-Sensitivity Ultrasonic Wake-Up Receiver for Power-, Area-, and Interference-Constrained Applications**
Rekhi, A., Arbabian, A., IEEE
IEEE.2018
- **Wireless Data Links for Next-Generation Networked Micro-Implantables**
Wang, M. L., Baltsavias, S., Chang, T., Weber, M. J., Charthad, J., Arbabian, A., IEEE
IEEE.2018
- **Microwave-Induced Thermoacoustic Imaging of Subcutaneous Vasculature With Near-Field RF Excitation** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*
Aliroteh, M. S., Arbabian, A.
2018; 66 (1): 577–88

- **A miniaturized single-transducer implantable pressure sensor with time-multiplexed ultrasonic data and power links** *IEEE J. Solid-State Circuits*
Weber, M., Yoshihara, Y., Sawaby, A., Charthad, J., Chang, T., Arbabian, A.
2018
- **Ball Grid Array Module With Integrated Shaped Lens for 5G Backhaul/Fronthaul Communications in F-Band** *IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION*
Bisognin, A., Nachahe, N., Luxey, C., Gianesello, F., Gloria, D., Costa, J. R., Fernandes, C. A., Alvarez, Y., Arboleya-Arboleya, A., Laviada, J., Las-Heras, F., Dolatsha, N., Grave, et al
2017; 65 (12): 6380–94
- **Wireless Power Transfer to Millimeter-Sized Nodes Using Airborne Ultrasound** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Rekhi, A. S., Khuri-Yakub, B. T., Arbabian, A.
2017; 64 (10): 1526–41
- **Exploiting spatial degrees of freedom for high data rate ultrasound communication with implantable devices** *APPLIED PHYSICS LETTERS*
Wang, M. L., Arbabian, A.
2017; 111 (13)
- **Peak-Power-Limited Frequency-Domain Microwave-Induced Thermoacoustic Imaging for Handheld Diagnostic and Screening Tools** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*
Nan, H., Arbabian, A.
2017; 65 (7): 2607-2616
- **Remote sub-wavelength focusing of ultrasonically activated Lorentz current** *APPLIED PHYSICS LETTERS*
Rekhi, A. S., Arbabian, A.
2017; 110 (16)
- **Capsule Ultrasound Device: Characterization and Testing Results**
Wang, J., Memon, F., Touma, G., Baltasvias, S., Jang, J., Chang, C., Rasmussen, M., Olcott, E., Jeffrey, R., Arbabian, A., Khuri-Yakub, B. T., IEEE
IEEE.2017
- **A Compact 130GHz Fully Packaged Point-to-Point Wireless System with 3D-Printed 26dBi Lens Antenna Achieving 12.5Gb/s at 1.55pJ/b/m**
Dolatsha, N., Grave, B., Sawaby, M., Chen, C., Babveyh, A., Kananian, S., Bisognin, A., Luxey, C., Gianesello, F., Costa, J., Fernandes, C., Arbabian, A., IEEE
IEEE.2017: 306
- **A 30.5mm(3) Fully Packaged Implantable Device with Duplex Ultrasonic Data and Power Links Achieving 95kb/s with < 10(-4) BER at 8.5cm Depth**
Chang, T., Wang, M. L., Charthad, J., Weber, M. J., Arbabian, A., IEEE
IEEE.2017: 460
- **The power of sound: miniaturized medical implants with ultrasonic links**
Wang, M. L., Chang, T., Charthad, J., Weber, M. J., Arbabian, A.
edited by George, T., Dutta, A. K., Islam, M. S.
SPIE-INT SOC OPTICAL ENGINEERING.2017
- **Communication with Crystal-Free Radios**
Shaviv, D., Ozgur, A., Arbabian, A., IEEE
IEEE.2017
- **Closed-Loop Ultrasonic Power and Communication with Multiple Miniaturized Active Implantable Medical Devices**
Wang, M. L., Chang, T., Teisberg, T., Weber, M. J., Charthad, J., Arbabian, A., IEEE
IEEE.2017
- **A High-Precision 36 mm(3) Programmable Implantable Pressure Sensor with Fully Ultrasonic Power-up and Data Link**
Weber, M. J., Yoshihara, Y., Sawaby, A., Charthad, J., Chang, T., Garland, R., Arbabian, A., IEEE
IEEE.2017: C104–C105

- **Sound Technologies, Sound Bodies** *IEEE MICROWAVE MAGAZINE*
Arbabian, A., Chang, T. C., Wang, M. L., Charthad, J., Baltsavias, S., Fallahpour, M., Weber, M. J.
2016; 17 (12): 39-54
- **Design of Tunable Ultrasonic Receivers for Efficient Powering of Implantable Medical Devices With Reconfigurable Power Loads** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Chang, T. C., Weber, M. J., Wang, M. L., Charthad, J., Khuri-Yakub, B. (., Arbabian, A.
2016; 63 (10): 1554-1562
- **Loss and Dispersion Limitations in mm-Wave Dielectric Waveguides for High-Speed Links** *IEEE TRANSACTIONS ON TERAHERTZ SCIENCE AND TECHNOLOGY*
Dolatsha, N., Chen, C., Arbabian, A.
2016; 6 (4): 637-640
- **System-Level Analysis of Far-Field Radio Frequency Power Delivery for mm-Sized Sensor Nodes** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*
Charthad, J., Dolatsha, N., Rekhii, A., Arbabian, A.
2016; 63 (2): 300-311
- **Capsule Ultrasound Device: Further Developments**
Memon, F., Touma, G., Wang, J., Baltsavias, S., Moini, A., Chang, C., Rasmussen, M., Nikoozadeh, A., Choe, J., Olcott, E., Jeffrey, R., Arbabian, A., Khuri-Yakub, et al
IEEE.2016
- **Noncontact thermoacoustic detection of targets embedded in dispersive media**
Boyle, K. C., Nan, H., Khuri-Yakub, B. T., Arbabian, A.
edited by Kamerman, G., Steinvall, O.
SPIE-INT SOC OPTICAL ENGINEERING.2016
- **A Miniaturized Ultrasonically Powered Programmable Optogenetic Implant Stimulator System**
Weber, M. J., Bhat, A., Chang, T., Charthad, J., Arbabian, A., IEEE
IEEE.2016: 12–14
- **An Ultrasonically Powered Implantable Device for Targeted Drug Delivery**
Charthad, J., Baltsavias, S., Samanta, D., Chang, T., Weber, M. J., Hosseini-Nassab, N., Zare, R. N., Arbabian, A.
edited by Patton, J., Barbieri, R., Ji, J., Jabbari, E., Dokos, S., Mukkamala, R., Guiraud, D., Jovanov, E., Dhaher, Y., Panescu, D., Vangils, M., Wheeler, B., Dhawan, A. P.
IEEE.2016: 541–44
- **Fast Iterative Reconstruction Algorithm for Microwave-Induced Thermoacoustic Imaging**
Nan, H., Haghi, B., Aliroteh, M. S., Fallahpour, M., Arbabian, A., IEEE
IEEE.2016: 1-4
- **Analog Processing to Enable Scalable High-Throughput mm-Wave Wireless Fiber Systems**
Sawaby, M., Mamandipoor, B., Madhow, U., Arbabian, A.
edited by Matthews, M. B.
IEEE COMPUTER SOC.2016: 1658-1662
- **Standoff Tracking of Medical Interventional Devices using Non-Contact Microwave Thermoacoustic Detection**
Alexopoulos, G., Boyle, K. C., Dolatsha, N., Nan, H., Khuri-Yakub, B. T., Arbabian, A., IEEE
IEEE.2016
- **Noncontact thermoacoustic detection of targets embedded in dispersive media**
Boyle, K. C., Nan, H., Khuri-Yakub, B. T., Arbabian, A.
edited by Kamerman, G., Steinvall, O.
SPIE-INT SOC OPTICAL ENGINEERING.2016
- **A Miniaturized Ultrasonically Powered Programmable Optogenetic Implant Stimulator System**
Weber, M. J., Bhat, A., Chang, T., Charthad, J., Arbabian, A., IEEE
IEEE.2016: 12–14

- **An Ultrasonically Powered Implantable Device for Targeted Drug Delivery**
Charthad, J., Baltasvias, S., Samanta, D., Chang, T., Weber, M. J., Hosseini-Nassab, N., Zare, R. N., Arbabian, A.
edited by Patton, J., Barbieri, R., Ji, J., Jabbari, E., Dokos, S., Mukkamala, R., Guiraud, D., Jovanov, E., Dhaher, Y., Panescu, D., Vangils, M., Wheeler, B., Dhawan, A. P.
IEEE.2016: 541–44
- **Fully packaged millimetre-wave dielectric waveguide with multimodal excitation** *ELECTRONICS LETTERS*
Dolatsha, N., Saiz, N., Arbabian, A.
2015; 51 (17): 1339-1340
- **A mm-Sized Implantable Medical Device (IMD) With Ultrasonic Power Transfer and a Hybrid Bi-Directional Data Link** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Charthad, J., Weber, M. J., Chang, T. C., Arbabian, A.
2015; 50 (8): 1741-1753
- **A Power-Harvesting Pad-Less Millimeter-Sized Radio** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Tabesh, M., Dolatsha, N., Arbabian, A., Niknejad, A. M.
2015; 50 (4): 962-977
- **Non-contact thermoacoustic detection of embedded targets using airborne-capacitive micromachined ultrasonic transducers** *APPLIED PHYSICS LETTERS*
Nan, H., Boyle, K. C., Apte, N., Aliroteh, M. S., Bhuyan, A., Nikoozadeh, A., Khuri-Yakub, B. T., Arbabian, A.
2015; 106 (8)
- **Capsule Ultrasound Device**
Memon, F., Touma, G., Wang, J., Baltasvias, S., Moini, A., Chang, C., Rasmussen, M., Nikoozadeh, A., Choe, J., Arbabian, A., Jeffrey, R., Olcott, E., Khuri-Yakub, et al
IEEE.2015
- **Interferogram-Based Breast Tumor Classification Using Microwave-Induced Thermoacoustic Imaging**
Nan, H., Haghi, B., Arbabian, A., IEEE
IEEE.2015: 2717-2720
- **Non-Contact Thermoacoustic Imaging of Tissue with Airborne Ultrasound Detection**
Boyle, K. C., Nan, H., Apte, N., Unlugedik, A., Aliroteh, M. S., Bhuyan, A., Nikoozadeh, A., Khuri-Yakub, B. T., Arbabian, A., IEEE
IEEE.2015
- **Design of High-Efficiency Miniaturized Ultrasonic Receivers for Powering Medical Implants with Reconfigurable Power Levels**
Chang, T., Weber, M., Charthad, J., Nikoozadeh, A., Khuri-Yakub, P. T., Arbabian, A., IEEE
IEEE.2015
- **Stepped-frequency continuous-wave microwave-induced thermoacoustic imaging** *APPLIED PHYSICS LETTERS*
Nan, H., Arbabian, A.
2014; 104 (22)
- **Frequency-modulated magneto-acoustic detection and imaging** *ELECTRONICS LETTERS*
Aliroteh, M. S., Scott, G., Arbabian, A.
2014; 50 (11): 790-791
- **mm-Wave Silicon: Smarter, Faster, and Cheaper Communication and Imaging.** *Frequency References, Power Management for SoC, and Smart Wireless Interfaces*
Niknejad, Ali, M., Arbabian, A., Callender, S., Chen, J., Chien, J., Kang, S.
Springer International Publishing.2014: 281–295
- **A Compact Nonlinear-Transmission-Line-Based mm-Wave SFCW Imaging Radar**
Noujeim, K., Malysa, G., Babveyh, A., Arbabian, A., IEEE
IEEE.2014: 1766-1769
- **A Compact Nonlinear-Transmission-Line-Based mm-Wave SFCW Imaging Radar**
Noujeim, K., Malysa, G., Babveyh, A., Arbabian, A., IEEE

IEEE.2014: 463-466

- **Coherent Frequency-Domain Microwave-Induced Thermoacoustic Imaging**
Nan, H., Arbabian, A., IEEE
IEEE.2014
- **A power-harvesting pad-less mm-sized 24/60GHz passive radio with on-chip antennas** *IEEE VLSI Circuits Symposium*
Tabesh, M.
2014
- **Segmentation and Artifact Removal in Microwave-Induced Thermoacoustic Imaging** *36th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC)*
Nan, H., Chou, T., Arbabian, A.
IEEE.2014: 4747–4750
- **A 135GHz SiGe Transmitter With A Dielectric Rod Antenna-In-Package For High EIRP/Channel Arrays** *36th Annual IEEE Custom Integrated Circuits Conference (CICC) - The Showcase for Integrated Circuit Design in the Heart of Silicon Valley*
Saiz, N., Dolatsha, N., Arbabian, A.
IEEE.2014
- **A mm-Sized Implantable Device with Ultrasonic Energy Transfer and RF Data Uplink for High-Power Applications** *36th Annual IEEE Custom Integrated Circuits Conference (CICC) - The Showcase for Integrated Circuit Design in the Heart of Silicon Valley*
Charthad, J., Weber, M. J., Chang, T. C., Saadat, M., Arbabian, A.
IEEE.2014
- **A 94 GHz mm-Wave-to-Baseband Pulsed-Radar Transceiver with Applications in Imaging and Gesture Recognition** *Symposium on VLSI Circuits held its 26th Meeting on State-of-the-Art Topics important to VLSI Circuit and System Designers, as well as Device and Process Technology Experts*
Arbabian, A., Callender, S., Kang, S., Rangwala, M., Niknejad, A. M.
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2013: 1055–71
- **Analysis and Design of a Multi-mode Dielectric Waveguide Interconnect with Planar Excitation**
Dolatsha, N., Arbabian, A.
2013
- **Analysis and Design of Multi-mode Dielectric Waveguide Interconnect with Planar Excitation**
Dolatsha, N., Arbabian, A., Electromagnet Acad
ELECTROMAGNETICS ACAD.2013: 234-239
- **Dielectric Waveguide with Planar Multi-Mode Excitation for High Data-Rate Chip-to-Chip Interconnects**
Dolatsha, N., Arbabian, A.
2013
- **A Three-Stage Cascaded Distributed Amplifier with GBW Exceeding 1.5THz** *IEEE Radio Frequency Integrated Circuits Symposium (RFIC)*
Arbabian, A., Niknejad, A.
2012: 211-214
- **A 94GHz mm-wave to baseband pulsed-radar for imaging and gesture recognition.** *In VLSI Circuits (VLSIC)*
Arbabian, A., Kang, S., Callender, S., Chien, J., Afshar, B., Niknejad, A.
2012: 56-57
- **60GHz Low-Loss Compact Phase Shifters Using A Lumped Element Hybrid** *CICC*
Tabesh, M., Arbabian, A., Niknejad, A.
2011
- **Time-Domain Ultra-Wideband Synthetic Imager (TUSI) in Silicon** *33rd Annual International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society (EMBS)*
Arbabian, A., Niknejad, A. M.
IEEE.2011: 505–511
- **A 90GHz Pulsed-Transmitter with Near-Field/Far-Field Energy Cancellation using a Dual-Loop Antenna**

Arbabian, A., Kang, S., Callender, S., Afshar, B., Chien, J., Niknejad, A.
2011

- **A 90 GHz Hybrid Switching Pulsed-Transmitter for Medical Imaging** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*
Arbabian, A., Callender, S., Kang, S., Afshar, B., Chien, J., Niknejad, A. M.
2010; 45 (12): 2667-2681
- **A 90GHz Carrier 30GHz Bandwidth Hybrid Switching Transmitter with Integrated Antenna** *ISSCC 2010 Digest of Teach.*
Arbabian, et. al., A.
2010: 420-421
- **A 90nm CMOS Low-Power 60GHz Transceiver with Integrated Baseband Circuitry** *IEEE Journal of Solid State Circuits*
Marcu, C., Chowdhury, D., Thakkar, C., Park, J., Kong, L., Tabesh, M., Arbabian, A.
2009; 44 (12): 3434-3447
- **A 90nm CMOS Low-Power 60GH Transceiver with Integrated Baseband Circuitry** *ISSCC 2010 Digest of Tech. Papers*
Marcu, C., Chowdhury, D., Thakkar, C., Kong, L., Tabesh, M., Park, J., Arbabian, A.
2009: 314-315
- **Design of a CMOS Tapered Cascaded Multistage Distributed Amplifier** *IEEE Transactions on Microwave Theory and Techniques*
Arbabian, A., Niknejad, A., M.
2009; 57 (4): 938-947
- **A Tapered Cascaded Multi-Stage Distributed Amplifier with 370GHz GBW in 90nm CMOS**
Arbabian, A., Niknejad, A., M.
2008
- **A Broadband Distributed Amplifier with Internal Feedback Providing 660GHz GBW in 90nm CMOS** *ISSCC 2008 Digest of Tech. Papers*
Arbabian, A., Niknejad, A., M.
2008: 196-197
- **A 60-GHz 90- nm CMOS Cascode Amplifier with Interstage Matching**
Heydari, B., Reynaert, P., Adabi, E., Bohsali, M., Afshar, B., Arbabian, A.
2007
- **Internal Unilaterization Technique for CMOS mm-Wave Amplifiers**
Heydari, B., Adabi, E., Bohsali, M., Afshar, B., Arbabian, A., Niknejad, A., M.
2007
- **The Optimizations of PRF Staggering in a MTI Radar**
Arbabian, A., Bastani, M., H., Tabesh, M.
2005
- **Rural Telecommunications in Iran: A Hybrid Solution**
Tabesh, M., Arbabian, A., Javaheri, H., Jalali, A.
2005
- **Wireless Data Links for Next-Generation Networked Micro-Implantables** *Proc. 2018 IEEE Custom Integrated Circuits Conference*
Wang, M. L., Baltasvias, S., Chang, T., Weber, M. J., Arbabian, A.
2018
- **Scaling of Ultrasound-Powered Receivers for Sub-Millimeter Wireless Implants** *IEEE Biomedical Circuits and Systems Conference (BioCAS)*
Chang, T., Weber, M. J., Charthad, J., Baltasvias, S., Arbabian, A.
2017