**Sayfe Kiaei , Professor,** School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ, Sayfe@asu.edu

## Professional Summary

Distinguished IEEE Fellow and Motorola Endowed Chair Professor with more than four decades of leadership experience in both academia and industry. Renowned for contributions to analog IC, RFIC, Power Management IC, Power Converters, communication systems, signal and multi-medial processing, and solar energy technologies. Founder and director of multiple multimillion-dollar international research centers under NSF, industry, CDADIC, and DOD, and government.

## Academic Appointments and Leadership

Includes positions at Arizona State University (Professor, Endowed Chair), Oregon State University (Assistant/Associate Professor), and University of Texas, Austin (Adjunct Professor).

## Industrial Leadership

Motorola Inc., Senior Member of Technical Staff leading R&D for 2G–4G, Bluetooth, WiFi, GPS, DSL, and DOCSIS technologies; represented Motorola in ITU, ETSI, and 3GPP standards committees and with Boeing Co. (1985–87) as Research Engineer.

## Honors and Recognition

- IEEE Fellow (2004–Present)
- IEEE Darlington Best Paper Award on Mixed-Signal IC(1995)
- Global Standards Award (Motorola, 1999)
- Carter Best Teaching Award (1992)
- NSF Industrial University Fellowship (1993)

## Funded Research Projects (selected)

- COE-Energy Center ($22.5M, 2021–2025)
- NSF Spectrum Sharing (5G/6G) ($300K, 2020–2022)
- NSF IUCRC Connection One ($8.5M, 2002–2020)
- USPCAS-Energy ($18M, 2014–2020)
- NSF ERC Solar Testbed QESST ($45M, 2010–2020)
- DARPA RADHARD Electronics ($1.5M, 2005–2006).

## Publications and Patents

Full list of IEEE publications, patents, and standards contributions are included below.

## Detailed Curriculum Vitae

**FIELDS OF SPECIALIZATION**

- Integrated Circuits (IC): Analog & Digital IC, Radio Frequency IC, Communication IC (wireline and wireless), Power Management IC, Sensor IC, Digital Circuits (VLSI, Processor, DSP, Memory System, System Clocking).
- Power Management: Power Management IC, Converters and Inverters (DC-DC, AC-DC), Resonators, Energy System & Management, Solar Energy.
- Sensor Circuits & Bioelectronics: RFID, ZIGBEE, Bluetooth, Biosensors, Hearing Aid sensors, Cochlear implant, Implanted devices electronics, Medical Implanted Communication System (MICS).
- Communication Systems: Wireless (1G-5G), wireline (CABLE DOCSIS, DSL, Ethernet, Serial I/O), 2-way radio, BT, WIFI,NFC, Sensors.
- Signal Processing: Digital Signal Processing, Adaptive Signal Processing, Video & Audio and acoustic Signal Processing, Adaptive multi-medial Audio/video signal processing.

**DEGREES**

- Ph.D., Electrical and Computer Engineering, Washington State University, 1987
- M.S., Electrical and Computer Engineering, Washington State University, 1984
- B.S.E.E., Electrical Engineering, Northeastern University, Washington State University, 1982

**ACADEMIC POSITIONS**

Fall 2001-Present: Professor, Endowed Chair Professor in Analog and RFIC, School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ

**Courses:**

- Integrated Circuits: Analog and digital IC, Radio Frequency IC, RF transceiver, VLSI, Processor System Architecture, Controller, Microcontroller, ASIC, Multimedia processor, Memory, I/O, Memory Controller, Clock System
- Power Management: PMIC, Inverters, DC/AC-DC, Battery Management, Integrated Power Management IC
- Sensors, Bioelectronics, Biosensors, Hearing Aid Electronics, Implanted devices electronics
- Signal and Audio processing: DSP, Video/Audio/Acoustic processing, adaptive signal processing, Array processing
- Communication system: multi-media, wireline and wireless, IP, PHY and MAC layer, Wireless 1G, 2G GSM, 3G (UMTA, WBCDMA), 4G LTE, 5G, WiFi, Bluetooth, Wireless system standards, MODEM standards, Wireline CABLE, DOCIS, DSL, Ethernet, Serial I/O

**Research Projects**

Research Funded by NSF, DOC, USAID, DARPA, JPL, NASA, Motorola Inc., Intel Inc., Broadcom, Qualcomm, Raytheon, General Dynamics, Texas Instruments, and over 10 other industries.

**2004-2020, Director and founder of NSF IUCRC Center Connection One**, School of Electrical, Computer, and Energy Engineering, Arizona State University, Tempe, AZ;

- The NSF Connection One Industry/University Cooperative Research Center was established the center in 2002 with focus on communication system, integrated Circuits and Systems, wireless system, RF, multi-media, sensors, and power management. The center has five university member with over 30 industrial members. Total funding over $10M.

**2021-2025, Director and PI, USAID, Center of Excellence for Energy (COE) ASU/ Egypt** , Funding $22.5M; Director and PI: COE - USIAD Centers of Excellence for Energy (COE)

- COE/E is a partnership between ASU-US and three Egyptian partner universities (EPUs): Ain Shams University (ASU-EG), Aswan University (AU), and Mansoura University (MU). COE areas included power system, grid, power electronics, DC-DC / Inverters, renewable energy, PV, BIPV, PV fabrication and lamination, PV testing and certification, Wind, Hydro, bio-fuel, fuel cell, batteries and storage, and thermal areas. COE funded over $4M of research, and has developed new energy curriculum. COE supported exchange of over 90 students and faculty visiting ASU for the last 4 years.

**2014-2020, Director, USAID, ASU/PCASE:** Center for Advance Studies in Energy, Funding $18M. Director and PI: PCASE - Partnership Center for Energy systems,

- Energy Center funded by the USAID. USIAD Centers for Advanced Studies in Energy program (USPCAS-E) is a partnership between Arizona State University and two leading Pakistani universities: the National University of Science and Technology (NUST) Islamabad and the University of Engineering and Technology in Peshawar (UET). PCASE funded over $5M of research, and has developed two new Graduate schools of Energy. Within 5 years, the center has over 1000 MS and PHD Students, with 14 new energy MS and PhD degrees, two new building with over 20 energy labs, and supported exchange of over 200 students. PCASE areas included power system, grid, power electronics, renewable energy, PV, BIPV, PV fabrication and lamination, PV testing and certification, Wind, Hydro, bio-fuel, fuel cell, batteries and storage, and thermal areas.

**2008-2012: Associate Dean of Research**, Ira A. Fulton Schools of Engineering, Arizona State University

- Responsible for leading the research infrastructure, promoting and developing research programs with industry and federal agencies, leading large multi-university proposals,

investing and providing seed funding to foster new research areas, and promoting graduate program in the college of engineering. Research Enterprise support included:

- Increase College of Engineering research funding from $50M to over $80M.
- Working with Vice President for Research, Dean's, and directors on University-wide research initiatives.
- Established the first NSF Engineering Research Center (ERC) at the ASU on Solar Energy QESST. Managed, organized and planned the ERC proposal process. ASU is the lead school partnering with MIT, Georgia Tech, U of Delaware, Cal-Tech, U of New Mexico, and UA.
- Lead the QESST testbeds for the development of built-in PV(BIPV) system including solar array integration with roof shingles, PV windows, single chip BIPV module regulator, and PV fabrication.
- Lead several trans-disciplinary 4M research projects (4M: multi-million, multi-investigator, multi-disciplinary, multi-university grants) in energy, security, and related initiatives.
- Oversight of over 20 existing research centers in the college of Engineering.
- Engage with industry and federal government to establish new research collaborations.
- Organized workshops and supported proposals for NSF, NIH, DOE, DOD, DARPA, etc.
- Organized workshops for new assistant professors to apply for NSF CAREER Awards. ASU CAREER awards grew from 3 annual awards in 2008 to over 15 CAREER awards by 2012.
- Research Administration and pre-award proposal administration for the schools. Developed a decentralized research administration and advancement team for the Schools supporting 5 schools, 12 departments, over 220 engineering faculty, with funding over $70M.
- Annual budget over $7M for supporting research centers, seed funding for new center, cost sharing, proposal support, equipment and infrastructure support, graduate scholarships, and research administration.
- ADR Staffs included, Director of industrial and government liaison, Director of research administration, and 14 research advancement staff.
- Graduate Programs: Recruiting, Fellowships, marketing, outreach, coordination with departments

**1997-2001, Adjunct Professor, Electrical and Computer Engineering Dept.,** The University of Texas, Austin, Texas,

- Taught graduate courses at UT Austin on communication System, signal processing, multi0medial comm. Co-advised two Ph.D. program committees in IC design and Telecomm (while at Motorola)

**1987-1993, Assistant / Associate Professor -** Electrical and Computer Engineering Department, Oregon State University, Corvallis, OR

- Research and classes in Electronics, DSP, Communication system, multi-medial, Audio/video processing, networks, Wireless systems, MODEMS, Power management, power electronics. Graduated 30 MS and Ph.D. students.
- Faculty Chair, Computer Engineering Program, Developed a new Computer Engineering Program at OSU in 1987
- 1987-1993, NSF Center For Digital / Analog IC (CDADIC) Co-Director, NSF IUCRC Center director at Oregon State University. The CDADIC was established the center in 1987 with focus on integrated circuits at WSU, UW, and OSU with over 20 industrial members
  - https://cdadic.oregonstate.edu/

**INDUSTRIAL POSITIONS**

**1993-2002: Motorola Inc., Senior Member of Technical Staff,** Personal Communication Sector, Austin, Texas - Worked projects related to wireless communications, two-way push-to-talk radios, wireless networks, ADSL and MODEM RF, and related areas.

- Motorola Cellular Division, Wireless Technology Center (WITC), 1997-2002. Responsible for development of integrated circuits and systems for wireless handset. Lead number of projects including cellular (2G, 3G, 4G), wireless connectivity (Bluetooth and WIFI transceiver), GPS and location Receiver, wireless networks, 2-way radios and related areas.
- Motorola Semi-conductor products sector (SPS), Broadband Products Operations, 1995-1997, Worked on the development of XDSL (ADSL, VDSL, G.lite), MODEM, DOCSIS, Wireline communication, Optical broadband communication systems including OFDM, modulation, synchronization, equalization and the development of a single chip ADSL transceiver (CopperGoldTm). The transceiver contained Analog Front End (A/D, D/A, Hybrid), custom DSP, baseband processor, Memory, I/O, Clock system, DMT, modulation, demodulation, FFT, IFFT, echo canceler, time domain equalizer, front-end constellation mapping, Trellis code modulation, Viterbi decoder), audio and acoustic processing, DSP, video/audio / signal processing, and an on-chip DSP core.
- Land Mobile Products Sector LMPS 1993-1995, Responsible for Wireless digital two-way radios, developed RFIC, RF receiver, RF transmitter, digital audio and acoustic processing, audio and acoustic custom IC, DSP, frequency synthesizer, ADC, DAC, hot spot wireless network, next generation of digital two-way radios, "Talk about Radios", Japanese cellular systems (PHS).
- Standards, Represented Motorola in various standards including 2G-4G, GPS, Bluetooth working group, WiFi, 802.11, and DSL standards including T1E1, International Telecommunication Unit (ITU), T1E1, ETSI, 3GPPP, Universal ADSL Working Group (UAWG), Bluetooth working group, G.Lite working group, etc.

**1985-87: Member of Research Staff, Boeing Co.,** Bellevue, Wa, Flight Systems Research and Technology Center, summer. Design Engineer, Hardware and CAD tool development for system control.

**CONSULTANT**

- Medtronic's, Analog bio-sensors, MICS, 2004-2005.
- Intel Inc. Chandler, AZ, 2002-2006: Development of 3G-4G Wireless transceiver.
- Sony Inc., San Diego, CA & Tokyo, Japan, 2002-2004: Review and development of various telecom cellular system architecture including 3G system architecture, and GPS system.
- Motorola Inc. 2002-2005: Supporting development of BT, WiFi, E911, GPS integrated circuits and systems for the cellular and mobile handsets.
- Hewlett Packard, Corvallis, OR – 1990-1993: Various project on development of custom analog and digital IC's for printer and inkjet system.
- Tektronix Inc, Beaverton, OR - 1988-1990: Design and Implementation of Data acquisition system for Spectrum analyzer, development of custom DSP algorithm for the Tektronix spectrum analyzer including system architecture, simulation, analysis, and design of oversampled data acquisition system.

**FUNDED RESEARCH PROJECTS**

**Partial list of Research Awards**

2021-2025 – COE – Center of Excellence for Energy, U.S. Agency for International Development (USAID), PI and Director, $22.5M.

2020-2022 - Center for Next Generation Wireless Spectrum Sharing (5-6G Spectral sharing) The National Science Foundation (NSF), SII Planning, PI, $300K.

Communication of shared spectrum for muti-media / Data / WiFi / Cellular

2002-2020 – Industry/University Cooperative Research Center (IUCRC), The National Science Foundation (NSF) - Connection One, NSF contribution $1.5M.

Annual Industry Contribution: Total over $7M.

2015-2016 – Integration of Smart Dynamic Optical Communication, The National Science Foundation (NSF), Integration of Smart Dynamic Optical Communication Networks for Intelligent Distribution of Power Workload and Data in Disaster, $200K

2015-2020 – U.S. Agency for International Development (USAID), PCASE – Center for Energy systems, PI and Director, $18M.

2013-2014 Arizona Space Grant Consortium, NASA, Goddard Space Flight Center, RADHARD electronics, $200K

2012-2015 – Solar Energy, Private Donor, Solar Energy Development on international projects, $2M

2011-2014 – Self-Characterization for Calibration MEMS Sensors, Semi-Conductor Research Corporation

Self-Characterization for Calibration and Process Feedback of MEMS Devices, bio-sensor , $300K

2011-2013 - Bio-Sensors for Vital Signs Monitoring Device Design, The National Science Foundation (NSF), Remote wireless Bio-Sensors for Vital Signs Monitoring Device Design, $250K

2010-2011 – Adaptive Compensation of Analog circuits, The National Science Foundation, Adaptive Compensation of Analog circuits imperfections using DSP methods, $150K,

2010-2011 – Adaptive Self-Healing Wireless Sensor, The National Science Foundation, Autonomous Self-Healing Sensor Network Radio and Mixed-Signal Readout System Design, National Science Foundation (NSF), $300K

2010-2020 – Solar Testbed, The National Science Foundation (NSF), $45M , QESST NSF ERC Center on Solar Energy, Testbed Director

2010-2015 – REU, undergraduate research projects, The National Science Foundation (NSF), Research Experience for Undergraduate Students, projects: adaptive video, audio and acoustic, Glucose Amp-meter and impedeometer, total $400K

2008-2013 - Solar System, The Science Foundation of Arizona (SFAZ), PEPER- Photovoltaic Environmental Performance and Reliability for the Arizona-Wide Electric Grid, $1.2M.

2008-2009 - Medically implanted bio-sensor, The National Science Foundation (NSF), Medically implanted bio-sensor, wireless implanted bio-sensors, Wireless Glucose sensors, MICS, $200K

2007-2011 – MEMS implanted hearing aid and bio-sensors, The National Science Foundation (NSF), Micro-Power Multi-Phase on-chip MEMS Hearing Aid, Adaptive hearing aid audio processor, 2007-2011, $500K.

2007-2009 – Implantable Bio-Sensors, The National Science Foundation (NSF), High Efficiency Power Delivery and Front-End Module Design for Implantable Bio-Sensors $480K

2005-2009 - MIMO Wireless network, The National Science Foundation (NSF), Cognitive MIMO Communications for Dynamic-Spectrum Wireless Networks, sharing multi-medial MIMO system, $150K

2005-2009 - Radio Network, The National Science Foundation (NSF), Autonomous Self-Healing Sensor Network Radio, , $250K

2005-2008 Integrated LiDAR on a chip, BAE Systems, Integrated on-chip Time Measurement Circuits LiDAR; $650K

2005-2008 – Power Management Circuits, Freescale Semiconductor, PWM, Battery & Power management, $150K

2005-2006 – RADHARD Electronics, DOD: Defense Advanced Research Projects Agency (DARPA), Radhard by Design - MRC/DARPA, Total funding $1.5M

2005-2010 - Wireless Integrated Nano Technology Center, State of Arizona, WINTECH-Wireless Integrated Nano Technology Center, broad spectrum of projects on wireless shared spectrum system including video/audio/data and IP, $450K annually, total $2.5M

2004-2005 –NASA , Integration of Ultra-Low power RF CMOS, $127K

2004-2008 – Implanted Neural-Enabled Prostheses bio-sensor with Cochlear impant, Deference Advance Research Project Agency (DARPA), Implanted Neural-Enabled Prostheses biosensor (Cochlear implant) with Sensorimotor Integration, $500K

2004-2008 – NEMS RF Filters, Deference Advance Research Project Agency (DARPA), Nano-Mechanical RF Band pass resonator for 2GHZ RF Applications, with JPL, $2.2 M,

2003-2005 - Implanted Neuro-Sensor, DOD-ARMY-ARL: Army Research Office (ARO), Implanted Neuro-sensor, $175K

2002-2005 – RFIC, WiFi, Intel Corporation, Design of Multi-Standard RF Front-End Circuits for Cellular and WiFi, $300K

2002 – Geo-location, GPS, SRC, LOW POWER ULTRA - WIDE BAND GEOLACTION SYSTEMS, $65K.

2001-2003 – UWB, WIFI, SRC (Semi-conductors research Corp), Ultra-Wideband Transceivers for cellular and WiFi 802.11, $225K

1987-1993 - Design of Analog/Digital IC's, The National Science Foundation, Center for the Design of Analog/Digital IC's ( CDADIC) 1987-1995, At Oregon State, $1.5M

1992-1994 – RFIC, Motorola Land Mobile Products Sector, LMPS, Low Power IF processing for Direct Digital Transceivers, $100K,

1993 – Mixed-Signal IC, Hewlett-Packard, Hewlett-Packard Faculty Chair position in Mixed-Signal IC, HP, $500K

1992-1993 - Faculty industry Fellowships, The National Science Foundation, National Science Foundation, Motorola Inc. Faculty Industry Fellowship, $250K,

1992-1993 - Research Initiation Award (RIA) , The National Science Foundation, National Science Foundation, Research Initiation Award (RIA) (same as current CAREER Award), Synthesis and Automatic Derivation of Multi-Rate VLSI Arrays for DSP Algorithms, $320K.

1988-1992 – Center for the Design of Analog/Digital IC's ( CDADIC), CDADIC, various projects on Low-Noise Source Coupled Logic (SCL), Mixed-Mode IC's, CDACIC $350K.

1988- Spectrum and time analyzers, Tektronix Inc., Decimation Filters for A/D Noise Enhancements, Tektronix, Inc., $100K,

1987-1993 – DARPA, MOSIS, Tektronix, IT, Motorola, Various grants for IC Fabrication (DARPA/MOSIS, VLSI)

Testing equipment (Tek, HP), DSP system development (TI, Motorola)

**AWARDS**

- IEEE Fellow 2004-Present
- IEEE Fellows CAS Committee Chair, 2009-2012
- Global Standards Award, For contributions in the International Telecommunication Unit (ITU) for Asymmetric Digital Subscriber Line (ADSL) G.Lite Standards. Motorola Inc., 1999.
- 10X Cycle Reduction Award, for development of new IC design process from DSP algorithm to IC layout, Motorola Inc., 1995.
- IEEE Darlington best paper Award, IEEE Circuits and Systems Society Best Paper Award, 1995. For "Characterization and Comparison of CMOS FSCL Circuits with Conventional CMOS for mixed-signal ICs," Published at: IEEE Trans. on Circuits and Systems II, Sept. 93.
- Carter Best Teaching Award, College of Engineering Best Teacher Award, Oregon State University, 1992. For "outstanding and inspirational teaching in the College of Engineering". Award is selected by the confidential vote of all of the undergraduate students in the College of Engineering among over 125 professors in the College.
- Industrial University Fellowship (IUF) Award, National Science Foundation, 1993.
- Research Initiation Award, National Science Foundation, 1990-93.
- Outstanding Graduate Student Scholarship, Azur-Data Inc. WSU, 1984

**PROFESSIONAL RECOGNITION**

- IEEE Fellow, 2004-Present
- IEEE Fellow Committee Chair, CAS, 2008-2010
- IEEE Fellow Committee member, 2007-2010.
- IEEE Senior Member, 1993-Present, IEEE Member 1987-1992.
- IEEE Faculty Advisor, Oregon State University, 1987-1990

**IEEE Editorials**

- IEEE Microwave Magazine, Editor,
- IEEE System Journal, Associate Editor, 2010-2011.
- IEEE Transactions on VLSI, Associate Editor, Jan 2001-2008.
- IEEE Communication Magazine, Editor, Feature Issues on "Circuits for Wireless and Wireline Communications," April 1999.
- IEEE Transactions on Microwave Theory and Techniques , editor, Special Issue on: "Radio Frequency IC Design," Dec. 1998.
- IEEE Transactions on Circuits and Systems-II, editor, Special Issue on: "Low-Power Wireless Communication Systems," June 1997.
- Associate Editor, IEEE Transactions on Circuits and Systems-II, 1993-1996.
- Editor and Reviewer for many IEEE journals and conferences
- Founding member of IEEE RF Integrated Circuits Symposium
- Associate Editor, IEEE Communications, Tutorial & Surveys Magazine, 2006-2009.

**Conference Organizations**

Conference chair, Technical Program committee chair and TPC member, tutorials, workshops, session chair, etc. in RFIC, ISSCC, ISCAS,VLSI, ICASSP, Low-Power Symposium, ICC, Application Specific IC's, IMS, MTT, etc.

- RFIC Executive Committee members, 2000-2017
- RFIC Steering Committee Member, RFIC symposium, 1996-2017.
- RFIC Founding member, 1995-96.
- Technical Program Chair, IEEE International Sym. on Circuits and Systems, Phoenix, AZ, 2002.
- ISSCC Admin Council, Conferences Committee 2000-2005.
- General Chair, Radio Frequency IC (RFIC) Symposium, Seattle, WA, 2002.
- Technical Program Chair, RFIC Symposium, Phoenix, AZ, 2001.
- Finance Chair, RFIC symposium, Boston, MA, 2000.
- Publicity Chair, RFIC symposium, Los Angeles, CA, 1999.
- Transactions Chair, RFIC symposium, Baltimore, MD, 1998.
- General Chair, Int. Sym. on Low-Power Electronics and Design (ISLPED), Bio-Sensors, Monterey, CA, 97.
- Executive Committee Member, Int. Symp. On Low-Power Electronics and Design, 96-2000.
- Technical Program Committee Member of the following conferences:
- International Conference on Circuits and Systems: 1996, 2000, 2001, 2004-2008
- RFIC Symposium, 1996-2018
- Application Specific Array Processing (ASAP): 2000-2002

- Technical Program Chair, Int. Sym. on Low-Power Electronics and Design, Monterey, CA, 96.
- Arizona Telecom Comm (ATIC)
- GLS VLSI 1998, Lafayette, Louisiana, 1998
- VLSI Design 98, Chennai, India, Jan. 1998.
- ICECS, Lisbon, Portugal, 98.
- Application Specific Array Processing, 1995-97, 2000
- Vehicular Technology Conference, 1995-97.
- Inter. Conf. on Intelligent Information Systems, D.C., 1994-95.
- IEEE Pacific Rim Conference on Communications & Computers, Victoria, BC, Canada, 1991.

**EXPERT WITNESS** (partial list)

Patent litigation, patent validity, infringement, IPR, expert reports, deposition, testimony, and trade secrets at ITC, District court, and USPTO in the following areas (Complete list of cases available):

Electronics: Analog and Digital IC, Radio Frequency Integrated Circuits RFIC, Power Management, Battery Management, PMIC

Bioelectronics: Bi-sensors, Glucose monitoring system, Heart monitoring system, Hearing AID

Wireless communication: shared spectrum multi-media communication, Cellular: 1G- 5G, OFDM, WLAN: WiFi, 802.11, Bluetooth, ZIGBEE, RFID and NFC, Wireless Standards (ITU, ETSI, 3GPPP, LTE) including AMPS, GSM, CDMA, WCDMA, LTE, 1G, 2G, 3G, 4G, BT, WiFi (802.11), Satellite communications, Satellite Transceiver, ECHO and Multi-path cancelation

Wireline Communications: Wireline multi-media communication, MODEM, Digital Subscriber Line, ADSL, VDSL, MODEM, DOCSIS, Wireline standards including DSL, MODEM and DOCIS, Ethernet, Serial I/O, and related standards ITU/ETSI

GPS & Location: GPS system, GPS receiver, location determination

MEMS: MEMS, Bulk Acoustic Wave Filters, SAW, MEMS resonators, MEMS sensors, MEMS accelerometer

Signal processing & Communication: Mukti-medial processing, Vidoe/Audio and acoustic signal processing, adaptive signal processing, Communication networks, Communication system

**PATENTS, PUBLICATIONS**

Patents and Patent Applications (partial list)

## Issued Patents

| Patent No. | Title | Inventors | Filed | Issued |
|---|---|---|---|---|
| US 11,896,367 | Wireless in-shoe physical activity monitoring | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Sep. 27, 2021 | Feb. 13, 2024 |
| US 11,246,507 | Wireless in-shoe physical activity monitoring apparatus | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 15, 2022 |
| US 11,129,547 | Wireless in-shoe physical activity monitoring | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Sep. 28, 2021 |
| US 11,108,325 | Electronic circuit and method of controlling three-level switching converters | Parisa Mahmoudidaryan; Sayfe Kiaei; Bertan Bakkaloglu | Feb. 14, 2020 | Aug. 31, 2021 |
| US 10,791,965 | Method and apparatus for wirelessly monitoring repetitive bodily movements | Sayfe Kiaei | Apr. 12, 2019 | Oct. 6, 2020 |
| US 10,653,337 | Local object detection system | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 18, 2017 | May 19, 2020 |
| US 10,264,996 | Method and apparatus for wirelessly monitoring repetitive bodily movements | Sayfe Kiaei | Oct. 19, 2016 | Apr. 23, 2019 |
| US 10,213,134 | Wireless in-shoe physical activity monitoring implementation | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 26, 2019 |
| US 7,528,754 | Finite impulse response digital to analog converter | Bertan Bakkaloglu; Sayfe Kiaei; Shahin Taleie | Feb. 8, 2007 | May 5, 2009 |
| US 7,372,333 | Monolithic supply-modulated RF power amplifier and DC-DC power converter IC | Siamak Abedinpour; Sayfe Kiaei | Feb. 3, 2004 | May 13, 2008 |
| US 7,218,085 | Integrated ZVS synchronous buck DC-DC converter with adaptive control | Siamak Abedinpour; Sayfe Kiaei | May 27, 2003 | May 15, 2007 |
| US 6,661,371 | Oscillator frequency correction in GPS signal acquisition | Thomas M. King; George J. Geier; Sayfe Kiaei | Apr. 30, 2002 | Dec. 9, 2003 |

**Published Patent Applications**

| Publication No. | Title | Inventors | Filed | Published / Status |
|---|---|---|---|---|
| US 2022/0007968 | Wireless in-shoe physical activity monitoring | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Sep. 27, 2021 | Jan. 13, 2022 |
| US 2020/0266708 | Electronic circuit and method of controlling three-level switching converters | Parisa Mahmoudidaryan; Sayfe Kiaei; Bertan Bakkaloglu | Feb. 14, 2020 | Aug. 20, 2020 |
| US 2019/0231226 | Method and apparatus for wirelessly monitoring repetitive bodily movements | Sayfe Kiaei | Apr. 12, 2019 | Aug. 1, 2019 |
| US 2018/0054663 | Wireless in-shoe physical activity monitoring implementation | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 22, 2018 |
| US 2018/0049670 | Wireless in-shoe physical activity monitoring apparatus | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 22, 2018 |
| US 2018/0052228 | Local object detection system | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 18, 2017 | Feb. 22, 2018 |
| US 2018/0049671 | Wireless in-shoe physical activity monitoring dongle | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 22, 2018 |
| US 2018/0049703 | Wireless in-shoe physical activity monitoring | Timothy W. Markison; Sayfe Kiaei; Gary McCoy | Aug. 17, 2017 | Feb. 22, 2018 |
| US 2017/0105659 | Method and apparatus for wirelessly monitoring repetitive bodily movements | Sayfe Kiaei | Oct. 19, 2016 | Apr. 20, 2017 |
| US 2007/0033000 | Efficient non-iterative frequency domain method and system for nonlinear analysis | Shahin Farahani; Sayfe Kiaei; Nazanin Darbanian | Jul. 19, 2006 | Feb. 8, 2007 |
| US 2006/0226909 | Monolithic supply-modulated RF power amplifier and DC-DC power converter IC | Siamak Abedinpour; Sayfe Kiaei | Feb. 3, 2004 | Oct. 12, 2006 |
| US 2006/0052988 | Compressed vector-based spectral analysis method and system for nonlinear RF blocks | Shahin Farahani; Sayfe Kiaei; Nazanin Darbanian | Nov. 21, 2003 | Mar. 9, 2006 |

| Publication No. | Title | Inventors | Filed | Published / Status |
|---|---|---|---|---|
| US 2003/0201935 | Oscillator frequency correction in GPS signal acquisition | Thomas M. King; George J. Geier; Sayfe Kiaei | Apr. 30, 2002 | Oct. 30, 2003 |

**Standards Contributions**

- "Spectral Compatibility of ADSL: Frequency Overlap vs. OFDM," T1E1, Dec. 97.
- "Echo Cancellation for G.Lite Universal ADSL," OFDM, Universal ADSL Working Group, Atlanta, GA, Jan 98.
- "8-bit QAM Constellation effects on reach for universal ADSL," OFDM, Universal ADAL Working Group, Atlanta, GA, Jan 98.
- "Trellis Code Modulation coding gain for OFDM," Universal ADSL Working Group, Atlanta, GA, Jan 98.
- "Monte Carlo Modeling and simulation of twisted pair wiring for OFDM," Universal ADAL Working Group, Atlanta, GA, Jan 98.
- "Overlap Upstream/Downstream spectral allocation for OFDM ADSL ," International Telecommunication Unit, Chicago, March 98.
- "Echo Cancellation for ADSL OFDM," International Telecommunication Unit, Antwerp, Belgium, 98.
- "Performance of Echo Cancellation ADSL in OFDM system in the presence of Near End Cross Talk (NEXT)," International Telecommunication Unit, Honolulu, Hawaii, June 98.
- Presentations and editorials at various XDSL and OFDM standards: ITU, ETSI, UAWG, and T1E1, 97-99.
- Presentations and editorials at various standards including Bluetooth SIG, WiFi, 802.11, NFC, RFID, 2G-5G, ITU, 3GPPP, 802.11, ..

**Books**

"Design, Modeling and Testing of Data Converters, P Carbone, S Kiaei," F Xu - 2014 – Springer, © Springer-Verlag Berlin Heidelberg 2014

**Refereed Journal Papers**

1. Alizadeh, M. Yaghoobi, M. Meghdadi, A. Medi, and S. Kiaei, "A 10-W X-Band Class-F High-Power Amplifier in a 0.25-μm GaAs pHEMT Technology," IEEE Trans. Microwave Theory Techn., vol. 69, no. 1, pp. 157–169, Jan. 2021.
2. S. A. Ayati, A. Alizadeh, and S. Kiaei, "CMOS Full-Duplex Mixer-First Receiver with Adaptive Self-Interference Cancellation," IEEE Trans. Circuits Syst. I: Regular Papers, vol. 68, no. 2, pp. 868–878, Feb. 2021.

3. S. Nazhad, A. Alizadeh, M. Frounchi, J. D. Cressler, B. Bakkaloglu, and S. Kiaei, "5-GHz Injection-Locked Delay Cell With 10–25 ns Adjustable Group Delay in SiGe BiCMOS," IEEE Trans. Circuits Syst. II: Express Briefs, vol. 71, no. 3, pp. 1042–1046, Mar. 2024.
4. Alizadeh, S. Hassanzadehyamchi, A. Moradinia, A. S. Nazhad, M. Frounchi, O. Momeni, A. M. Niknejad, J. D. Cressler, and S. Kiaei, "D-Band Active Transmission Line with 33-GHz Bandwidth and 13-dB Gain at $f_{max}/2$," IEEE Trans. Microwave Theory Techn., vol. 72, no. 4, pp. 2452–2465, Apr. 2024.
5. CMOS Full-Duplex Mixer-First Receiver With Adaptive Self-Interference Cancellation. S. -A. Ayati; A. Alizadeh; S. Kiaei, IEEE Transactions on Circuits and Systems I, Jan 2021.
6. A 10-W X-Ban Class-F High-Power Amplifier in a 0.25m GaAs pHEMT Technology, A. Alizadeh; M. Yaghoobi; M. Meghdadi; A. Medi; S. Kiaei, IEEE Transactions on Microwave Theory and Techniques, Jan 2021.
7. An X-Band Class-J Power Amplifier With Active Load Modulation to Boost Drain Efficiency, A. Alizadeh; S. Hassanzadehyamchi; A. Medi; S. Kiaei, IEEE Transactions on Circuits and Systems I: Sep 2020
8. In-Field Recovery of RF Circuits from Wearout Based Performance Degradation, D. Chang; J. N. Kitchen; S. Kiaei; S. Ozev, IEEE Transactions on Emerging Topics in Computing, Jun 2020
9. A 50-V Isolation, 100-MHz, 50-mW Single-Chip Junction Isolated DC-DC Converter With Self-Tuned Maximum Power Transfer Frequency, C. Liu; D. Mandal; Z. Yao; M. Sun; J. Todsen; B. Johnson; S. Kiaei; B. Bakkaloglu, IEEE Transactions on Circuits and Systems II: Express Brief, May 2019
10. Wideband Hybrid Envelope Tracking Modulator With Hysteretic-Controlled Three-Level Switching Converter and Slew-Rate Enhanced Linear Amplifier, P. Mahmoudidaryan; D. Mandal; B. Bakkaloglu; S. Kiaei, IEEE Journal of Solid-State Circuits, 2019.
11. Low-Power/Low-Voltage Integrated CMOS Sense Resistor-Free Analog Power/Current Sensor Compatible With High-Voltage Switching DC-DC Converter, S. Singh; D. Mandal; B. Bakkaloglu; S. Kiaei IEEE Transactions on Circuits and Systems I, 2019
12. Adaptively Biased Output Cap-Less NMOS LDO With 19 ns Settling Time, D. Mandal; C. Desai; B. Bakkaloglu; S. Kiaei, IEEE Transactions on Circuits and Systems II: Express Briefs, 2019
13. Chirag Desai; Debashis Mandal; Bertan Bakkaloglu; Sayfe Kiaei, "A 1.66 mV FOM Output Cap-Less LDO With Current-Reused Dynamic Biasing and 20 ns Settling Time," IEEE Solid-State Circuits Letters Year: 2018, Volume: 1, Issue: 2, Pages: 50-53
14. Debashis Mandal ; Chirag Desai ; Bertan Bakkaloglu ; Sayfe Kiaei, Adaptively Biased Output Cap-Less NMOS LDO with 19 ns Settling-Time;; IEEE Transactions on Circuits and Systems II: Feb 2019
15. Ayati, Mandal, Bakkaloglu, Kiaei, "Integrated Quasi-Circulator With RF Leakage Cancellation for Full-Duplex Wireless Transceivers,", IEEE Trans of Microwave theory and techniques, Dec 2017.

16. “A 50-mA 99.2% Peak Current Efficiency, 250-ns Settling Time Digital Low-Dropout Regulator With Transient Enhanced PI Controller”, ChaiYong Lim ; Debashis Mandal ; Bertan Bakkaloglu ; Sayfe Kiaei; IEEE Transactions on Very Large Scale Integration (VLSI) Systems; Year: 2017, Volume: 25, Issue: 8; Pages: 2360 - 2370
17. *“ Flexible PV-cell Modeling for Energy Harvesting in Wearable IoT Applications,* Jaehyun Park, Hitesh Joshi, Hyung Gyu Lee, Sayfe Kiaei, Umit Y. Ogras, ACM Transactions on Embedded Computing Systems (TECS), Volume 16, Article No.: 156, Pages 1 – 20, September 2017
18. Doohwang Chang; Jennifer N. Kitchen; Sayfe Kiaei; “Sule Ozev, In-field Recovery of RF Circuits from Wearout Based Performance Degradation”, IEEE Transactions on Emerging Topics in Computing, 2017.
19. Edgar Martí-Arbona; Debashis Mandal; Bertan Bakkaloglu; Sayfe Kiaei, A High-Voltage-Compliant Current-to-Digital Sensor for DC–DC Converters in Standard CMOS Technology, IEEE Transactions on Power Electronics, 2017, Volume: 32, Issue: 3. Pp. 2180 - 2188
20. Michael Cheah ; Debashis Mandal ; Bertan Bakkaloglu ; Sayfe Kiaei, “A 100-mA, 99.11% Current Efficiency, 2-mVpp Ripple Digitally Controlled LDO With Active Ripple Suppression”, Aug 2016.
21. Marti-Arbona, E.; Mandal, D.; Bakkaloglu, B.; Kiaei, S., "A High-Voltage Compliant Current-to-Digital Sensor for DC-DC Converters in Standard CMOS Technology," IEEE Transactions on Power Electronics, no. 99, 2016.
22. Chang, D.; Kitchen, J.N.; Bakkaloglu, B.; Kiaei, S.; Ozev, S., "Monitor-Based In-Field Wearout Mitigation for CMOS LC Oscillators," in IEEE Transactions on Device and Materials Reliability, vol. 16, no. 2, pp. 183-193, 2016.
23. Chang, D.; Kitchen, J.N.; Bakkaloglu, B.; Kiaei, S.; Ozev, S., "Design-Time Reliability Enhancement Using Hotspot Identification for RF Circuits," in IEEE transactions on Very Large Scale Integration (VLSI) Systems, -vol. 24, no. 3, pp. 1179-1183, 2016
24. Seungkee Min; Copani, T.; Kiaei, S.; Bakkaloglu, B., "A 90-nm CMOS 5-GHz Ring-Oscillator PLL With Delay-Discriminator-Based Active Phase-Noise Cancellation," Solid-State Circuits, IEEE Journal of , vol.48, no.5, pp.1151,1160, May 2013
25. Junghan Lee; Tino Copani; Terry Mayhugh Jr.; Bhaskar Aravind; Sayfe Kiaei; Bertan Bakkaloglu.;, “A 280 mW, 0.07% THD+N class-D audio amplifier using a frequency-domain quantizer,” Analog Integrated Circuits and Signal Processing, 173-186, 2012.
26. Seungkee Min; Copali, T.; Kiaei, S.; Bakkaloglu, B.; , “A 90nm CMOS 5GHz ring oscillator PLL with delay-discriminator based active phase noise cancellation,” Radio Frequency Integrated Circuits Symposium (RFIC), 2012 IEEE, pp. 173-176, 2012
27. Deligoz, I.; Naqvi, S.R.; Copani, T.; Kiaei, S.; Bakkaloglu, B.; Sang-Soo Je; Junseok Chae; , "A MEMS-Based Power-Scalable Hearing Aid Analog Front End," Biomedical Circuits and Systems, IEEE Transactions on , vol.5, no.3, pp.201-213, June 2011
28. Copani, T.; Seungkee Min; Shashidharan, S.; Chakraborty, S.; Stevens, M.; Kiaei, S.; Bakkaloglu, B.; , "A CMOS Low-Power Transceiver With Reconfigurable Antenna

Interface for Medical Implant Applications," Microwave Theory and Techniques, IEEE Transactions on , vol.59, no.5, pp.1369-1378, May 2011

29. Khalil, W.; Shashidharan, S.; Copani, T.; Chakraborty, S.; Kiaei, S.; Bakkaloglu, B.; , "A 405-MHz All-Digital Fractional- Frequency-Locked Loop for ISM Band Applications," Microwave Theory and Techniques, IEEE Transactions on , vol.59, no.5, pp.1319-1326, May 2011
30. Lashkarian, N.; Nassiri-Toussi, K.; Jula, P.; Kiaei, S.; , "Performance Bound on Ergodic Capacity of MIMO Beam-Forming in Indoor Multi-Path Channels," Communications, IEEE Transactions on , vol.58, no.11, pp.3254-3264, November 2010
31. Hyungseok Kim; Junghan Lee; Copani, T.; Bazarjani, S.; Kiaei, S.; Bakkaloglu, B.; , "Adaptive Blocker Rejection Continuous-Time ADC for Mobile WiMAX Applications," Solid-State Circuits, IEEE Journal of , vol.44, no.10, pp.2766-2779, Oct. 2009
32. Kitchen, J.N.; Chu, C.; Kiaei, S.; Bakkaloglu, B.; , "Combined Linear and -Modulated Switch-Mode PA Supply Modulator for Polar Transmitters," Solid-State Circuits, IEEE Journal of , vol.44, no.2, pp.404-413, Feb. 2009
33. Sang-Soo Je; Rivas, F.; Diaz, R.E.; Jiuk Kwon; Jeonghwan Kim; Bakkaloglu, B.; Kiaei, S.; Junseok Chae; , "A Compact and Low-Cost MEMS Loudspeaker for Digital Hearing Aids," Biomedical Circuits and Systems, IEEE Transactions on , vol.3, no.5, pp.348-358, Oct. 2009
34. Taleie, S.M.; Copani, T.; Bakkaloglu, B.; Kiaei, S.; , "A Linear Digital IF to RF SD DAC Transmitter With Embedded Mixer," Microwave Theory and Techniques, IEEE Transactions on , vol.56, no.5, pp.1059-1068, May 2008
35. Wing-Yee Chu; Bakkaloglu, B.; Kiaei, S.; , "A 10 MHz Bandwidth, 2 mV Ripple PA Regulator for CDMA Transmitters," Solid-State Circuits, IEEE Journal of , vol.43, no.12, pp.2809-2819, Dec. 2008.
36. Lyles, U. J.; Copani, T.; Bakkaloglu, B.; Kiaei, S.; , "An Injection-Locked Frequency-Tracking ΣΔ Direct Digital Frequency Synthesizer," Circuits and Systems II: Express Briefs, IEEE Transactions on , vol.54, no.5, pp.402-406, May 2007
37. Khalil, W.; Bakkaloglu, B.; Kiaei, S.; , "A Self-Calibrated On-Chip Phase-Noise Measurement Circuit With −75 dBc Single-Tone Sensitivity at 100 kHz Offset," Solid-State Circuits, IEEE Journal of , vol.42, no.12, pp.2758-2765, Dec. 2007
38. Chen, X.; Kiaei, S.; , "Pulse generation scheme for low-power low-complexity impulse ultra-wideband," Electronics Letters , vol.43, no.1, pp.44-45, Jan. 4 2007
39. Carlosena, A.; Wing-Yee Chu; Bakkaloglu, B.; Kiaei, S.; , "Randomized Carrier PWM With Exponential Frequency Mapping," Power Electronics, IEEE Transactions on , vol.22, no.3, pp.960-966, May 2007
40. Abedinpour, S.; Bakkaloglu, B.; Kiaei, S.; , "A Multistage Interleaved Synchronous Buck Converter With Integrated Output Filter in 0.18 μm SiGe Process," Power Electronics, IEEE Transactions on , vol.22, no.6, pp.2164-2175, Nov. 2007
41. Kitchen, J. N.; Deligoz, I.; Kiaei, S.; Bakkaloglu, B.; , "Polar SiGe Class E and F Amplifiers Using Switch-Mode Supply Modulation," Microwave Theory and Techniques, IEEE Transactions on , vol.55, no.5, pp.845-856, May 2007

42. A Multistage Interleaved Synchronous Buck Converter With Integrated Output Filter in 0.18 micron. , S Abedinpour, B Bakkaloglu, S Kiaei - Power Electronics, IEEE Transactions on, Nov. 2007, Volume: 22, pp - 2164-2175
43. B Bakkaloglu, S Kiaei, B Chaudhuri - Computer Standards & Interfaces, 2007 – Elsevier, Analog Computer Standards & Interfaces Volume 29, Issue 1 , January 2007, Pages 19-30
44. Pulse generation scheme for low-power low-complexity impulse ultra-wideband, Chen, X.; Kiaei, S.; Electronics Letters; Volume: 43 Issue: 1 Jan. 2007 ; Page(s): 44-45
45. Bandwidth extension technique for polar modulated RF transmitters ; Bakkaloglu, B.; Kiaei, S.; Dwyer, R.; Electronics Letters; Volume: 42 Issue: 8 13 April 2006 ; Page(s): 476- 478 ;
46. Frequency modulated bandpass SD chirp synthesizer for sensor applications; Chung, H.H.; Lyles, U.; Copani, T.; Bakkaloglu, B.; Kiaei, S.; Electronics Letters; Volume: 42 Issue: 16 August 3, 2006 ; Page(s): 917- 918
47. Radiation Hardened by Design RF Circuits Implemented in 0.13 mm CMOS Technology; Chen, W.; Pouget, V.; Gentry, G. K.; Barnaby, H. J.; Vermeire, B.; Bakkaloglu, B.; Kiaei, K.; Holbert, K. E.; Fouillat, P. ; Nuclear Science, IEEE Transactions on ; Volume: 53 Issue: 6 Part=1, Dec. 2006 ; Page(s): 3449-3454 ;
48. Analysis of Single Events Effects on Monolithic PLL Frequency Synthesizers ; Chung, H. H.; Chen, W.; Bakkaloglu, B.; Barnaby, H. J.; Vermeire, B.; Kiaei, S. ; Nuclear Science, IEEE Transactions on ; Volume: 53 Issue: 6 Part=1, Dec. 2006 ; Page(s): 3539-3543
49. Pulse generation scheme for low-power low-complexity impulse ultra-wideband
50. Chen, X.; Kiaei, S.; Electronics Letters; Volume: 43 Issue: 1 Jan. 4 2007; Page(s): 44-45
51. Bandwidth extension technique for polar modulated RF transmitters ; Bakkaloglu, B.; Kiaei, S.; Dwyer, R.; Electronics Letters; Volume: 42 Issue: 8 13 April 2006 ; Page(s): 476- 478 ;
52. Frequency modulated bandpass SD chirp synthesizer for sensor applications; Chung, H.H.; Lyles, U.; Copani, T.; Bakkaloglu, B.; Kiaei, S.; Electronics Letters; Volume: 42 Issue: 16 August 3, 2006 ; Page(s): 917- 918
53. Radiation Hardened by Design RF Circuits Implemented in 0.13 mm CMOS Technology; Chen, W.; Pouget, V.; Gentry, G. K.; Barnaby, H. J.; Vermeire, B.; Bakkaloglu, B.; Kiaei, K.; Holbert, K. E.; Fouillat, P. ; Nuclear Science, IEEE Transactions on ; Volume: 53 Issue: 6 Part=1, Dec. 2006 ; Page(s): 3449-3454 ;
54. Analysis of Single Events Effects on Monolithic PLL Frequency Synthesizers ; Chung, H. H.; Chen, W.; Bakkaloglu, B.; Barnaby, H. J.; Vermeire, B.; Kiaei, S. ; Nuclear Science, IEEE Transactions on ; Volume: 53 Issue: 6 Part=1, Dec. 2006 ; Page(s): 3539-3543
55. "Channel Shortening For Discrete Multi-tone Transceivers To Maximize Channel Capacity" OFDM and DSL, G. Arslan, B. Evans, S. Kiaei; ; IEEE Transactions for Signal Processing, Vol 49; No. 12; Pp: 3123-3135. Dec 2001.

56. Optimum equalization of multicarrier systems: a unified geometric approach, for OFDM Lashkarian, N.; Kiaei, S. ; IEEE Transactions on Communications, Volume: 49 Issue: 10 , Oct. 2001 Page(s): 1762 –1769
57. Class of cyclic-based estimators for frequency-offset estimation of OFDM systems; Lashkarian, N.; Kiaei, S. , IEEE Transactions on Communications , Volume: 48 Issue: 12 , Jan 2001; Page(s): 2139 –2149
58. Systems and circuits for broadband communications; Kiaei, S. IEEE Communications Magazine , Volume: 37 Issue: 4 , April 1999 Page(s): 70 –70
59. Westgate, C.R.; Gupta, R.K.; Kiaei, S. ; Microwave Theory and Techniques, IEEE Transactions on , Volume: 46 Issue: 12 Part: 2 , Dec. 1998 ; Page(s): 2180 –2181
60. Introduction to the special issue on low power wireless communications Kiaei, S.; Friedman, E.G. Circuits and Systems II: IEEE Transactions on Analog and Digital Signal Processing, Volume: 44 Issue: 6 , June 1997 Page(s): 425 –427
61. Adaptive multiuser detector for asynchronous DS-CDMA in Rayleigh fading; Dutta, A.K.; Kiaei, S. , IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing, Volume: 44 Issue: 6 , June 1997; Page(s): 468 -472
62. "Noise Considerations for Mixed-Signal RF IC Transceivers," ACM Transaction on Wireless Networks, Vol. 4, pp. 41-53, 1998. [S. Kiaei, D. Allstot, N. Verghese, K. Hansen].
63. "A triangularly weighted zero-crossing detector providing delta-sigma frequency-to-digital conversion", IEE Electronics Letters, vol.33, no.13, pp.1121-1122, June 1997. [M. Hovin, S. Kiaei, T.S. Laude]
64. "Adaptive Multi-user Detector For Asynchronous DS- CDMA In Raleigh Fading," IEEE Transactions on CAS-II, pp. 468-473, June 97. [A.K. Dutta, S. Kiaei]
65. "Multi-Rate Transformation of Recurrence Equations for Regular VLSI Arrays, " Application Specific Array Processors, IEEE Press, 1994. [L. Aihua, S. Kiaei]
66. "Analog Logic Techniques," IEEE Circuits and Devices Magazine, pp. 12-21, May 1993. [S. Kiaei, D. Allstot, R. Zele]
67. "Overlapping Transformation for Time-Area Optimal VLSI arrays for Toeplitz Matrices," J. of Computer and Software Engineering, Vol. 3, #4, pp. 461-481, June 95. [S. Kiaei, Yuepeng Zheng]
68. "Characterization and Comparison of CMOS FSCL Circuits with Conventional CMOS Logic for Hybrid ICs," IEEE Trans. on Circuits and Systems, Sept. 93. [S.H. Chee, S. Kiaei, D. Allstot]
69. "Low Noise Logic for Mixed-Mode VLSI Circuits, Journal of microelectronics, " Vol. 23, No. 2, pp. 103-115, April 1992. [S. Kiaei, D. Allstot]
70. "Enhancement Source-Couple Logic ESCL," IEEE Trans. on Circuits, and Systems II: Analog and Digital Signal Processing, Vol. 39, No. 6, pp. 399-402, July92. [M. Maleki, S. Kiaei]
71. "Synthesis of Complex FSCL Blocks for Mixed Mode Systems," IEEE J. Solid State Circuits, Vol. 27, No. 8, pp. 1157-1168, Aug 1992. [S. Maskai, S. Kiaei, D. Allstot]
72. "Adaptive self-correcting D-S Modulators," IEE Electronics Letters, Vol. 28, No. 14, pp. 1288-1290, July 92. [S. Abdenadher, S. Kiaei, G. Temes, R. Schreier]

73. "On-line Adaptive Digital Correction of Dual-Quantization Delta-Sigma Modulators," IEE Electronics Letters, Vol. 28, No. 16, pp. 1511-1513, July 92.[Y. Yang, R. Schreier, G. Temes, S. Kiaei]
74. "Piecewise Linear Schedules for Recurrence Equations," VLSI Sig. Proc. VI, IEEE Press, 1992. [S. Rajopadhye, L. Mui, S. Kiaei]
75. "Automatic Synthesis and Derivations of VLSI Architectures for Recursive IIR Digital Filters," CAD for VLSI Design, 1990. [S. Kiaei, S. Rajopadhye]
76. "VLSI Design of Wavefront Array Processors for Recursive Filters," VLSI Signal Processing II, IEEE Press, pp. 152-164, 1988. [S. Kiaei, U.B. Desai]
77. "RFIC Design," IEEE Transactions on Microwave Theory and Techniques, v. 46, pp. 2180-2183, Dec. 98. [S. Kiaei, R. Gupta]
78. "Circuits for Wireless and Wireline Communications," IEEE Comm. Magazine, April 1999. [S. Kiaei]

**Conference Publications**

1. S. Nazhad, A. Alizadeh, M. Frounchi, J. D. Cressler, B. Bakkaloglu, and S. Kiaei, "A 5-GHz Injection-Locked Delay Cell With 10–25 ns Adjustable Group Delay in a 130-nm SiGe BiCMOS Technology," 2022 IEEE BiCMOS and Compound Semiconductor Integrated Circuits and Technology Symposium (BCICTS 2022), pp. 41–44, 2022.
2. " Switching Battery Charger with Cascaded Two Loop Control Using Time-Based Techniques,". ChaiYong Lim; Debashis Mandal; Bertan Bakkaloglu; Sayfe Kiaei, Published in: 2021 IEEE Applied Power Electronics Conference and Exposition (APEC), June 2021
3. 27.5 A 91%-Efficiency Envelope-Tracking Modulator Using Hysteresis-Controlled Three-Level Switching Regulator and Slew-Rate-Enhanced Linear Amplifier for LTE-80MHz Applications P. Mahmoudidaryan; D. Mandal; B. Bakkaloglu; S. Kiaei, 2019 IEEE International Solid- State Circuits Conference - (ISSCC), 2019
4. Integrated High-Efficiency Single-Inductor CCM Boost Converter for Multi-Junction PV Energy Harvesting, Q. Peng; D. Mandal; P. Mahmoudidaryan; B. Bakkaloglu; S. Kiaei, 2019 IEEE Applied Power Electronics Conference and Exposition (APEC), 2019
5. Sense resistor-free analog power sensor for boost converter with 14.1% gain error and 9.4% offset error, Shrikant Singh ; Debashis Mandal ; Bertan Bakkaloglu ; Sayfe Kiaei; 2018 IEEE 9th Latin American Symposium on Circuits & Systems (LASCAS), 2018
6. Ayati, S. A.; Mandal, D.; Bakkaloglu, B.; Kiaei, S., "Adaptive Integrated CMOS Circulator," in IEEE Symposium on Radio Frequency Integrated Circuits (RFIC), May 2016
7. Khunti, H.; Krehbiel, J.; Cheah, M.; Bakkaloglu, B.; Kiaei, S., "SSB transceiver for vital sign detection," in IEEE Biomedical Circuits and Systems Conference (BioCAS), Oct. 2015.

8. Marti-Arbona, E.; Mandal, D.; Bakkaloglu, B.; Kiaei, S., "Low power integrated on-chip current to digital converter," in Applied Power Electronics Conference and Exposition (APEC), March 2015
9. Marti-Arbona, E.; Mandal, D.; Bakkaloglu, B.; Kiaei, S., "PV panel power optimization using MPPT," in Applied Power Electronics Conference and Exposition (APEC), March 2015
10. Chang, D.; Ozev, S.; Bakkaloglu, B.; Kiaei, S.; Afacan, E.; Dundar, G., "Reliability enhancement using in-field monitoring and recovery for RF circuits," in VLSI Test Symposium (VTS), 2014
11. Deng, Lingfei; Kundur, Vinay; Naga, Naveen Sai Jangala; Ozel, Muhlis Kenan; Yilmaz, Ender; Ozev, Sule; Bakkaloglu, Bertan; Kiaei, Sayfe; Pratab, Divya; Dar, Tehmoor, "Electrical calibration of spring-mass MEMS capacitive accelerometers," Design, Automation & Test in Europe Conference & Exhibition (DATE), 2013 , vol., no., pp.571,574, 18-22 March 2013
12. Kiaei, M.S.; Fouli, K.; Scheutzow, M.; Maier, M.; Reisslein, M.; Assi, C., "Delay analysis for ethernet long-reach passive optical networks," Communications (ICC), 2012 IEEE International Conference on , vol., no., pp.3099,3104, 10-15 June 2012
13. Marti-Arbona, Edgar; Bakkaloglu, Bertan; Kiaei, Sayfe, "Ultra-Low Power Current-to-Digital Sensor for Switching DC-DC Converters," Ph.D. Research in Microelectronics and Electronics (PRIME), 2012 8th Conference on , vol., no., pp.1,4, 12-15 June 2012
14. Seungkee Min; Copani, T.; Kiaei, S.; Bakkaloglu, B., "A 90nm CMOS 5GHz ring oscillator PLL with delay-discriminator based active phase noise cancellation," Radio Frequency Integrated Circuits Symposium (RFIC), 2012 IEEE , vol., no., pp.173,176, 17-19 June 2012
15. A fully integrated pulsed-LASER time-of-flight measurement system with 12ps single-shot precision; Copani, T.; Vermeire, B.; Jain, A.; Karaki, H.; Chandrashekar, K.; Goswami, S.; Kitchen, J.; Chung, H.H.; Deligoz, I.; Bakkaloglu, B.; Barnaby, H.; Kiaei, S.; Custom Integrated Circuits Conference, 2008. CICC 2008. IEEE; 21-24 Sept. 2008. 359-362.
16. A Self-Calibrated On-chip Phase-Noise-Measurement Circuit with -75dBc Single-Tone Sensitivity at 100kHz Offset. Khalil, W.; Bakkaloglu, B.; Kiaei, S. Solid-State Circuits Conference, 2007. ISSCC 2007. Digest of Technical Papers. IEEE International. 11-15 Feb. 2007. 546-621.
17. Supply modulators for RF polar transmitters. Kitchen, J.; Chu, C.; Kiaei, S.; Bakkaloglu, B. Radio Frequency Integrated Circuits Symposium, 2008. RFIC 2008. IEEE. June 17 2008-April 17 2008. 417-420.
18. A 700uA, 405MHz fractional-N All digital frequency-locked loop for MICS band applications. Shashidharan, S.; Khalil, W.; Chakraborty, S.; Kiaei, S.; Copani, T.; Bakkaloglu, B. Radio Frequency Integrated Circuits Symposium (RFIC), 2010 IEEE. 23-25 May 2010. 409-412.
19. A 14-GHz CMOS receiver with local oscillator and IF bandpass filter for satellite applications. Wenjian Chen; Copani, T.; Barnaby, H.J.; Kiaei, S. Radio Frequency Integrated Circuits Symposium, 2009. RFIC 2009. IEEE. 7-9 June 2009. 123-126.

20. *In situ* tuning of a MEMS microphone using electrodeposited nanostructures, Sang-Soo Je, Jere C Harrison, Michael N Kozicki, Bertan Bakkaloglu, Sayfe Kiaei and Junseok Chae, Published 18 February 2009 • 2009 IOP Publishing Ltd Journal of Micromechanics and Microengineering, Volume 19, Number 3
21. (Invited) analysis and modeling of noise folding and spurious emission in wideband fractional-N synthesizers. Khalil, W.; Hedayati, H.; Bakkaloglu, B.; Kiaei, S. Radio Frequency Integrated Circuits Symposium, 2008. RFIC 2008. IEEE. June 17 2008-April 17 2008. 291-294.
22. Combined Linear and Î"-Modulated Switched-Mode PA Supply Modulator for Polar Transmitters. Kitchen, J.; Wing-Yee Chu; Deligoz, I.; Kiaei, S.; Bakkaloglu, B. Solid-State Circuits Conference, 2007. ISSCC 2007. Digest of Technical Papers. IEEE International. 11-15 Feb. 2007. 82-588.
23. A 24GHz CMOS digitally modulated polar power amplifier with embedded FIR filtering. Hyungseok Kim; Copani, T.; Kiaei, S. Ph.D. Research in Microelectronics and Electronics (PRIME), 2010 Conference on. 18-21 July 2010. 1-4.
24. A 0.18Î¼m CMOS fully integrated RFDAC and VGA for WCDMA transmitters. Taleie, S.M.; Yongping Han; Copani, T.; Bakkaloglu, B.; Kiaei, S. Radio Frequency Integrated Circuits Symposium, 2008. RFIC 2008. IEEE. June 17 2008-April 17 2008. 157-160.
25. A 96Gb/s-Throughput Transceiver for Short-Distance Parallel Optical Links. Goswami, S.; Copani, T.; Jain, A.; Karaki, H.; Vermeire, B.; Barnaby, H.J.; Fetzer, G.; Vercillo, R.; Kiaei, S. Solid-State Circuits Conference, 2008. ISSCC 2008. Digest of Technical Papers. IEEE International. 3-7 Feb. 2008. 230-609.
26. A 0.13-Î¼m CMOS Ultra-Low Power Front-End Receiver for Wireless Sensor Networks. Wenjian Chen; Copani, T.; Barnaby, H.J.; Kiaei, S. Radio Frequency Integrated Circuits (RFIC) Symposium, 2007 IEEE. 3-5 June 2007. 105-108.
27. A low noise buck converter with a fully integrated continuous time Î£Î" modulated feedback controller. Wong, M.; Bakkaloglu, B.; Kiaei, S. Custom Integrated Circuits Conference, 2007. CICC '07. IEEE. 16-19 Sept. 2007. 377-380.
28. A 10MHz-Bandwidth 2mV-Ripple PA-Supply Regulator for CDMA Transmitters. Wing-Yee Chu; Bakkaloglu, B.; Kiaei, S. Solid-State Circuits Conference, 2008. ISSCC 2008. Digest of Technical Papers. IEEE International. 3-7 Feb. 2008. 448-626.
29. A Bandpass Î"Î£ DDFS-Driven 19GHz Frequency Synthesizer for FMCW Automotive Radar. Hoon Hee Chung; Lyles, U.; Copani, T.; Bakkaloglu, B.; Kiaei, S. Solid-State Circuits Conference, 2007. ISSCC 2007. Digest of Technical Papers. IEEE International. 11-15 Feb. 2007. 126-591.
30. A 2mW CMOS MICS-band BFSK transceiver with reconfigurable antenna interface. Seungkee Min; Shashidharan, S.; Stevens, M.; Copani, T.; Kiaei, S.; Bakkaloglu, B.; Chakraborty, S. Radio Frequency Integrated Circuits Symposium (RFIC), 2010 IEEE. 23-25 May 2010. 289-292.
31. A 14mW 5Gb/s CMOS TIA with gain-reuse regulated cascode compensation for parallel optical interconnects. Goswami, S.; Silver, J.; Copani, T.; Wenjian Chen; Barnaby, H.J.; Vermeire, B.; Kiaei, S. Solid-State Circuits Conference - Digest of Technical Papers, 2009. ISSCC 2009. IEEE International. 8-12 Feb. 2009. 100-101a.

32. A 0.13-Âµm CMOS local oscillator for 60-GHz applications based on push-push characteristic of capacitive degeneration. Copani, T.; Hyungseok Kim; Bakkaloglu, B.; Kiaei, S. Radio Frequency Integrated Circuits Symposium (RFIC), 2010 IEEE. 23-25 May 2010. 153-156.
33. A 90nm CMOS 5GHz ring oscillator PLL with delay-discriminator based active phase noise cancellation. Seungkee Min; Copani, T.; Kiaei, S.; Bakkaloglu, B. Radio Frequency Integrated Circuits Symposium (RFIC), 2012 IEEE. 17-19 June 2012. 173-176.
34. A BiCMOS voltage controlled oscillator and frequency doubler for K-band applications. Copani, T.; Bakkaloglu, B.; Kiaei, S. Radio Frequency Integrated Circuits Symposium, 2008. RFIC 2008. IEEE. June 17 2008-April 17 2008. 537-540.
35. Dynamic calibration of feedback DAC non-linearity for a 4<sup>th</sup> order CT sigma delta for digital hearing aids. Naqvi, S.R.; Deligoz, I.; Kiaei, S.; Bakkaloglu, B. SOC Conference (SOCC), 2011 IEEE International. 26-28 Sept. 2011. 109-113.
36. Ultra-Low Power Current-to-Digital Sensor for Switching DC-DC Converters. Marti-Arbona, Edgar; Bakkaloglu, Bertan; Kiaei, Sayfe. Ph.D. Research in Microelectronics and Electronics (PRIME), 2012 8th Conference on. 12-15 June 2012. 1-4.
37. Ultra-Low Power Current-to-Digital Sensor for Switching DC-DC Converters
38. Marti-Arbona, Edgar; Bakkaloglu, Bertan; Kiaei, Sayfe – 2012 8th Conference on Ph.D. Research in Microelectronics and Electronics (PRIME), 2012.
39. HH Chung, U Lyles, T Copani, B Bakkaloglu, S Kiaei - Solid-State Circuits Conference, 2007. ISSCC 2007.
40. W Chen, T Copani, HJ Barnaby, S Kiaei - Radio Frequency Integrated Circuits (RFIC) Symposium, 2007,
41. A Self-Calibrated On-chip Phase-Noise-Measurement Circuit with -75dBc Single-Tone Sensitivity at 100kHz Offset, , , 11-15 Feb. 2007
42. J Kitchen, WY Chu, I Deligoz, S Kiaei, - Solid-State Circuits Conference, 2007. ISSCC 2007. Digest of, 2007 - Solid-State Circuits Conference, 2007. ...
43. , M Wong, B Bakkaloglu, S Kiaei, F Semiconductor, AZ … - Custom Integrated Circuits Conference, 2007. CICC'07. IEEE, 2007
44. Tri-mode integrated receiver for GPS, GSM 1800, and WCDMA ; Darbanian, N.; Farahani, S.; Kiaei, S.; Bakkaloglu, B.; Smith, M.; Radio Frequency Integrated Circuits (RFIC) Symposium, 2006 IEEE ; 11-13 June 2006 ;
45. A low power bandpass □□ modulator injection locked synthesizer ; Hoon Hee Chung; Lyles, U.; Copani, T.; Bakkaloglu, B.; Kiaei, S. ; Radio Frequency Integrated Circuits (RFIC) Symposium, 2006 IEEE; 11-13 June 2006
46. Linear RF polar modulated SiGe Class E and F power amplifiers ; Kitchen, J.D.; Deligoz, I.; Kiaei, S.; Bakkaloglu, B. ; Radio Frequency Integrated Circuits (RFIC) Symposium, 2006 IEEE ; 11-13 June 2006

47. Randomized carrier PWM with exponential frequency mapping; Carlosena, A.; Wing-Yee Chu; Bakkaloglu, B.; Kiaei, S. ;Circuits and Systems, 2006. ISCAS 2006. Proceedings. 2006 IEEE International Symposium on; 21-24 May 2006
48. A 65MHZ switching rate, two-stage interleaved synchronous buck converter with fully integrated output filter ; Abedinpour, S.; Bakkaloglu, B.; Kiaei, S. ; Circuits and Systems, 2006. ISCAS 2006. Proceedings. 2006 IEEE International Symposium on; 21-24 May 2006
49. A Multi-Stage Interleaved Synchronous Buck Converter with Integrated Output Filter in a 0.18/spl mu/ SiGe process ; Abedinpour, S.; Bakkaloglu, B.; Kiaei, S. ; Solid-State Circuits, 2006 IEEE International Conference Digest of Technical Papers; Feb. 6-9, 2006 ; Page(s): 1398- 1407
50. A Bandpass RF-DAC with Embedded FIR Reconstruction Filter ; Taleie, S.M.; Copani, T.; Bakkaloglu, B.; Kiaei, S. ; Solid-State Circuits, 2006 IEEE International Conference Digest of Technical Papers ; Feb. 6-9, 2006 ; Page(s): 2370- 2379
51. S. Kiaei, S. M. Taleie, B. Bakkaloglu, "Low-power high-Q NEMS receiver architecture", IEEE International Symposium on Circuits and Systems, Vol.5, 23-26 May 2005 Page(s):4401 - 4404
52. Kiaei, Overview of Transmit and Linear PA Up-converters, Vol 5, May 05; RFIC 2005, Workshops, PP. 28-45.
53. S. Kiaei, RF Design of Up and Down converters, S. Kiaei, Vol. 5, May 05, RF Building Blocks workshop, PP. 45-68. Location: Long Beach Convention Center, Room 102AB
54. S. Kiaei, IMS 2005, DC/DC converters and Noise Shaping Techniques for Switched-Mode DC/DC Converters for RF Transceivers, Vol. 5, May 05, Monilithic Power Management workshop, PP. 98-112.
55. Darbanian, N.; Kiaei, S.; Farahani, S.;, Optimum design and trade-offs for a triple-band LNA for GSM, WCDMA and GPS applications, SOC Conference, 2004. Proceedings. IEEE International , 12-15 Sept. 2004, PP 383-386
56. Xiaomin Chen; Kiaei, S.;, An improved delay-hopped transmitted-reference ultra wideband architecture, SOC Conference, 2004. Proceedings. IEEE International , 12-15 Sept. 2004, Pages:359 - 362
57. Taleie, S.M.; Jiandong Zhang; Kiaei, S.;, Nonlinearity and power consumption analysis of a low-IF MEMS receiver architecture, Circuits and Systems, 2004. MWSCAS '04. The 2004 47th Midwest Symposium on , Volume: 3 , July 25-28, 2004; Pages:III_363 - III_366
58. Kiaei, S.; Smith, M.;, Receiver design for 4G, Microwave Symposium Digest, 2004 IEEE MTT-S International , Volume: 1 , 6-11 June 2004, Pages:VI - VI
59. Badillo, D.A.; Kiaei, S.;, Comparison of contemporary CMOS ring oscillators, Radio Frequency Integrated Circuits (RFIC) Symposium, 2004. Digest of Papers. 2004 IEEE , 6-8 June 2004, Pages:281 - 284
60. Badillo, D.A.; Kiaei, S.;, A low phase noise 2.0 V 900 MHz CMOS voltage controlled ring oscillator, Circuits and Systems, 2004. ISCAS '04. Proceedings of the 2004 International Symposium on , Volume: 4 , 23-26 May 2004, Pages: IV - 533-6 Vol.4

61. Xuejin Wang; Aykut Dengi; Sayfe Kiaei;, A high IIP3 X-band BiCMOS mixer for radar applications, Circuits and Systems, 2004. ISCAS '04. Proceedings of the 2004 International Symposium on , Volume: 1 , 23-26 May 2004, Pages:I-113 - I-116 Vol.1
62. Shahin Farahani, Nazanin Darbanian, and Sayfe Kiaei, Simulation of Nonlinear Systems with Sparse Input Vectors Using CRC Techniques, Proceedings of 11th IEEE workshop on Digital Signal Processing, Aug 2004, NM, Vo I, PP VoI
63. Shahin Farahani, Nazanin Darbanian, and Sayfe Kiaei, AN EDUCATIONAL TOOL AND TEACHING GUIDELINES FOR NONLINEAR SYSTEMS WITH SPARSE INPUTS , Proceedings of 3rd IEEE workshop on Signal Processing for Education, Aug 2004, NM, Vol I, PP Vol L
64. Shahin Farahani, Nazanin Darbanian, and Sayfe Kiaei, Compressed Vector-Based Spectral Analysis Technique for Analysis and Simulation of Nonlinear Systems , Proceedings of IEEE Wireless and Microwave Technology Conference, Florida 2004 pp.45
65. Shahin Farahani, Nazanin Darbanian, Sayfe Kiaei, Ali Afsahi, Hang Song , A SiGe BiCMOS 0.18 Multi-Mode RF front-end for GSM 1.8, GPS, and WCDMA Applications, Proceedings of Software Define Radio technical conference, Phoenix, AZ 2004, Workshop Vol, Section III, PP 301-325
66. S. Farahani, N. Darbanian, S. Kiaei, , "Compressed Vector-Based Spectral Analysis Technique for RF Nonlinear Analysis and Simulation of Circuits and Systems", , 6TH IEEE Wireless and Microwave Technology Conference, Florida 2004, Section I, PP 40-45
67. N. Darbanian S. Farahani, A. Afsahi, H. Song, S. Kiaei, M. Smith, "A SiGe BiCMOS 0.18un Multi-Mode RF front-end for GSM 1.8, GPS, and WCDMA Applications" accepted for presentation in IEEE WAMI conference, Florida 2004, 6TH IEEE Wireless and Microwave Technology Conference , Florida 2004,Section I, pp 45-49
68. S.M Taleie, J. Zhang, S. Kiaei, A New Low-IF Receiver using High-Q MEMS filter, 6TH IEEE Wireless and Microwave Technology Conference -Florida 2004, Section II, pp 90-95
69. S. Kiaei, S. M. Taleie, B. Bakkaloglu, “Low-power high-Q NEMS receiver architecture”, IEEE International Symposium on Circuits and Systems, Vol.5, 23-26 May 2005 Page(s):4401 - 4404
70. Kiaei, Overview of Transmit and Linear PA Up-converters, Vol 5, May 05; RFIC 2005, Workshops, PP. 28-45.
71. S. Kiaei, RF Design of Up and Down converters, S. Kiaei, Vol. 5, May 05, RF Building Blocks workshop, PP. 45-68. Location: Long Beach Convention Center, Room 102AB
72. S. Kiaei, IMS 2005, DC/DC converters and Noise Shaping Techniques for Switched-Mode DC/DC Converters for RF Transceivers, Vol. 5, May 05, Monilithic Power Management workshop, PP. 98-112.
73. “A Bandpass Delta Sigma RF-DAC with Embedded FIR Reconstruction Filter,” International Solid State Circuits Conference (ISSCC) 2006 [Taleie, S.M.; Copani, T.; Bakkaloglu, B.; Kiaei, S.]

74. “Compressed Vector-Based Spectral Analysis Technique for RF Nonlinear Analysis and Simulation of Circuits and Systems,” Proc. of IEEE WAMI Conference, Clearwater, FL, June 2004. [S. Farahani, N. Darbanian, S. Kiaei]
75. "A SiGe BiCMOS 0.18un Multi-Mode RF front-end for GSM 1.8, GPS, and WCDMA Applications," Proc. of IEEE WAMI Conference, Clearwater, FL, June 2004. [N. Darbanian S. Farahani, A. Afsahi, H. Song, S. Kiaei, M. Smith]
76. “Delta-Sigma Data Converters for Wireless Applications,” Proc. of 2003 International Workshop on ADC's, June 2003. [Chaudhuri, Bikram, Kiaei, S.]
77. “A Pseudo-Concurrent 0.18 /spl mu/m Multi-Band CMOS LNA,” Proc. of 2003 IEEE MTT-S International, June 2003. [Lavasani, S.H.M.; Chaudhuri, B.; Kiaei, S.]
78. “Monolithic Supply Modulated RF Power Amplifier and DC-DC Power Converter IC,” Proc. of 2003 IEEE MTT-S International, June 2003. [Abedinpour, S.; Deligoz, K.; Desai, J.; Figiel, M.; Kiaei, S.]
79. “A Novel Low Phase Noise 1.8V 900MHz CMOS Voltage Controlled Ring Oscillator,” Proc. of ISCAS '03 Volume: 3, May, 2003. [Badillo, D.A.; Kiaei, S.]
80. “Monolithic Distributed Power Supply for a Mixed-Signal Integrated Circuit,” Circuits and Systems, 2003. ISCAS '03. Proceedings of the 2003 International Symposium on, Volume: 3, 2003 [Abedinpour, S.; Kiaei, S.]
81. “A Pseudo-Concurrent 0.18 /spl mu/m Multi-Band CMOS LNA,” Radio Frequency Integrated Circuits (RFIC) Symposium, 2003 IEEE, June 2003 [Lavasani, S.H.M.; Chaudhuri, B.; Kiaei, S.]
82. “Parasitic-aware synthesis of RF CMOS switching power amplifiers,” Circuits and Systems, 2002. ISCAS 2002. IEEE International Symposium on , Volume: 1 , 2002 [Kiyong Choi; Allstot, D.J.; S. Kiaei]
83. “Monocycle shapes for ultra wideband system,” Circuits and Systems, 2002. ISCAS 2002. IEEE International Symposium on, Volume: 1, 2002, PP. 597 –600, [Xiaomin Chen; Kiaei, S.]
84. “An all-digital programmable digitally-controlled-oscillator (DCO) for digital wireless applications,” Circuits and Systems, 2002. ISCAS 2002. IEEE International Symposium on, Volume: 4, 2002, [Abdollahi, S.R.; Kiaei, S.; Bakkaloglu, B.; Fakhraie, S.M.; Anvari, R.; Abdollahi, S.E. ]
85. “Optimum equalization of multicarrier systems: a unified geometric approach Communications, IEEE Transactions on, Volume: 49 Issue: 10, Oct. 2001; Page(s): 1762 –1769, [Lashkarian, N.; Kiaei, S.]
86. “Equalization for Discrete Multitone Transceivers to Maximize Bit Rate,” IEEE Transactions on Signal Processing, Volume: 48, Issue:12, Dec. 2001; Pgs. 3123-3135, [Arslan, Evans, Kiaei]
87. "Performance of Differentially Detected DQPSK in the presence of I/Q Phase Imbalance," International Symposium on Circuits and Systems, Zurich, Switzerland, June 2000. [M. Scarpa, J. Vogel, J. Stonick, S. Kiaei]
88. “BER of differentially detected $\pi/4$ DQPSK in the presence of quadrature gain imbalance”, 1999 IEEE Wireless Communications and Networking Conference,

WCNC 1999, September 21-24, 1999, New Orleans, Louisiana, USA., 1999, [M. Scarpa, J. Vogel, J. Stonick, S. Kiaei]; 201-205;

89. "Globally Optimal ML Estimation of Timing and frequency offset in OFDM Systems," International Communications Conference, New Orleans, Louisiana, 2000. [N. Lashkarian, S. Kiaei]
90. "Minimum variance unbiased estimation of frequency offset in OFDM systems, a blind synchronization approach." Int. Conf. On Acoustics, Speech and Signal Processing, Istanbul, Turkey, 2000. [N. Lashkarian, S. Kiaei]
91. "Optimum Channel Shortening for Multicarrier Transceivers, " Int. Conf. On Acoustics, Speech and Signal Processing, Istanbul, Turkey, 2000.[G. Arslan, B. Evans, S. Kiaei]
92. "Class of Cyclic-Based Estimators for Frequency-Offset Estimation of OFDM Systems," IEEE Transactions on Communications, Volume: 48, Issue:12, Dec. 2000; Pgs. 2139-2149, [Lashkarian, Kiaei]
93. "Optimum Equalization of Multi-Carrier Systems Via Projection onto Convex Set," International Communication Conference, Vancouver, British Columbia, Canada, 1999. [N. Lashkarian, S. Kiaei]
94. "BER of Differentially Detected pi/4 DQPSK in the Presence of Quadrature Gain Imbalance" IEEE Wireless Communications and Networking Conference, Sept. 1999. [M. Scarpa, J. Vogel, J. Stonick, S. Kiaei]*
95. "Fast Equalizers for Finite Length MMSE Equalization with Application to DMT ADSL System," Int. Conf. On Acoustics, Speech and Signal Processing, vol. 5, pp. 2753-2756, Phoenix, AZ, 1999. [N. Lashkarian, S. Kiaei]
96. "Communication and Signal processing Circuits for ADSL/VDSL system," international workshop on design of mixed-mode integrated circuits and applications, Guanajuato, Mexico, July 1998. [S. Kiaei]
97. "Analysis of Adaptive CMOS Down Conversion Mixers," Proceedings of the 8th Great Lakes Symposium on VLSI, Feb. 1998. [Sandalci, C.K.; Kiaei, S.]
98. "DC offset correction for direct conversion transceivers," Great Lake VLSI Symposium, Lafayette, Louisiana, 1998. [C. Sandalci, S. Kiaei]*
99. "Fundamentals of ADSL system," SuperComm, Atlanta, GA, June 1998. [S. Kiaei]
100. "Low-Power RF Design," Design Automation Conference (DAC), Anaheim, CA, June 1997. [S. Kiaei]
101. "Adaptive Multi-user Detector for Asynchronous DS-CDMA in Rayleigh Fading," Transactions on Circuits and Systems II: Analog and Digital Signal Processing, June 1997. [Dutta, A.K.; Kiaei, S.]
102. "Δ-Σ Frequency-to-Time Conversion by Triangularly Weighted ZC Counter," International Symposium on Low Power Electronics and Design, Aug. 1997. [Hovin, M.; Kiaei, S.; Lande, T.S.]
103. "Introduction to the Special Issue on Low Power Wireless Communications," IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing, June, 1997. [Kiaei, S.; Friedman, E.G.]

104. “Low Power Frequency-to-Time Conversion for Cellular Systems Using Predictive Zero-Crossing,” 1997 IEEE 47th Vehicular Technology Conference, May 1997. [Dutta, A.K.; Kiaei, S.; Talwalkar, S.A.]
105. “Triangularly Weighted Zero-Crossing Detector Providing ΣΔ Frequency-to-Digital Conversion,” Electronics Letters, Volume: 33, Issue: 13, June 1997. [Hovin, M.E.; Lande, T.S.; Wisland, D.T.; Kiaei, S.]
106. Pages:1121 - 1122
107. “Low-Power Delta-Sigma Time-to-Digital Conversion,” Proc. 1997 International Symposium on Low Power Electronics and Design, pp. 52-56, Monterey, CA, 1997. [M. Hovin, S. Kiaei, T.S. Laude]
108. “Modified Adaptive Multi-user Detector for DS-CDMA with Fading,” 47th Vehicular Technology Conference, VTC 97, Phoenix, AZ, May 97. [A. Dutta, S. Kiaei]
109. “Predictive Zero-Crossing Frequency Discrimination for Cellular Systems, Part I and II.” 47th Vehicular Technology Conference, VTC 97, Phoenix, AZ, May 97. [A. Dutta, S. Kiaei]
110. “CDMA Multi-user Cancellation,” ", Int. Conf. On Acoustics, Speech and Signal Processing, Munich, Germany, April 97. [A. Dutta, S. Kiaei]
111. “Digitally Correcting Schemes for Oversampled A/D,” Int. Symp. On Circuits and systems, London, UK, 1994. [ S. Abdenadher, S. Kiaei, G. Temes, R. Schreier]*
112. “Multi-Rate Transformation of Recurrence Equations,” Int. Conf. on ASAP, Venice, Italy, Oct. 1993. [Li Aihua, Y. Zheng, S. Kiaei]
113. “Adaptive Digital Correction for Dual Quantization /spl Sigma/-/spl Delta/ Modulators,” IEEE International Symposium on Circuits and Systems, May 1993. [Kiaei, S.; Abdennadher, S.; Temes, G.C.; Yang, Y.]
114. “Analog Logic Techniques Steer Around the Noise,” IEEE Circuits and Devices Magazine, Volume: 9, Issue: 5, Sept. 1993; Pages:18 – 21 [Allstot, D.J.; Kiaei, S.; Zele, R.H.]
115. “Folded Source-Coupled Logic vs. CMOS Static Logic for Low-Noise Mixed-Signal ICs,” IEEE Transactions on Circuits and Systems I: Fundamental Theory and Applications, Sept. 1993. [Allstot, D.J.; San-Hwa Chee; Kiaei, S.; Shrivastawa, M.]
116. “Multi-Rate Transformation of Directional Affine Recurrence Equations,” International Conference on Application-Specific Array Processors, Oct. 1993. [Zheng, Y.; Kiaei, S.]
117. “Adaptive self-correcting ⍰⍰⍰ modulators,” International Conference on microelectronics, Tunisia, 1992. [S. Abdenadher, S. Kiaei, G. Temes]*
118. “Adaptive Self-Calibrating Delta-Sigma Modulators,” Electronics Letters, Volume: 28, Issue: 14, 2 July 1992; Pages: 1288 – 1289. [Abdennadher, S.; Kiaei, S.; Temes, G.; Schreier, R.]
119. “Enhancement Source-Coupled Logic for Mixed-Mode VLSI Circuits,” IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing, Volume: 39, Issue: 6, June 1992; Pages: 399 – 402. [Maleki, M.; Kiaei, S.]

120. "On-line Adaptive Digital Correction of Dual-Quantization Delta-Sigma Modulators," Electronics Letters, Volume: 28, Issue: 16, 30 July 1992; Pages: 1511 – 1513 [Yaohua Yang; Schreier, R.; Temes, G.C.; Kiaei, S.]
121. "Piecewise Linear Schedules For Recurrence Equations," Workshop on VLSI Signal Processing, Oct. 1992. [Rajopadhye, S.; Mui, L.; Kiaei, S.]
122. "Synthesis Techniques for CMOS Folded Source-Coupled Logic Circuits," IEEE Journal of Solid-State Circuits, Aug. 1992. [Maskai, S.R.; Kiaei, S.; Allstot, D.J.]
123. "A Folding Transformation for VLSI IIR Filter Array Design," Proc. of International Conference on Acoustics, Speech, and Signal Processing, Toronto, Canada, pp. 1237-1240, May 1991. [S. Rajopadhye, S. Kiaei]
124. "Systematic Derivation of Multi-Rate VLSI Arrays for the Solution of Toeplitz Matrices," IEEE Great Lakes Symposium on VLSI, March 1991. Proc. of IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing, Victoria, BC, Canada, pp. 623-626, May 1991. [S. Kiaei]
125. "CMOS Source-Couple Logic for Mixed-Mode VLSI," Proc. of International Symposium on Circuits and Systems, New Orleans, Louisiana, pp. 1608-1611, May 1990. [S. Kiaei, S.H. Chee, D. Allstot]
126. "VLSI Design of Multi-Rate Arrays," Proc. of International Conference on Acoustics, Speech, and Signal Processing, New Mexico, pp. 1049-1052, 1990. [L. Aihua, S. Kiaei]
127. "Comparison of Low-Noise Current-Mode Logic Circuits for High Performance Mixed-Mode Applications," Proc. of International Symposium on Circuits and Systems, New Orleans, Louisiana, May 1990. [S. H .Chee, S. Chow, S.S. Lee, S. Kiaei, D. Allstot]
128. "VLSI Design of Dynamically Reconfigurable Array Processors-DRAP,"" Proc. of International Conference on Acoustics, Speech, and Signal Processing, Glasgow, Scotland, 1989. [S. Kiaei, J. Durgham]
129. "VLSI Design of Bit/Serial Adaptive IIR Filters," Proc. of IEEE Pacific Conference on Communications, Computers, and Signal Processing, Victoria, Canada, pp. 650-652, June 1989. [R. Badyal, S. Kiaei]
130. "CCA Approach for ARMA Spectral Analysis," Proc. of IEEE International Symposium on Circuits and Systems, Portland, OR, pp. 1319-1322, May 1989. [S. Kiaei, L. Luo]
131. "Canonical Correlation Analysis (CCA) for ARMA Spectral Estimation," IEEE International Symposium on Circuits and Systems, May, 1989. [Kiaei, S.; Luo, L.]
132. "VLSI Implementation of Adaptive Bit/Serial IIR Filters," IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, June 1989. [Badyal, R.; Kiaei, S.]
133. "VLSI design of WAP for Recursive Equations," VLSI Signal Processing, 1988. [S. Kiaei, U. Desai]
134. "Independent Data Flow Wavefront Array Processors for Recursive Equations," Proc. of 20th Annual Conference on Information Sciences and Systems, Princeton University, NJ, 1986. [S. Kiaei, U. Desai]

135. "A Stochastic Realization Approach to Reduced-Order Hierarchical Estimation," Proc. of 24th IEEE Conference on Dec., Ft. Lauderdale, FL, pp. 416-421, December 1985. [U. Desai, S. Kiaei]
136. "Hierarchical Estimation Algorithms," Proc. of IEEE Conference on Man, Cybernetics, and Systems, Tucson, AZ, October 1985. [U. Desai S. Kiaei]
137. "Approximation of Markovian Models with Non-Constant Parameters," Proc. of 23rd IEEE Conference on Dec., Las Vegas, NV, pp. 1642-1644, December 1984. [U. Desai, S. Banerjee, S. Kiaei]
138. "A Canonical Correlation Approach to Reduced-Order LQR Design," Proc. of 23rd IEEE Conference on Dec., Las Vegas, NV, pp. 1523-1528, December 1984. [U. Desai, S. Banerjee, S. Kiaei]

**GRADUATE STUDENT ADVISEES & RESEARCH PROJECT**

(Partial list of Students graduated, current employment to the best of my knowledge)

- J. Durgam, VLSI Design of Dynamically Reconfigurable Array Processors, MSEE, 1988. Intel.
- J. Gilbert, Minimization Techniques for PLAs, MSEE, 1988, Tektronix Inc.
- L. Luo, CCA Methods for ARMA Spectral Estimation, MSEE, 1989. Berkeley Research Center
- E. Zahl, Enhancement Methods for A/D Noise Reduction, MSEE, 1989. AT&T
- L. Aihua, Synthesis of MRAs, MSEE, 1990. Intel.
- F. Aslam, Image Restoration Methods, MSEE, 1990.
- S.H. Chee, FSCL Circuits for Mixed-Mode IC's, MSEE, 1990. Linear Tech.
- C. Dawson, MSEE, 1990. Boeing
    - Chow, Source-Coupled Logic ALU, MSEE, 1990. Intel
- S. Maskai, Decimation Filters Using FSCL Circuits, MSEE, 1991. Intel
- L. Louis, VLSI Implementation of Toeplitz Matrices, MSEE, 1991.
- R. Badyal, Bit/Serial VLSI Design of IIR Filters, MSEE, 1992, HP
- Lap Mui, Piece-Wise Linear Schedule for VLSI Arrays, MSEE, 1992. HP
- S. Abdennadher, Adaptive Sigma-Delta Modulators, MSEE, 1992. Level One / Intel.
- H. Bribech, Second Order Adaptive A/D Schemes, MSEE, 1992.
    - Hickman, MSEE, 92. Tektronix
- M. Maleki, Current-Mode Flash A/D, MSEE, 1992. University of Oregon
- Man Wong, Low-Noise Decimation Filter for Mixed-Mode ICs, MSEE, 1993, Motorola.
- Anu Krishna Swamy, Low Noise IC Blocks for Mixed-mode IC's, MSEE, 1993, Ph.D., 1997.
- Manu Srivastava, Comparison of Differential Logic (FSCL, CVSL, DSLL), MSEE, 1994, Intel.
- Joel Oren, VLSI Design of Asynchronous FIR Filters, MSEE thesis, Feb. 1994. E-Systems.

- Y. Zheng, VLSI Design and Synthesis of Multi-Rate Arrays, Ph.D. March 94, Hughes Research.
- Satish Kulkarni, Low-Sensitivity Filters, MSEE, 1995, Motorola.
- Amit Dutta, Multi-user Interference Cancellation, Ph.D, Dec. 97, Faculty, India.
- Dwight Poplin, Multiplierless MPEG Decoder, MSEE, 1996. HP.
- Maxim Scarpa, Adaptive I/Q Miss-match Correction for Direct Conversion Receivers, MSEE 1998.
- Jeff McNeal, Sigma-Delta Frequency-to-Time Conversion, MSEE, 1998. Level One Comm.
- Julia Vogel, Adaptive DC offset Cancellation, MSEE, 1998. Faculty in Germany.
- Takao Inoue, MS, Echo Cancellation for ADSL, 1998. MSEE, The U of Texas at Austin.
- Navid Lashkarian, Frequency off-set estimation and Synchronization of OFDM systems, Ph.D., June 1999. Broadcom Inc. & Faculty at UC San Jose.
- Guner Arslan, (co-advisor with B. Evans), "Fast Equalization for DMT systems, with applications to ADSL," Ph.D. The University of Texas at Austin, 2000
- Salem Abdennadher, I/Q Mismatch Correction for RF Wireless transceivers, Ph.D., Level One Comm/Intel.
- Can Sandalci, DSL Line Driver, Ph.D., 2001, Intel.
- 34. Dean Badillo, Low-Cost VCO Ring Oscillators, PhD, 2004, Intel, Chandler,
- 35. Siamak Abedinpour, PhD, 2005 Freescale, Tempe, Arizona
- 36. Hemanth Shivalingaiah, Multi-Band Low Noise Amplifiers, Ph.D., 2006, Intel,
- 37. Shahin Farahani, PhD, 2006, Qualcomm Inc,
- 38. Nazanin Darbanian, M.S. Freescale, Tempe, Arizona
- 39. Joe Rutkowski, Joseph, MS, 2004, Phillips.
- 40. Chaudhuri, Bikram, Synthesizer, MS/PhD, MS 2004.
- Zhang, Jiandong, MEMs, MEMS, December-04
- Afsahi, Ali, MS/PHD, UC San Diego, QUALCOMM, Connection One
- Chen, Xiaomin, UWB, PHD, 2007, SRC/Motorola
- Jali, Hilda, Power Management, MS, June-05,
- Xuejin Wang, RF Optimization, 2006 CAD tools, PhD, Neo-Linear
- Umar Lyles, Power Amplifier, MS, 2006. Texas Instruments
- MS, Erika Munoz, RADHARD, 2007, Intel
- Waleed Khali, (Co-Advisor), Professor at Ohio State
- Jennifer Kitchen, PhD, 2009, Professor at ASU
- Shahin Mehdizad Taleie, RFDAC, PhD, 2009, Qualcomm
- Ilker Deligoz, PHD, 2009, Qualcomm
- Hyung Kim, PhD, Jan 2010, Intel
- Jung Le, PhD 2010, Intel, TI
- Syed Naqvi, PhD, 2012, Intel.
- Todd Martin, MS, 2011, TI
- Seungkee Min, PhD, 2011, Intel
- Ali Meamar, Post Doc, RFIC 2013

- Hitesh Khunti, MS 2013, Qualcom
- Debashis Mandal, Post Doc, Research faculty 2015-2018
- Edgar Martinez, PhD, 2015, Qualcomm
- Chirag Desai, MS, 2016, Qualcom
- Sanjay Avasarala, MS, 2016
- Li Ming, MS, 2017
- Qirong Peng, MS, 2017,
- Yu Geng, PhD, 2018
- Amir Ayati, PhD Aug 2018; Qualcomm
- Pasisa Mahmoudi, PhD, May 2019, Qualcomm
- Chai Yong, MS: 2015, PHD: 2019, Qualcomm
- Shrikant Singh, MS: 2016, PhD, 2019, Movandi
- Amir Alizadeh, Research Faculty 2019-Present
- Ata S. PhD, 2021, Ata Sarrafinejad, PhD, 2021
- Jie Fu, PhD, 2028
- Shamma Nasrin, Post Doc 2026

## UNIVERSITY COMMITTEES

Various Committees at ASU, Oregon State University, etc.

## INSTRUCTIONAL SUMMARY

Partial list of classes taught at Oregon State University (87-93), Motorola (93-2002), UT Austin (97-2002), Arizona State University (2002-present)

- Digital IC Design, Analog IC, RFIC, Digital IC, Power Management IC, VLSI
- Wireless Transceiver, Wireless Communications, GPS, Telecomm Systems, Digital Communication
- Signal Processing, Advance digital signal processing, Communication, Digital Communication, Digital Processing, Adaptive array processing, Audio Processing
- Computer Architecture, Microprocessor System Architecture, Pipeline Array Processing