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International Researcher IDs

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ScopusID: 15022056500

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Education Information

Doctorate, University of California, Irvine, Samueli School of Engineering, Mechanical And Aerospace Engineering, United States Of America 2007 - 2012

Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), Turkey 2004 - 2007

Undergraduate Minor, Middle East Technical University, Faculty of Engineering, Department of Mechanical Engineering, Turkey 2001 - 2005

Undergraduate, Middle East Technical University, Faculty of Engineering, Makine Mühendisliği Bölümü, Turkey 2000 - 2004

Foreign Languages

English, C2 Mastery

Dissertations

Doctorate, Very High Dynamic Range Resonant MEMS Load Cells For Micromechanical Test Frames, University Of California, Irvine, Mechanical And Aerospace Engineering, 2012

Postgraduate, High performance MEMS gyroscopes, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), 2007

Research Areas

MEMS, Optoelectronic Materials and Devices, Semiconducting Materials and Devices, System Dynamics and Control, Mechatronics, Modeling and Simulation of Dynamic Systems, Mechanical Vibrations, Mechanisms (Leaving, opening, turning, etc.), MEMS technologies, Engineering and Technology

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Makine Mühendisliği Bölümü, 2012 - Continues

Advising Theses

- AZGIN K., An array of square plate resonators with adjustable resonance frequency, Postgraduate, H.POLAT(Student), 2022
- AZGIN K., An in-plane MEMS gyroscope with adjustable sensitive axis, Postgraduate, B.BEŞCAN(Student), 2022
- AZGIN K., Micro-scanning mirrors and lenses for improving image resolution, Doctorate, A.SÖZAK(Student), 2022
- AZGIN K., Fabrication and characterization of nbn Inas/Gasb/B-Al(x)ga(1-x)sb type-II superlattice detectors with dual-color detection in mwir, Postgraduate, U.ÇEKMEZ(Student), 2022
- AZGIN K., THERMAL IMAGING BASED ON MECHANICAL VIBRATIONS, Postgraduate, Ş.YILMAZ(Student), 2022
- AZGIN K., Mems gyroscopes with capacitive enhancement, Postgraduate, E.ERSOY(Student), 2022
- AZGIN K., MEMS resonant temperature sensing with variable coupling stiffness and improved sensitivity, Postgraduate, E.Şimşek(Student), 2020
- AZGIN K., Magnetically levitated accelerometer design, Postgraduate, İ.Ceylan(Student), 2019
- AZGIN K., A control moment gyroscope based on rotational vibrations, dynamic model and experimentation, Postgraduate, F.ARBERKLİ(Student), 2018
- AZGIN K., Extended Kalman filter based multi-purpose inertial sensor field calibration algorithm, Postgraduate, L.OZAN(Student), 2017
- AZGIN K., Design, simulation and fabrication of a MEMS based levitated platform for laser scanner applications, Postgraduate, O.KAYA(Student), 2017
- AZGIN K., Temperature detection using micro plate vibrations, Postgraduate, S.PALA(Student), 2017
- AZGIN K., Design of a MEMS based hydraulic pressure sensor, Postgraduate, U.GÖREKE(Student), 2016
- AKIN T., AZGIN K., Development of an integrated resonant mems temperature sensor, Postgraduate, T.KÖSE(Student), 2016
- AKIN T., AZGIN K., Compensation methods for quasi-static acceleration sensitivity of MEMS gyroscopes, Postgraduate, H.DOĞAN(Student), 2014
- AZGIN K., Compensation methos for quasi-static acceleration sensitivity of MEMS gyroscopes / , Postgraduate, H.Doğan(Student), 2014
- AKIN T., AZGIN K., Correction of temperature and acceleration effects on MEMS gyro output signals / , Postgraduate, M.ALI(Student), 2014
- KÜLAH H., AZGIN K., Development of a high yield fabrication process for MEMS based resonant mass sensors for cell detection applications, Postgraduate, T.BERKİN(Student), 2014

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **A Thermal and Electro-Magnetic Hybrid MOEMS Microscanner With Integrated Spatial Light Modulation and Metalens for Resolution Enhancement of Infrared Imaging Systems**
Sozak A., Simsek E., Yelboga T., Gungor A., Balli F., AZGIN K.
IEEE SENSORS JOURNAL, vol.22, no.21, pp.20538-20545, 2022 (SCI-Expanded)
- II. **A Dual-Resonator Temperature Sensing Approach With Time Base Error Suppression**
KAYA O., Kose T., AZGIN K.
IEEE SENSORS JOURNAL, vol.20, no.2, pp.707-714, 2020 (SCI-Expanded)
- III. **A Turbine-Based MEMS Sensor for Spirometry With Wearable Devices**
Beyaz M., Habibiabad S., Yildiz H., Goreke U., AZGIN K.
IEEE SENSORS JOURNAL, vol.19, no.19, pp.8612-8617, 2019 (SCI-Expanded)

- IV. **A Compact Energy Transducer for Power Generation From Respiration**
Beyaz M. I., Habibiabad S., Yildiz H., Goreke U., Azgin K.
JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, vol.28, no.3, pp.504-512, 2019 (SCI-Expanded)
- V. **A MEMS square Chladni plate resonator**
Pala S., AZGIN K.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.26, no.10, 2016 (SCI-Expanded)
- VI. **Design and fabrication of a high performance resonant MEMS temperature sensor**
Kose T., AZGIN K., Akin T.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.26, no.4, 2016 (SCI-Expanded)
- VII. **The Development and Performance Characterization of Turbine Prototypes for a MEMS Spirometer**
GOREKE U., HABİBİABAD S., AZGIN K., Dogrusoz Y., Beyaz M. I.
IEEE SENSORS JOURNAL, vol.16, no.3, pp.628-633, 2016 (SCI-Expanded)
- VIII. **The effects of tine coupling and geometrical imperfections on the response of DETF resonators**
AZGIN K., Valdevit L.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.23, no.12, 2013 (SCI-Expanded)
- IX. **Ultrahigh-Dynamic-Range Resonant MEMS Load Cells for Micromechanical Test Frames**
Azgin K., Akin T., Valdevit L.
JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, vol.21, no.6, pp.1519-1529, 2012 (SCI-Expanded)
- X. **MEMS resonant load cells for micro-mechanical test frames: feasibility study and optimal design**
Torrents A., Azgin K., Godfrey S. W., Topalli E. S., AKIN T., Valdevit L.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.20, no.12, 2010 (SCI-Expanded)
- XI. **A high-performance silicon-on-insulator MEMS gyroscope operating at atmospheric pressure**
Alper S. E., Azgin K., Akin T.
SENSORS AND ACTUATORS A-PHYSICAL, vol.135, pp.34-42, 2007 (SCI-Expanded)

Articles Published in Other Journals

- I. **LORENTZ KUVVETİ TABANLI, TINLAYAN ve TİTREŞİM GENLİĞİ ÖLÇÜMÜ İLE ÇALIŞAN BİR MEMS MANYETOMETRE**
AZGIN K.
Uludağ University Journal of The Faculty of Engineering, vol.22, no.3, pp.61-80, 2017 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

- I. **Oscillating Control Moment Gyroscope Mathematical Model Development, Verification and Results**
AKBULUT B., ARBERKLİ F., AZGIN K., TEKİNALP O.
International Symposium on Space Technology and Science, Fukui, Japan, 15 - 21 June 2019
- II. **Oscillating Control Moment Gyroscope Experimental Results**
AKBULUT B., ARBERKLİ F., AZGIN K., TEKİNALP O.
AIAA Scitech 2019 Forum, San Diego, California, United States Of America, 7 - 11 January 2019
- III. **A MEMS Based Lens Microscanner for Resolution Enhancement of Infrared Imaging Systems**
Sozak A., Simsek E., AZGIN K.
18th IEEE Sensors Conference, Montreal, Canada, 27 - 30 October 2019
- IV. **Integrated Temperature Sensor for Temperature Compensation of Inertial Sensors**
KAYA O., Kose T., AZGIN K.
6th IEEE International Symposium on Inertial Sensors and Systems (INERTIAL), Naples, Italy, 1 - 05 April 2019
- V. **A Hypothetical Mechanical Design for Vibrating Mass Control Moment Gyroscopes**
BURAK A., ARBERKLİ F., TEKİNALP O., AZGIN K.
2018 Space Flight Mechanics Meeting, Kissimmee, Florida, United States Of America, 8 - 12 January 2018

- VI. **EFFECTS OF ROTOR GEOMETRY ON THE PERFORMANCE OF VIBRATING MASS CONTROL MOMENT GYROSCOPES**
Arberkli F., Akbulut B., AZGIN K., TEKİNALP O.
AAS/AIAA Astrodynamics Specialist Conference, Washington, United States Of America, 20 - 24 August 2017, vol.162, pp.247-258
- VII. **Experimental Characterization and Validation of Vibrating Rotor Control Moment Gyroscope**
AKBULUT B., ARBERKLİ F., AZGIN K., TEKİNALP O.
AIAA SPACE and Astronautics Forum and Exposition, Orlando, FL, United States Of America, 12 - 14 September 2017
- VIII. **Effects of Rotor Geometry on the Performance of Vibrating Mass Control Moment Gyroscopes**
ARBERKLİ F., AKBULUT B., AZGIN K., TEKİNALP O.
AAS/AIAA Astrodynamics Specialist Conference, Columbia River George, Stevenson, WA, United States Of America, 20 - 24 August 2017
- IX. **Thermal Sensitivity of the Fundamental Natural Frequency of a Resonant MEMS IR Detector Pixel**
Pala S., AZGIN K.
Conference on Infrared Sensors, Devices, and Applications VII, California, United States Of America, 9 - 10 August 2017, vol.10404
- X. **A SIMPLIFIED MODEL FOR VIBRATING MASS CONTROL MOMENT GYROSCOPE**
Akbulut B., Arberkli F., AZGIN K., TEKİNALP O.
27th AAS/AIAA Space Flight Mechanics Meeting, San-Antonio, Northern Mariana Islands, 5 - 09 February 2017, vol.160, pp.2961-2974
- XI. **A Lorentz force MEMS magnetometer**
Pala S., Cicek M., AZGIN K.
15th IEEE Sensors Conference, Florida, United States Of America, 30 October - 03 November 2016
- XII. **A single-mass self-resonating closed-loop capacitive MEMS accelerometer**
Kose T., Terzioglu Y., Azgin K., Akin T.
15th IEEE Sensors Conference, SENSORS 2016, Florida, United States Of America, 30 October - 02 November 2016
- XIII. **A Single Mass Self Resonating Closed Loop Capacitive MEMS Accelerometer**
KÖSE T., TERZİOĞLU Y., AZGIN K., AKIN T.
15th IEEE Sensors Conference, 30 October - 01 November 2016
- XIV. **Vibrating Mass Control Moment Gyroscope Dynamic Model Validation**
AKBULUT B., ARBERKLİ F., AZGIN K., TEKİNALP O.
AIAA/AAS Astrodynamics Specialist Conference, Long Beach, California, United States Of America, 13 - 16 September 2016
- XV. **TEMPERATURE COMPENSATION OF A CAPACITIVE MEMS ACCELEROMETER BY USING A MEMS OSCILLATOR**
Kose T., Azgin K., Akin T.
3rd IEEE International Symposium on Inertial Sensors and Systems, California, United States Of America, 22 - 25 February 2016, pp.33-36
- XVI. **A MEMS turbine prototype for respiration harvesting**
Goreke U., Habibiabad S., AZGIN K., Beyaz M. I.
15th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS), Massachusetts, United States Of America, 1 - 04 December 2015, vol.660
- XVII. **A Simple Out-of-Plane Capacitive MEMS Accelerometer Utilizing Lateral and Vertical Electrodes for Differential Sensing**
Terzioglu Y., Kose T., AZGIN K., AKIN T.
2015 IEEE SENSORS, Busan, South Korea, 1 - 04 November 2015, pp.525-527
- XVIII. **A simple out of plane capacitive MEMS accelerometer utilizing lateral and vertical electrodes for differential sensing**
Terzioglu Y., Kose T., Azgin K., Akin T.
2015 IEEE SENSORS, Busan, South Korea, 1 - 04 November 2015, pp.1-3

- XIX. AN AUTOMATIC ACCELERATION COMPENSATION SYSTEM FOR A SINGLE-MASS MEMS GYROSCOPE**
Gavcar H. D., AZGIN K., Alper S. E., Akin T.
18th International Conference on Solid-State Sensors, Actuators and Microsystems (TRANSDUCERS), Alaska, United States Of America, 21 - 25 June 2015, pp.19-22
- XX. Vibrationally Excited Satellite Attitude Actuator: a Feasibility Study**
Akbulut B., TEKİNALP O., AZGIN K.
7th International Conference on Recent Advances in Space Technologies (RAST), İstanbul, Turkey, 16 - 19 June 2015, pp.183-186
- XXI. Vibrationally Excited Satellite Attitude Actuator A Feasibility Study**
TEKİNALP O., AKBULUT B., AZGIN K.
RAST 2015, Recent Advances on Space Technologies, İstanbul, Turkey, 16 - 19 June 2015
- XXII. A single mass two-axis capacitive MEMS accelerometer with force rebalance**
Köse T., Terzioğlu Y., Azgın K., Akın T.
2nd IEEE International Symposium on Inertial Sensors and Systems, IEEE ISISS 2015, Hawaii, United States Of America, 23 - 26 March 2015
- XXIII. Design and electromagnetic optimization of a respiration harvester**
Goreke U., AZGIN K., Beyaz M. I.
28th European Conference on Solid-State Transducers (EUROSENSORS), Brescia, Italy, 7 - 10 September 2014, vol.87, pp.396-399
- XXIV. A Capacitive MEMS Accelerometer Readout with Concurrent Detection and Feedback Using Discrete Components**
Terzioglu Y., Alper S. E., AZGIN K., Akin T.
IEEE/ION Position, Location and Navigation Symposium (PLANS), Monterrey, Mexico, 5 - 08 May 2014, pp.12-15
- XXV. SIMULTANEOUS DETECTION OF LINEAR AND CORIOLIS ACCELERATIONS ON A MODE-MATCHED MEMS GYROSCOPE**
Sonmezoglu S., Gavcar H. D., AZGIN K., Alper S. E., AKIN T.
27th IEEE International Conference on Micro Electro Mechanical Systems (MEMS), San-Francisco, Costa Rica, 26 - 30 January 2014, pp.32-35
- XXVI. A RESONANT TUNING FORK FORCE SENSOR WITH UNPRECEDENTED COMBINATION OF RESOLUTION AND RANGE**
Azgin K., Ro C., Torrents A., Akin T., Valdevit L.
24th IEEE International Conference on Micro Electro Mechanical Systems (MEMS), Cancun, Mexico, 23 - 27 January 2011, pp.545-548
- XXVII. A novel in-operation high g-survivable MEMS gyroscope**
Azgin K., Temiz Y., Akın T.
6th IEEE Sensors Conference, Georgia, United States Of America, 28 - 31 October 2007, pp.111-114
- XXVIII. An SOI-MEMS tuning fork gyroscope with linearly coupled drive mechanism**
Azgin K., Temiz Y., Akın T.
20th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2007), Kobe, Japan, 21 - 25 January 2007, pp.482-485
- XXIX. Experiences From Two Consecutive Senior Level Mechatronic Courses: Enhancing Creativity Through Design**
AKÖNER M., KOKU A. B., AZGIN K.
MECHATRONICS 2006: The 10th Mechatronics Forum Biennial International Conference, Malvern, PA, United States Of America, 19 - 21 June 2006
- XXX. High-performance SOI-MEMS gyroscope with decoupled oscillation modes**
Alper S., Azgin K., Akin T.
19th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2006), İstanbul, Turkey, 22 - 26 January 2006, pp.70-73

Supported Projects

AZGIN K., KAYA O., Project Supported by Higher Education Institutions, MEMS Tabanlı Lazer Tarayıcı, 2017 - Continues
Tekinalp O., Azgin K., TUBITAK Project, Proof of Concept of a Vibration Based Satellite Attitude Control Actuator, 2015 - 2020

AZGIN K., TÜBİTAK International Bilateral Joint Cooperation Program Project, Manyetik Pusula Uygulamaları İçin Mekanik Rezonans Tabanlı Mikro Manyetometre Geliştirilmesi, 2014 - 2017

Patent

Azgin K., Gavcar H. D., Akin T., Method for Suppression Of G-Sensitivity of MEMS Gyroscope, Patent, CHAPTER B Implementation of Operations; Transport, The Invention Registration Number: 2020 17869 T4 , 2020

Azgin K., Köse T., MEMS Temperature Sensor, Patent, CHAPTER G Physics, The Invention Registration Number: EP3241005B1 , 2019

Azgin K., Vibration Based Mechanical IR Detector and an IR Imaging Method Using The Same, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, The Invention Registration Number: US9897488B2 , Standard Registration, 2018

AZGIN K., Self calibrating micro-fabricated load cells, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, Standard Registration, 2016

Metrics

Publication: 42

Citation (WoS): 223

Citation (Scopus): 307

H-Index (WoS): 8

H-Index (Scopus): 10

Non Academic Experience

University of California, Irvine

University of California, Irvine