

Asst. Prof. KIVANÇ AZGIN

Personal Information

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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

Akın T., Azgın K., HIGH PERFORMANCE MEMS INERTIAL SENSORS, Postgraduate, U.ÇEKMEZ(Student), Continues
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., Temperature detection using micro plate vibrations, Postgraduate, S.PALA(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., Extended Kalman filter based multi-purpose inertial sensor field calibration algorithm, Postgraduate, L.OZAN(Student), 2017

AZGIN K., Design of a MEMS based hydraulic pressure sensor, Postgraduate, U.GÖREKE(Student), 2016

AZGIN K., AKIN T., Development of an integrated resonant mems temperature sensor, Postgraduate, T.KÖSE(Student), 2016

AZGIN K., KÜLAH H., Development of a high yield fabrication process for MEMS based resonant mass sensors for cell detection applications, Postgraduate, T.BERKİN(Student), 2014

AZGIN K., Compensation methos for quasi-static acceleration sensitivity of MEMS gyroscopes /, Postgraduate, H.Doğan(Student), 2014

AZGIN K., AKIN T., Correction of temperature and acceleration effects on MEMS gyro output signals /, Postgraduate, M.ALI(Student), 2014

AZGIN K., AKIN T., Compensation methods for quasi-static acceleration sensitivity of MEMS gyroscopes, Postgraduate, H.DOĞAN(Student), 2014

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **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 (Journal Indexed in SCI)
- II. **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 (Journal Indexed in SCI)
- III. **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 (Journal Indexed in SCI)
- IV. **A MEMS square Chladni plate resonator**
Pala S., AZGIN K.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.26, no.10, 2016 (Journal Indexed in SCI)
- V. **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 (Journal Indexed in SCI)
- VI. **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 (Journal Indexed in SCI)
- VII. **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 (Journal Indexed in SCI)
- VIII. **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 (Journal Indexed in SCI)
- IX. **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 (Journal Indexed in SCI)

- X. **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 (Journal Indexed in SCI)

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 (Other Refereed National Journals)

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. **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
- VII. **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
- VIII. **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
- IX. **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
- X. **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
- XI. **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

XII. 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

XIII. 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

XIV. 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

XV. 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

XVI. 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

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.1-3

XVIII. 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

XIX. 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

XX. A single mass two-axis capacitive MEMS accelerometer with force rebalance

Köse T., Terzioglu Y., Azgin K., Akin T.

2nd IEEE International Symposium on Inertial Sensors and Systems, IEEE ISISS 2015, Hawaii, United States Of America, 23 - 26 March 2015

XXI. 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

XXII. 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

XXIII. 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

- XXIV. 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
- XXV. A novel in-operation high g-survivable MEMS gyroscope**
Azgin K., Temiz Y., Akin T.
6th IEEE Sensors Conference, Georgia, United States Of America, 28 - 31 October 2007, pp.111-114
- XXVI. An SOI-MEMS tuning fork gyroscope with linearly coupled drive mechanism**
Azgin K., Temiz Y., Akin T.
20th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2007), Kobe, Japan, 21 - 25 January 2007, pp.482-485
- XXVII. 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
- XXVIII. 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
AZGIN K., Project Supported by Higher Education Institutions, Rezonant MEMS Aygıt Test Yatağı Geliştirilmesi Projesi, 2013 - 2014

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 , Registration in Multiple Countries, 2020

Azgin K., Köse T., MEMS Temperature Sensor, Patent, CHAPTER G Physics, The Invention Registration Number: EP3241005B1 , Registration in Multiple Countries, 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 , Initial Registration, 2018

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

Citations

Total Citations (WOS):182

h-index (WOS):8