

Dr. Ossama O. Abdelkhalik

Associate Professor

Department of Mechanical Engineering-Engineering Mechanics
Michigan Technological University

http://www.me.mtu.edu/meem/facultybio/O_Abelkhalik.html

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Citizenship: Citizen of USA

EDUCATION

Ph.D. (September 2001 – December 2005)

- Texas A&M University, College Station, TX, USA; Aerospace Engineering Department
- Advisor: Prof. Daniele Mortari
- Dissertation title: Orbit Design And Estimation For Ground Surveillance Missions Using Genetic Algorithms

M. Sc. (September 1997 – December 2000)

- Aerospace Engineering Department, Cairo University, Egypt
- Thesis title: Remote Sensing Satellites Orbits Design And Control

B. Sc. (September 1991 – May 1996)

- Aerospace Engineering Department, Cairo University, Egypt (**Honor**)
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PROFESSIONAL EXPERIENCE

2015 – Current: Associate Professor

*Department of Mechanical Engineering & Engineering Mechanics
Michigan Technological University, Houghton, MI, USA*

2007 – 2015: Assistant Professor

*Department of Mechanical Engineering & Engineering Mechanics
Michigan Technological University, Houghton, MI, USA*

2006 – 2007: Visiting Assistant Professor

College of Engineering, Embry-Riddle Aeronautical University, Daytona Beach, FL, USA

2006 – 2006: Postdoctoral Research Associate

Aerospace Engineering Department, Texas A&M University, College Station, TX, USA

2001 – 2005: Graduate Student

Aerospace Engineering Department, Texas A&M University, College Station, TX, USA

2000 – 2001: Visiting Researcher

Carlo Gavazzi Space (CGS) Company, Milan, Italy

1999 – 2001: Research Engineer

*Egyptian Space Program, National Authority for Remote Sensing and Space Sciences (NARSS),
Cairo, Egypt*

1998 – 1999: HVAC mechanical Design Engineer

ORASCOM Engineering Design Office, Cairo, Egypt

1996 – 1997: Teaching Fellow

High Institute for Computer and Management Technology, Egypt

COURSES TAUGHT

Undergraduate Level Courses at Michigan Tech University:

- ✓ Dynamic Systems and Controls
- ✓ Analysis and Design of Feedback Control Systems
- ✓ Space Mechanics (Top 10% among MTU faculty in students evaluations during 2010/2011 academic year)
- ✓ Heat Transfer

Graduate Level Courses at Michigan Tech University:

- ✓ Optimization
- ✓ Intermediate Dynamics
- ✓ Space Mechanics
- ✓ Advanced Thermodynamics
- ✓ Orbit Determination Methods

Undergraduate Level Courses at Embry-riddle University:

- ✓ Spacecraft Attitude Dynamics and Controls
- ✓ Controls Systems Analysis and Design
- ✓ Space Mechanics

HONORS AND AWARDS

- Top 10% in Michigan Tech University faculty in student evaluations in fall 2010
- Medal for Distinction in Undergraduate Studies, Cairo University, 1996
- B.Sc. Dean's list of Recognition (1991-1996)

Funded research Projects

- 1 **O. Abdelkhalik (PI)** and Rush Robinett (Co-I), “Making Small Wave Energy Converters Cost-effective for Underwater Microgrids Through a 10-fold Improvement in Year-round Productivity”, subcontract from *South Dakota School of Mines and Technology*, Sponsor: *DARPA*, August 2016 – August 2017
- 2 **O. Abdelkhalik (PI)**, “Advanced control of Multi Degree of Freedom Wave Energy Converters”, *Sandia National Lab*, July 2016 – June 2017
- 3 **O. Abdelkhalik (PI)** and Rush Robinett (Co-I), “Collaborative Research: On making wave energy an economical and reliable power source for ocean measurement applications”, *National Science Foundation*, July 1 2016 – June 30 2018.
- 4 **O. Abdelkhalik (PI)**, and Rush Robinett (Co-I), “On integrating new capability into coastal energy conversion systems”, Subcontract from South Dakota School of Mines and Technology, Sponsor: *Office of Naval Research*, April 2016 – March 2017
- 5 Umesh Korde (PI), **O. Abdelkhalik (Co-I)**, and Rush Robinett (Co-I), “On integrating new capability into coastal energy conversion systems”, Sponsor: *Office of Naval Research*, April 2017 – March 2020
- 6 Brad L. King (PI), **O. Abdelkhalik (Co-I)**, Michael Roggeman (Co-I) “Stratus: A CubeSat to Measure Cloud Structure and Winds”, *NASA*, June 2016 – June 2018.
- 7 Brad L. King (PI), **O. Abdelkhalik (Co-I)**, Michael Roggeman (Co-I), “Auris: A CubeSat to Measure The Location of a GEO Satellite”, *AFRL Nanosat Program*, Jan 2016 – Jan 2018.
- 8 **O. Abdelkhalik (PI)**, “CPS: Breakthrough: Toward Revolutionary Algorithms for Cyber-Physical Systems Architecture Optimization”, *National Science Foundation*, January 2015 – January 2018.
- 9 **O. Abdelkhalik (PI)**, “REU: CPS: Breakthrough: Toward Revolutionary Algorithms for Cyber-Physical Systems Architecture Optimization”, *National Science Foundation*, May 2015 – April 2016.
- 10 **O. Abdelkhalik (PI)**, “Advanced control of Multi Degree of Freedom Wave Energy Converters”, *Sandia National Lab*, November 2014 – September 2016.
- 11 **O. Abdelkhalik (PI)**, “Trajectory Planning for NASA Asteroid Retrieval Mission”, *ExoTerra Resource LLC*, September – November 2014.
- 12 W. Weaver (PI), **O. Abdelkhalik (Co-I)**, “Advanced control and energy storage architectures for microgrids”, *Sandia National Lab*, January 1, 2014 – August 31, 2014.

- 13 W. Weaver (PI), **O. Abdelkhalik (Co-I)**, "Optimization of energy storage architectures for microgrids - extension", *Sandia National Lab*, September 2014 – April 2015.
- 14 **O. Abdelkhalik (PI)**, "Trajectory Optimization for Solar Electric Propulsion Satellites", *ExoTerra Resource LLC*, September – November 2013.
- 15 **O. Abdelkhalik (PI)**, R. Zekavat, "Estimation of Relative Positions and Attitudes of Microsatellites Constellations Using Wireless Local Positioning System," *Michigan Space Grant Consortium, NASA*, February 2009 – February 2010.
- 16 B. Chen (PI), **O. Abdelkhalik (Co-I)**, "Initial Analysis for a Semi-Active Vibration Damping System for Spacecraft in Launch Vehicles," *Michigan Space Grant Consortium, NASA*, Feb. 2009- Feb. 2010.
- 17 **O. Abdelkhalik (PI)**, "Feasibility study for a Non-GPS Auto Navigation system," *MUCI*, February 2008-August 2008
- 18 **O. Abdelkhalik (PI)**, "Feasibility Study for repeated shadow track mission," *Advanced Technology Solutions LLC*, October 15, 2008 - August 14, 2009.

INVITED TALKS/SEMINARS

- **O. Abdelkhalik.** "Systems Architecture Optimization Using Hidden Genes Genetic Algorithms," University of New Mexico, Albuquerque, NM, April 2017.
- **O. Abdelkhalik.** "Systems Architecture Optimization Using Hidden Genes Genetic Algorithms," Air Force Research Lab, Albuquerque, NM, February 2017.
- **O. Abdelkhalik.** "Systems Architecture Optimization Using Hidden Genes Genetic Algorithms," Sandia National Labs, October 2016.
- **O. Abdelkhalik.** "Variable-Size Optimization with application to Interplanetary Space Trajectories Design," Department of Aerospace Engineering, University of Illinois, Urbana Champaign, Graduate seminar series, February 2013.
- **O. Abdelkhalik.** "Interplanetary Trajectory Optimization," the International Congress of Mechanical Engineering IMPULSO 25, Monterrey, Mexico, 15-17 November 2012
- **O. Abdelkhalik.** "Solution To The Sixth Global Trajectory Optimization competition," GTOC6 workshop, International Symposium on Space Flight Dynamics, Pasadena, CA, October 2012.
- **O. Abdelkhalik.** "Interplanetary Trajectory Optimization," invited in the schools:
 - Aerospace Engineering Department, Cairo University, Egypt, July 2012
 - Mechanical and Aerospace Engineering Department, West Virginia University, February 2012

- **O. Abdelkhalik.** ``*Dynamic Penalty Function Evolutionary Algorithms for Oil and Gas Reservoir History Matching,*'' Qatar Petroleum Research and Technology Office, Doha, Qatar, July 2012.
- **O. Abdelkhalik.** ``*Novel Algorithms for Variable Size Design Space Optimization,*'' General Electric, Qatar Science and Technology Park, Doha, Qatar, June 2012.
- **O. Abdelkhalik.** ``*Interplanetary Trajectory Optimization,*'' Department of Aerospace Engineering, Khalifa University, UAE, June 2011
- **(Teleconference presentation) O. Abdelkhalik.** ``*Rapid Shape Based Trajectory Construction using Fourier Series Approach,*'' NASA Johnson Space Center, May 2011
- **O. Abdelkhalik.** ``*Dynamic Penalty Function Evolutionary Algorithms for Oil and Gas Reservoir History Matching,*'' MAERSK, Qatar Science and Technology Park, Doha, Qatar, March 2011.
- **O. Abdelkhalik.** ``*Interplanetary Trajectory Optimization,*'' Department of Mechanical and Aerospace Engineering, New Mexico State University, Feb 2010
- **O. Abdelkhalik.** ``*Orbit design for remote sensing missions using genetic algorithms,*'' Aerospace Engineering Dept. at San Jose State University, April 2009
- **O. Abdelkhalik.** ``*Orbit design for remote sensing missions using genetic algorithms,*'' Aerospace Engineering Dept. at Mississippi State University, March 2009
- **O. Abdelkhalik.** ``*Optimal Space Orbits Design,*'' Signal and System Seminar Series, ECE Department, MTU, October 2008.
- **O. Abdelkhalik.** ``*Optimal Space Orbits Design,*'' I/UCRC Space Propulsion and Power Research, Hartford, CT, July 24 2008.
- **O. Abdelkhalik.** ``*Orbit Design for Ground Surveillance Missions Using Genetic Algorithms,*'' invited in the following schools:
 - Mechanical & Industrial Engineering Dept. at Concordia University, Montreal, Canada, June 2006.
 - Aerospace Engineering Dept. at Embry-Riddle Aeronautical University, May 2006.
 - Aerospace Engineering Dept. at Mississippi State University, March 2006.

RESEARCH SUPERVISION

➤ *PhD students:*

Graduated

1. Ahmed Gad, graduated in Summer 2011
2. Shu-Ting Goh, graduated in Summer 2012
3. Ehsan Taheri, graduated in Fall 2014

Current

4. Shadi Darani, will start in Spring 2014
5. Shangyan Zou, started Fall 2015
6. Jiajun Song, started Fall 2015
7. Jiayang Lyu, started Summer 2016
8. Sameh Darwish, started Summer 2017
9. Mohammed Desouky, started Spring 2017

➤ *MS students:*

Graduated

1. Neelima Addanki, graduated in Spring 2011
2. Nick Masticola, graduated in Fall 2010
3. Shangyan Zou, graduated 2015
4. Nirag Sheth, graduated 2015
5. Karthik Mysore Srinivasa, graduated 2015
6. Jonathan Curtis, graduated 2015
7. Omkar Dilip Rane
8. Sanil Mhatre

➤ **Undergraduate Students Groups:**

1. CanSat student team – Aerospace Enterprise – 2009/2010 and 2010/2011
2. Space Based Power Satellite systems - Aerospace Enterprise –Spring 2011
3. Interplanetary Trajectory Optimization Team – started Spring 2014

➤ **Undergraduate Supervised Research:**

1. Abbey Senczyszyn, summer 2015

➤ **Graduate Advising Committee member:**

1. Bingxi Li, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, PhD defense, December 2017.
2. Leslie Castelino, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, MS defense, July 2017.

3. Guilherme Aramizo Ribeiro, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, MS defense and PhD proposal, July 2017.
4. Luting Wang, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, proposal defense Dec 2016.
5. Chaofeng Wang, PhD student, Electrical and Computer Engineering Department, Michigan Technological University, Proposal defense Aug 2016
6. Baifan Wu, MS student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, defense in 2013
7. Hui Meen Nyew, PhD student, Computer Science Department, Michigan Technological University, proposal defense in August 2012.
8. Mohsen Pourkhaatoun, PhD student, Electrical and Computer Engineering Department, Michigan Technological University, Defended April 2011.
9. Wenjia Liu, PhD student, Electrical and Computer Engineering Department, MTU
10. Mehmet Bicak, PhD dissertation, "Application of Squeeze film dampers for Reducing Vibration" Electrical and Computer Engineering Department, Michigan Technological University, Defended April 2011.
11. Zhonghai Wang, PhD dissertation, "High Performance Localization via Multi-Node TOA-DOA Fusion" Electrical and Computer Engineering Department, Michigan Technological University, Defended December 2010.
12. Marie-Emmanuelle Ricour, Master thesis, "Optimization of active rendezvous trajectories by genetic algorithms," Aerospace Engineering Department, Embry-Riddle Aeronautical University, 2006

➤ ***PhD Qualifying Exam Committee member:***

1. Xian Li, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Advisor Mo Rastgar. Fall 2016
2. Bryan Page, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Advisor Nina Mahmoudian. Fall 2016
3. Zouhra B., Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Advisor G. Parker. Fall 2015
4. Amanda O’Niel, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Spring 2015
5. Brandon Jackson, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Fall 2014
6. Xin Wang, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, Spring 2014
7. Edmond Mayer, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, passed qualifying spring 2012.
8. Mark Hopkins, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, passed qualifying spring 2012.

9. Kurt Terhune, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, passed qualifying spring 2012.
10. Yun Wang, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, qualifying exam fall 2012.
11. Ming Cheng, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, qualifying exam Spring 2013.
12. Zicheng Ge, PhD student, Mechanical Engineering-Engineering Mechanics Department, Michigan Technological University, qualifying exam fall 2012.

SERVICE AND ACTIVITIES

Conference General Chair:

1. AAS/AIAA Space Flight Mechanics Meeting, Santa Fe, NM, USA, January 2014

Conference Track Co-Organizer:

2. ASME Power & Energy conference, June 2017: Renewable Energy Systems
3. ASME Power & Energy conference, June 2018: Renewable Energy Systems

Conference Session co-organizer / co-chair:

1. IEEE Aerospace Conference, Session: Space-Based Solar Power Transfer, March 2011, and March 2012.
2. ASME Power & Energy conference, June 2018: Renewable Energy Systems
3. ASME Power & Energy conference, June 2017: Distributed and Small Scale Generation
4. OCEANS 17, Anchorage, Alaska, USA, September 18-21, 2017. Session # AK-3: Energy from the oceans, coasts and rivers 3 - Wave Energy.

Conference Session Chair:

1. AIAA/AAS Astrodynamics Specialist Conference, 2-5 August 2010, Toronto, Ontario, Canada, Session # ASC-13: Tracking and Estimation
2. 20th AAS/AIAA Space Flight Mechanics Meeting, February 14-17, 2010, San Diego, California, Session # 4: Atmospheric Re-entry and Lunar Mission Analysis
3. AAS/AIAA Astrodynamics Specialist Conference, Girdwood, Alaska, USA, July 31 - August 4, 2011. Session # 15: Satellite Constellations
4. AAS/AIAA Astrodynamics Specialist Conference, Minneapolis, MN, USA, August 13-16, 2012. Session # 100-ASC-15: Formation Flying III, and Session #120-ASC-18: Constellations
5. AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, USA, February 10 - 14, 2013. Session # 21: Rendezvous and Formation Flying
6. AIAA Space and Astronautics Forum and Exposition, San Diego, CA, USA, August 4 – 7, 2014. Session # 21: Rendezvous and Formation Flying
7. AAS/AIAA Astrodynamics Specialist Conference, Vail, CO, USA, August 9-13, 2015. Session: Astrodynamics-1.
8. OCEANS 17, Anchorage, Alaska, USA, September 18-21, 2017. Session # AK-2: Energy from the oceans, coasts and rivers 2 - Wave Energy.

Technical Program Committee Member of the International Conference on Recent Developments in Control, Automation and Power Engineering (RDCAPE 2015), <http://rdcape.com/>, 12-13 March 2015, Noida (UP) India

Technical Committee Member:

Astrodynamics Technical Committee, American Institute of Aeronautics and Astronautics (AIAA), 2009 - current. Duties:

- ✓ Best paper award committee, chair. February 2013-current
- ✓ Educational Point Of Contact, 2009-current

Prepared Abstracts for the annual AIAA Undergrad Team Space Competition

- ✓ Space-Based Power Satellite System Design, 2012 (**accepted, and also prepared the RFP**)
- ✓ Space-Based Power Satellite System Design, 2011

Review Service

Guest Associate Editor MDPI Journal of Marine Science & Engineering, ISSN 2077-1312
<http://www.mdpi.com/journal/jmse>
Special issue "Ocean Wave Energy Conversion", 2019

Book Reviewer Space Mission Engineering: The NewSMAD, *Jim Wertz*, Microcosm.
Chapters reviewed: 1. History of Spaceflight, 9. Orbits and Astrodynamics, 18. Space Mission Geometry, 20.1 American versus international approaches to space logistics and manufacturing

Journal Reviewer:

1. IEEE Transactions on Computational Intelligence
2. IEEE Transactions on Sustainable Energy
3. Journal of Guidance Dynamics and Controls, AIAA
4. Journal of Spacecraft and Rocket, AIAA
5. IEEE Transactions on Aerospace and Electronic Systems
6. Journal of Astronautical Sciences, AAS
7. Journal of Dynamic Systems, Measurement and Control, ASME
8. Acta Astronautica, Elsevier
9. Journal of Aerospace Science and Technology, Elsevier
10. Proceedings of the Institution of Mechanical Engineers, Part G, Journal of Aerospace Engineering
11. Chinese Journal of Aeronautics
12. IIUM Engineering Journal
13. IWCMC 2008 Communication and Information Theory Symposium
14. Online Journal of Space Communication
15. Journal of Aerospace Engineering, Sage Publications, UK

Reviewer for NASA Postdoctoral Program: 2016, 2017

Reviewer: University Space Research Association (USRA) Scholarship Award program.

Reviewed applications from undergrads for NASA scholarships

Member of the International Advisory Committee of the International Islamic University in Malaysia (IIUM) Engineering Journal

Member of The Review Committee for Marshal Scholarship Applications at Michigan Tech University, 2017

Participated in the following editions of the Global Trajectory Optimization Competition (GTOC)

- GTOC 5, October 2010, <http://mech.math.msu.su/gtoc5/>
- GTOC 6, August 2012, Rank 13
- GTOC 7, May 2014, Rank 20
- GTOC 9, May 2017, Rank 16

Service in the Department of Mechanical Engineering-Engineering Mechanics at MTU:

- ✓ Alternate senator: September 2017 - current
- ✓ Faculty Development Committee member: September 2017 – September 2019
- ✓ Graduate Seminar Committee member: September 2007 – August 2011
- ✓ Curriculum Committee member: September 2011 – August 2013
- ✓ Computer Committee member: September 2010 – August 2011
- ✓ Faculty search committee member – Design and Dynamical Systems: Spring 2010, 2016

Judge (reviewed at least three papers in each)

- ✓ 2011 AIAA Student Conference Region VII-AU, Melbourne, 24-25 November
- ✓ 2012 International Student Paper Conference, 9 January, Nashville, TN
- ✓ 2011 International Astronautical Congress

Participated in the following Michigan Tech events

- ✓ Graduate School Orientation, fall 2008
- ✓ Graduate Student Council (GSC) Research Symposium, Spring 2008
- ✓ Mechanical Engineering – Engineering Mechanics Department Preview Day, Spring 2009
- ✓ Annual Western Upper Peninsula Science Fair – Spring 2008, 2010, 2011
- ✓ Advisor/Campus Security Act Training Workshop, 25 September 2012
- ✓ Foreign National Security and Export Control Workshop, 11 April 2013

Representing Michigan Tech University in the University Space Research Association – Spring 2009 – current

**Faculty Advisor for the Muslim Student Association - Michigan Tech University
Fall 2008 – current**

PUBLICATIONS

Journal Publications

1. Shadi Darani and **Ossama Abdelkhalik**, *Convergence Analysis of Hidden Genes Genetic Algorithms in Space Trajectory Optimization*, AIAA Journal of Aerospace Information Systems, accepted December 2017.
2. Shadi Darani and **Ossama Abdelkhalik**, *On Space Trajectory Optimization Using Hidden-Genes Genetic Algorithms*, AIAA Journal of Spacecraft and Rockets, accepted November 2017.
3. Ryan Coe, Giorgio Bacelli, David G Wilson, **Ossama Abdelkhalik**, Umesh A Korde, Rush D Robinett, *A comparison of control strategies for wave energy converters*. International Journal of Marine Energy, Elsevier, accepted November 9, 2017.
4. Shangyan Zou, **Ossama Abdelkhalik**, Rush Robinett, Giorgio Bacelli , David Wilson, Ryan Coe, and Umesh Korde, *Model Predictive Control of Parametric Excited Pitch Surge Modes in Wave Energy Converters*. Elsevier, International Journal of Marine Energy, Vol. 19, pages 32-46, 2017.
5. **Ossama Abdelkhalik**, Shangyan Zou, Rush Robinett, Giorgio Bacelli , David Wilson, Ryan Coe, and Umesh Korde, *Multi Resonant Feedback Control of Three-Degree-of-Freedom Wave Energy Converters*. IEEE Transactions on Sustainable Energy, Vol. 8, No. 4, pages 1518—1526, 2017.
6. Umesh A Korde, Jianyang Lyu, Rush D Robinett, David Wilson, Giorgio Bacelli, and **Ossama Abdelkhalik**, *Constrained near-optimal control of a wave energy converter in three oscillation modes*. Applied Ocean Research, Elsevier, Vol. 69, pages 126-137, 2017.
7. Shangyan Zou, **Ossama Abdelkhalik**, Rush Robinett, Giorgio Bacelli , and David Wilson, *Optimal Control of Wave Energy Converters*. Elsevier, Renewable Energy, Vol 103, pages 217--225, April 2017.
8. Jiajun Song, **Ossama Abdelkhalik** , Rush Robinett , Giorgio Bacelli , David Wilson , and Umesh Korde, *Multi Resonant Feedback Control of Wave Energy Converters*, Ocean Engineering, Elsevier, Vol. 127, pages 269--278, 2016.
<http://www.sciencedirect.com/science/article/pii/S0029801816304346>
9. **Ossama Abdelkhalik**, Shangyan Zou, Rush Robinett, Giorgio Bacelli , and David Wilson, *Estimation of Excitation Forces For Wave Energy Converters Control Using Pressure Measurements* . International Journal of Control, Taylor & Francis, 2016.
<http://dx.doi.org/10.1080/00207179.2016.1222555>.
10. **O. Abdelkhalik** , R. Robinett , S. Zou, G. Bacelli , R. Coe, D. Bull , D. Wilson , and U. Korde, *On The Control Design of Wave Energy Converters With Wave Prediction*, Springer Journal of Ocean Engineering and Marine Energy, Vol. 2, No. 4, pp 473— 483, 2016.
Doi: 10.1007/s40722-016-0048-4
11. E. Taheri, and **O. Abdelkhalik**, *Initial Three-Dimensional Low-Thrust Trajectory Design*. Advances in Space Research, Elsevier, Vol 57, No. 3, pp. 889-903, 2016.

12. E. Taheri, and **O. Abdelkhalik**, *Fast Initial Trajectory Design for Low-Thrust Restricted-Three Body Problems*. Journal of Guidance, Control, and Dynamics, AIAA, Vol 38, No. 11, pp. 2146-2160, 2015.
13. H.M. Nyew, **O. Abdelkhalik**, and N. Onder, *Structured-Chromosome Evolutionary Algorithms For The Variable-Size Autonomous Interplanetary Trajectory Planning Optimization*. Journal of Aerospace Information Systems, AIAA, Vol. 12, No. 3 (2015), pp. 314-328. doi: 10.2514/1.I010272.
14. Shu Ting Goh, Seyed A.(Reza) Zekavat, and **Ossama Abdelkhalik**, *LEO Satellite Formation for SSP: Energy and Doppler Analysis*, IEEE Transactions on Aerospace and Electronic Systems, IEEE, Vol. 51, No. 1, doi: 10.1109/TAES.2014.120333, Jan. 2015.
15. S.T. Goh, **O. Abdelkhalik** and S. R. Zekavat, *A Weighted Measurement Fusion Kalman Filter Implementation for UAV Navigation*, Aerospace Science and Technology, Elsevier, Volume 28, Number 1, pp 315 – 323, 2013.
16. **O. Abdelkhalik**, *Hidden Genes Genetic Optimization for Variable-Size Design Space Problems*. Journal of Optimization Theory and Applications, Springer, Volume 156, Number 2, February 2013.
17. **O. Abdelkhalik**, *Autonomous Planning of Multi gravity-Assist Trajectories with Deep Space Maneuvers Using a Differential Evolution Approach*. International Journal of Aerospace Engineering, Hindawi, vol. 2013, Article ID 145369, 2013.
18. Nicholas Masticola and **Ossama Abdelkhalik**, *Comparison of Relativistic Perturbations on Spacecraft Earth Orbits*, IIUM Engineering Journal, Volume 14, Number 1, 2013.
19. **O. Abdelkhalik** and E. Taheri, *Approximate On-Off Low-Thrust Space Trajectories using Fourier Series*. AIAA Journal of spacecraft and rockets, Volume 49, Number 5, September-October 2012.
20. **O. Abdelkhalik** and A. Gad, *Dynamic-Size Multi-Population Genetic Optimization for Multi-Gravity-Assist Trajectories*, AIAA Journal of Guidance, Control, and Dynamics, Volume 35, Number 2, pp 520–529, March-April 2012.
21. S. T. Goh, **O. Abdelkhalik** and S.R. Zekavat, *Constraint estimation of spacecraft formations orbits using relative positions measurements*. AIAA Journal of Guidance, Control, and Dynamics, Volume 35, Number 2, pp 387–397, March-April 2012.
22. S.T. Goh, **O. Abdelkhalik** and S. R. Zekavat, *Implementation of Differential Geometric Filter For Spacecraft Formation Orbit Estimation*, International Journal of Aerospace Engineering, Hindawi, vol. 2012, Article ID 910496, 2012. doi:10.1155/2012/910496.
23. E. Taheri and **O. Abdelkhalik**, *Shape Based Approximation of Constrained Low-Thrust Space Trajectories using Fourier Series*. AIAA Journal of spacecraft and rockets, Volume 49, Number 3, May - June 2012.
24. A. Gad, **O. Abdelkhalik**. *Hidden Genes Genetic Algorithm for Multi-Gravity-Assist Trajectories Optimization*, AIAA Journal of Spacecraft and Rockets, AIAA, Vol. 48, No 4, pp 629-641, July-August 2011.
25. S. T. Goh, **O. Abdelkhalik** and S.R. Zekavat, *Spacecraft Formation Orbit Estimation using WLPS-based Localization*, International Journal of Navigation and Observation, Hindawi, Volume 2011, Article ID 654057, 2011.

26. **O. Abdelkhalik**, A. Gad. *Optimization of space orbits design for Earth orbiting missions*, Acta Astronautica, Elsevier, Vol. 68, No. 7-8, pp 1307–1317, April-May 2011.
doi:10.1016/j.actaastro.2010.09.029.
27. **O. Abdelkhalik**. *Initial Orbit Design from Ground Track Points*, Journal of Spacecraft and Rockets, AIAA, Vol. 47, No 1, Jan.-Feb. 2010.
28. A. Gad, and **O. Abdelkhalik**. *Repeated Shadow Track Orbits for Space-SunSetter Missions*. International Journal of Aerospace Engineering, Volume 2009 (2009), Article ID 561495, doi:10.1155/2009/561495. <http://www.hindawi.com/journals/ijae/2009/561495.html>
29. **O. Abdelkhalik**, D. Mortari. *On The N-Impulse Orbit Transfer Using Genetic Algorithms*, Journal of Spacecraft and Rockets, AIAA, Vol. 44, No 2, March-April 2007.
30. **O. Abdelkhalik**, D. Mortari. *Orbit Design for Ground Surveillance Missions Using Genetic Algorithms*. Journal of Guidance Dynamics and Control, AIAA, Vol. 29, No 3, Sep. 2006.
31. **O. Abdelkhalik**, D. Mortari. *On The Two-Way Orbits*. Journal of Celestial Mechanics and Dynamical Astronomy, Springer, Vol. 94, No 4, April 2006, pp 399-410.
32. **O. Abdelkhalik**, B. Nairouz, T. Weaver, B. Newman. *MicroMaps Space Mission Analysis and Design*. Journal of Space Mission Architecture - NASA Jet Propulsion Lab, Fall 2003, pp 61-100.

Journal Publications in Review

1. **Ossama Abdelkhalik**, and Shadi Darani, *Evolving Hidden Genes in Genetic Algorithms For Systems Architecture Optimization*, ASME Journal of Dynamic Systems, Measurement and Control, submitted May 2017, **Accepted Pending Revisions** Dec 2017.
2. **Ossama Abdelkhalik**, Shangyan Zou, Rush Robinett, Giorgio Bacelli , David Wilson, Ryan Coe, *Control of Three-Degree-of-Freedom Wave Energy Converters Using Pseudo-Spectral Methods*. ASME Journal of Dynamic Systems, Measurement and Control, submitted December 7, 2016, **Accepted Pending Revisions**.
3. Shangyan Zou, **Ossama Abdelkhalik**, *Time Varying Linear Quadratic Optimal Control for Three-Degrees-Of-Freedom Wave Energy Converters*. Renewable Energy, Elsevier, submitted November 07, 2017
4. **Ossama Abdelkhalik**, and Shadi Darani, *Optimization Of Nonlinear Wave Energy Converters*, IEEE Transactions on Sustainable Energy, submitted July 2017.
5. **Ossama Abdelkhalik**, Shangyan Zou, and Rush, Robinett, *Constrained Control Of Two-Body Heaving Wave Energy Converters*. Renewable Energy, Elsevier, submitted July 2017, Revision received December 24, 2017.
6. **Ossama Abdelkhalik**, Shadi Darani, and Rush Robinett, *A Hamiltonian Surface Shaping Approach for Control System Analysis and Design of Nonlinear Wave Energy Converters*, Ocean Engineering, Elsevier, submitted September 2017.
7. Ehsan Taheri, Di Wu, **Ossama Abdelkhalik**, Shangyan Zou, Shadi Darani, Brandon Jackson, Jacob Liimatta. *A Space Trajectory Optimization For Debris Removal Mission - GTOC9*. ESA ACT Acta Futura, 2017.

8. **O. Abdelkhalik** , S. Zou, R. Robinett , G. Bacelli , R. Coe, D. Wilson , and U. Korde, *A Dynamic Programming Approach For Control Optimization of Wave Energy Converters*, Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, Sage Publications, submitted October 2017
9. **Ossama Abdelkhalik**, Shangyan Zou. *Control of Wave Energy Converters Using a Simple Dynamic Model*, IEEE Transactions on Sustainable Energy, submitted December 8, 2017.
10. M. Dessouki, K. Prabhu, and **O. Abdelkhalik**. *Spacecraft Magnetic Attitude Control Without Magnetic Field Measurements*, AIAA Journal of Spacecraft and Rockets, submitted December 18, 2017
11. M. Dessouki and **O. Abdelkhalik**. *Wave Prediction using Wave Rider Position Measurements and NARX Network in Wave Energy Conversion*. *Ocean Engineering*, Elsevier, submitted December 24, 2017

Patents

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