

Kenshiro Oguri

CONTACT INFORMATION	Purdue University School of Aeronautics and Astronautics 701 W Stadium Ave West Lafayette, IN 47907, USA	koguri@purdue.edu http://labusers.net/~kenoguri/
CITIZENSHIP	Japan	
ACADEMIC APPOINTMENTS	NASA JPL Postdoctoral Fellow Outer planet mission analysis group, Mission design and navigation section Mentor: Gregory Lantoine and Jon Sims Project: <i>Robust Solar Sail Trajectory Design for the NEA Scout Mission</i>	Aug 2021 – Present
	Adjunct Assistant Professor School of Aeronautics and Astronautics, Purdue University	July 2021 – Present
	NASA JPL Visiting Student Researcher Outer planet mission analysis group, Mission design and navigation section Mentor: Gregory Lantoine and Jon Sims Project (2019): <i>SRP-based orbit control for solar sailing with application to NEA Scout</i> Project (2018): <i>Investigating non-Keplerian dynamics around Psyche</i>	Sept – Nov 2019, June – Aug 2018
	JAXA ISAS Assistant Researcher Institute of Space and Astronautical Science, JAXA Mentor: Stefano Campagnola, Yasuhiro Kawakatsu, and Ryu Funase Project: <i>Mission design of SmallSat deep-space exploration</i>	Apr 2015 – Aug 2017
EDUCATION	Ph.D. in Aerospace Engineering Sciences University of Colorado Boulder, USA Dissertation: <i>Risk-aware Mission Design around Small Celestial Bodies</i> [Link] Advisor: Jay W. McMahon	May 2021
	M.S. in Aeronautics and Astronautics The University of Tokyo, Japan Advisor: Shin-ichi Nakasuka and Ryu Funase	Mar 2017
	B.S. in Aeronautics and Astronautics The University of Tokyo, Japan	Mar 2015
RESEARCH INTERESTS	Academic Fields of Interest: Astrodynamics; Control; Estimation; Optimization; Dynamical systems; Stochastic systems Space science	
	Current Research: Spacecraft Guidance, Navigation, and Control (GNC); Space trajectory optimization; Safety-critical space mission design; Small-body exploration; SmallSat mission design; Stochastic optimal control	
RESEARCH CONTRIBUTION AREAS	Stochastic Optimal Control for Astrodynamics Applications – Integrate stochastic optimal control into astrodynamics – Publications: (J3) , (J5) , (C1) , (C2) , (C3) , (C4) , (C5) , (C6)	

Convex Optimization-based Design and Control of Space Systems

- Leverage the efficiency and reliability of convex optimization to design/control space systems
- Publications: (J5), (J2), (C1), (C3), (C4), (C5)

Non-Keplerian Dynamics around Small Celestial Bodies

- Analyze perturbed dynamics around small bodies with application to science orbit design
- Publications: (J6), (C8), (J5), (C3)

Solar Radiation Pressure-based Orbit Control

- Develop solar sailing optimal orbit controller with application to GNC around small bodies
- Develop indirect trajectory optimization techniques with application to interplanetary transfers
- Publications: (J1), (J4), (J7), (C7), (C9), (C11)

Solar Sail Attitude-Orbit Coupled Dynamics Modeling & Control

- Develop semi-analytical precise dynamics models and controllers for attitude-orbit coupled dynamics under sail membrane deformations
- Publications: (C13), (C16), (C17), (C14)

TEACHING
EXPERIENCE**Graduate Teaching Assistant**

Fall 2020

Space Vehicle Guidance and Control, Department of Aerospace Engineering Sciences, CU Boulder
Graduate-level course on space vehicle guidance and control

Graduate Teaching Assistant

Spring 2016

Exercise in Space Engineering, Department of Aero&Astro, The University of Tokyo
Junior-level course on space systems engineering

NASA
PROJECTS**NEA Scout mission** [\[Link\]](#)

Sept – Nov 2019, Aug 2021 – Present

- NASA CubeSat solar sailing mission to explore Near-Earth Asteroids (NEAs)
- Role: Visiting student researcher
- Project Title: *SRP-based Orbit Control for Solar Sailing missions*
- Develop solar sailing trajectory indirect optimization with application to missed-thrust analysis
- Publications: (J4)

Psyche mission [\[Link\]](#)

June – Aug 2018

- NASA discovery mission program (*Psyche: Journey to a Metal World*)
- Role: Visiting student researcher
- Project Title: *Investigating non-Keplerian dynamics around Psyche*
- Analyze highly-perturbed dynamics with application to science orbit design around (16) Psyche
- Publications: (J6), (C8)

Dismantling Rubble Pile Asteroids with AoES [\[Link\]](#)

Aug 2017 – June 2021

- NASA Innovative Advanced Concepts (NIAC) program (Phase I & II)
- Role: Graduate research assistant
- Design mission architectures of soft-robot-based asteroid exploration concepts
- Develop guidance & control algorithms for SRP-based landing on asteroids
- Publications: (J7), (C11), (C10)

JAXA
PROJECTS**EQUULEUS: Equilibrium Lunar-Earth point 6U Spacecraft** [\[Link\]](#)

Jan 2016 – Present

- JAXA CubeSat mission to explore cislunar space with low energy transfer
- Role: Systems engineer lead & Mission designer
- Perform high-level design of mission concept & spacecraft systems; Design low-energy transfers & science orbits (EML2 NRHOs) and analyze the station-keeping cost of science orbits
- Publications: (J8), (J10), (C12)

PROCYON: Proximate Object Close Flyby with Optical Navigation [\[Link\]](#)

Apr 2014 – Aug 2017

- JAXA SmallSat mission that successfully explored deep space for the first time as a SmallSat
- Role: Spacecraft GNC engineer
- Develop GNC flight software in C language and analyze GNC flight data
- Publications: (J2), (J9), (J11), (C22)

AWARDS & FELLOWSHIPS	Masason Foundation Fellowship [Link]	Aug 2017 – Jun 2021
	Five-year full funding for Ph.D. study abroad. Success rate ~8.7%. Agency: Masason foundation, Japan	
	AAS GNC Conference Student Paper Competition Second Prize [Link]	Feb 2020
	Awarded for paper <i>Autonomous Guidance for Robust Achievement of Science Observations around Small Bodies</i> , from American Astronautical Society Rocky Mountain Section	
	Nakajima Foundation Study Abroad Fellowship [Link]	Aug 2017 – July 2019
	Two-year full funding for Ph.D. study abroad. Success rate ~14%. Agency: Nakajima foundation, Japan	
	CCAR Bahls Endowed Funds – Travel Award [Link]	Jan 2019
	Awarded for paper <i>Science Orbit Design with Frozen Beta angle: Theory and Application to Psyche mission</i> , from Colorado Center for Astrodynamics Research	
	AAS John V. Breakwell Student Award [Link]	Aug 2018
	Awarded for paper <i>SRP-based Orbit Control with Application to Small Body Landing</i> , from Space Flight Mechanics committee, American Astronautical Society	
	Japanese Government JSPS DC1 Research Fellowship [Link]	Apr – Aug 2017
	Most prestigious fellowship for Ph.D. study in Japan with three-year stipend funding. Declined when leaving Japan to start Ph.D. study in the U.S. Success rate ~21%. Agency: Japan Society for the Promotion of Science (JSPS)	
UTokyo Tuition Fee Half Exemption for Outstanding Students	Apr 2017	
Awarded from the University of Tokyo for academic excellence		
Japanese Government MEXT Commendation for Science and Technology	Mar 2017	
Awarded for the world-first deep-space flight as a SmallSat (PROCYON mission), from Ministry of Education, Culture, Sports, Science and Technology, Japan		
Japanese Government MEXT Leading Graduate Schools Fellowship [Link]	Apr 2015 – Mar 2017	
Two-year stipend funding for graduate study. Success rate unknown. Agency: Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan		
JSASS Outstanding Student Presentation Award	Oct 2016	
Awarded for paper <i>Time-optimal Attitude Control with Application to Orbit Control of Spinning Solar Sail Driven by Reflectivity Control</i> , from Japan Society for Aeronautical and Space Sciences		
Travel Awards for Overseas Conference Presentation	Feb, June, July 2016	
Awarded from Ministry of Education, Culture, Sports, Science and Technology, Japan; Tokyo electric power company holdings memorial foundation, Japan; Murata science foundation, Japan		
UTokyo University President's Award	Mar 2015	
Awarded for the PROCYON mission from the University of Tokyo		
RESEARCH GRANTS	Research Grant for Masason Fellows	FY2017 – FY2020
	Project: <i>On Robotic Asteroid Exploration: Spacecraft Autonomy and Cost-effective Exploration</i> Agency: Masason foundation, Japan. FY 2017 – 2020 Total: 1,880,000 JPY (~18,800 USD)	
	Japanese Government JSPS Grants-in-Aid for Scientific Research	FY2017
Project: <i>Robust Optimal Guidance and Control for Solar Sails with Modeling Uncertainty</i> Agency: Japan Society for the Promotion of Science. FY 2017: 1,000,000 JPY (~10,000 USD)		

JOURNAL
PUBLICATIONS**Articles in Preparation**

- (J1) **K. Oguri**, G. Lantoine, A. E. Petropoulos, and J. W. McMahon. Solar Sailing Q-law for Planetocentric, Many-Revolution Orbit Transfers. *Journal of Guidance, Control, and Dynamics*, in preparation

Articles under Review

- (J2) N. Ozaki, **K. Oguri**, and R. Funase. PROCYON Mission Reanalysis: Low-Thrust Asteroid Flyby Trajectory Design leveraging Convex Programming. *Journal of the Astronautical Sciences*, under review

Published/Accepted Articles

- (J3) **K. Oguri** and J. W. McMahon. Stochastic Primer Vector for Robust Low-thrust Trajectory Design under Uncertainty. *Journal of Guidance, Control, and Dynamics*, accepted, 2021. doi: <https://doi.org/10.2514/1.G005970>
- (J4) **K. Oguri**, G. Lantoine, and J. W. McMahon. Solar Sailing Primer Vector Theory: Indirect Trajectory Optimization with Practical Mission Considerations. *Journal of Guidance, Control, and Dynamics*, accepted, 2021
- (J5) **K. Oguri** and J. W. McMahon. Robust Spacecraft Guidance Around Small Bodies Under Uncertainty: Stochastic Optimal Control Approach. *Journal of Guidance, Control, and Dynamics*, 44(7):1295–1313, July 2021. doi: 10.2514/1.G005426 [\[Link\]](#)
- (J6) **K. Oguri**, G. Lantoine, W. Hart, and J. McMahon. Science orbit design with a quasi-frozen beta angle: effects of body obliquity on J2-perturbed dynamics. *Celestial Mechanics and Dynamical Astronomy*, 132(10):48, Oct. 2020. doi: 10.1007/s10569-020-09987-z [\[Link\]](#)
- (J7) **K. Oguri** and J. W. McMahon. Solar Radiation Pressure–Based Orbit Control with Application to Small-Body Landing. *Journal of Guidance, Control, and Dynamics*, 43(2):195–211, Feb. 2020. doi: 10.2514/1.G004489 [\[Link\]](#)
- (J8) **K. Oguri**, K. Oshima, S. Campagnola, K. Kakihara, N. Ozaki, N. Baresi, Y. Kawakatsu, and R. Funase. EQUULEUS Trajectory Design. *The Journal of the Astronautical Sciences*, 67(3): 950–976, Sept. 2020. doi: 10.1007/s40295-019-00206-y [\[Link\]](#)
- (J9) S. Ikari, T. Ito, **K. Oguri**, T. Inamori, S. Sakai, Y. Kawakatsu, A. Tomiki, and R. Funase. In Orbit Demonstration of a FDIR Algorithm for the Attitude Control System of Micro Interplanetary Spacecraft PROCYON. *Journal of the Japan Society for Aeronautical and Space Sciences*, 68 (2):89–95, 2020. doi: 10.2322/jjsass.68.89 (Japanese) [\[Link\]](#)
- (J10) S. Campagnola, J. Hernando-ayuso, K. Kakihara, Y. Kawabata, T. Chikazawa, R. Funase, N. Ozaki, N. Baresi, T. Hashimoto, Y. Kawakatsu, T. Ikenaga, **K. Oguri**, and K. Oshima. Mission Analysis for the EM-1 CubeSats EQUULEUS and OMOTENASHI. *IEEE Aerospace and Electronic Systems Magazine*, 34(4):38–44, Apr. 2019. doi: 10.1109/MAES.2019.2916291 [\[Link\]](#)
- (J11) S. Ikari, T. Inamori, T. Ito, K. Ariu, **K. Oguri**, M. Fujimoto, S. Sakai, Y. Kawakatsu, and R. Funase. Attitude Determination and Control System for the PROCYON Micro-Spacecraft. *Transactions of the Japan Society for Aeronautical and Space Sciences*, 60(3):181–191, 2017. doi: 10.2322/tjsass.60.181 [\[Link\]](#)

CONFERENCE
PROCEEDINGS
(SELECTED)

- (C1) **K. Oguri** and J. W. McMahon. Risk-aware Mission Design for In situ Asteroid Exploration under Uncertainty. In *2021 IEEE Aerospace Conference*, pages 1–17, Big Sky, MT (Virtual), Mar. 2021. IEEE. doi: 10.1109/AERO50100.2021.9438479
- (C2) **K. Oguri** and J. W. McMahon. Stochastic Primer Vector for Robust Impulsive Trajectory Design Under Uncertainty. In *AAS/AIAA Astrodynamics Specialist Conference*, South Lake Tahoe, CA (Virtual), Aug. 2020
- (C3) **K. Oguri** and J. W. McMahon. Autonomous Guidance for Robust Achievement of Science Observations around Small Bodies. In *AAS Guidance, Navigation, and Control conference*, Breckenridge, Colorado, Feb. 2020, **AAS GNC Conference Student Paper Competition Second Prize**
- (C4) **K. Oguri**, M. Ono, and J. W. McMahon. Convex Optimization over Sequential Linear Feedback Policies with Continuous-time Chance Constraints. In *2019 IEEE 58th Conference*

- on *Decision and Control (CDC)*, pages 6325–6331, Nice, France, Dec. 2019. IEEE. doi: 10.1109/CDC40024.2019.9029604 [Link]
- (C5) **K. Oguri** and J. W. McMahon. Risk-aware Trajectory Design with Impulsive Maneuvers: Convex Optimization Approach. In *AAS/AIAA Astrodynamics Specialist Conference*, pages 1985–2004, Portland, ME, 2019. American Astronautical Society
- (C6) **K. Oguri** and J. W. McMahon. Risk-aware Trajectory Design with Continuous Thrust: Primer Vector Theory Approach. In *AAS/AIAA Astrodynamics Specialist Conference*, Portland, ME, 2019
- (C7) **K. Oguri** and J. W. McMahon. SRP-based Orbit Control for Asteroid Exploration. In *32nd International Symposium on Space Technology and Science, Paper 2019-d-021*, Fukui, Japan, June 2019
- (C8) **K. Oguri**, G. Lantoine, B. Hart, and J. W. McMahon. Science Orbit Design with Frozen Beta angle: Theory and Application to Psyche mission. In *AAS/AIAA Space Flight Mechanics Meeting*, Ka’anapali, HI, 2019, **Bahls Endowed Funds Travel Award**
- (C9) **K. Oguri** and J. W. McMahon. SRP-based Orbit Control with Application to Orbit Station-keeping at Small Bodies. In *AAS/AIAA Space Flight Mechanics Meetings*, Ka’anapali, HI, 2019,
- (C10) J. McMahon, S. K. Mitchell, **K. Oguri**, N. Kellaris, D. Kuettel, C. Keplinger, and B. Bercovici. Area-of-Effect Softbots (AoES) for Asteroid Proximity Operations. In *2019 IEEE Aerospace Conference*, pages 1–16, Big Sky, Montana, Mar. 2019. IEEE. doi: 10.1109/AERO.2019.8741680
- (C11) **K. Oguri** and J. W. McMahon. SRP-based Orbit Control with Application to Small Body Landing. In *AAS/AIAA Astrodynamics Specialist Conference*, Snowbird, UT, 2018, **John V. Breakwell Student Award**
- (C12) **K. Oguri**, K. Kakihara, S. Campagnola, N. Ozaki, K. Oshima, T. Yamaguchi, and R. Funase. EQUULEUS Mission Analysis: Design of the Science Orbit Phase. In *International Symposium on Space Flight Dynamics*, Ehime, Japan, June 2017
- (C13) **K. Oguri**, A. Ishikawa, S. Ikari, T. Kudo, and R. Funase. Precision Evaluation of Reduced Dynamics Model for Non-uniform Spinning Solar Sail Driven by Reflectivity Control. In *4th International Symposium on Solar Sailing, 17045*, Kyoto, Japan, 2017
- (C14) A. Ishikawa, **K. Oguri**, S. Ikari, R. Funase, and S. Nakasuka. Estimation of Shape and Optical Parameters of Spinning Solar Sail Equipped with Reflectivity Control Devices. In *26th International Symposium on Space Flight Dynamics*, pages 1–6, 2017
- (C15) **K. Oguri**, T. Kudo, and R. Funase. Design Criteria of Reflectivity Control System Under Uncertainty in Sail Property for Maneuverability Requirement of Spinning Solar Sail. In *AIAA/AAS Astrodynamics Specialist Conference*, Long Beach, California, Sept. 2016. American Institute of Aeronautics and Astronautics. doi: 10.2514/6.2016-5674
- (C16) **K. Oguri** and R. Funase. Time-optimal Attitude Control Law with a Strategy of Applying to Orbital Control for Spinning Solar Sail Driven by Reflectivity Control. *Advances in the Astronautical Sciences*, 158:933–951, 2016
- (C17) **K. Oguri**, T. Kudo, and R. Funase. Time-Optimal Attitude Control and its Application to Orbital Control of Spinning Solar Sail Driven by Reflectivity Control. In *60th Space Sciences and Technology Conference, 2016-P34*, Hokkaido, Japan, 2016, **Outstanding Student Presentation Award**
- (C18) S. Nomura, R. Takahashi, M. Ikura, **K. Oguri**, T. Obata, S. Ikari, and R. Funase. Initial Design of EQUULEUS Attitude Determination and Control System : How to Design an ADCS with High Reliability for a Deep Space CubeSat. In *31st International Symposium on Space Technology and Science*, pages 1–6, 2017
- (C19) T. Kudo, **K. Oguri**, and R. Funase. Rapid Control of Attitude Angles for Spinning Solar Sail Utilizing Spin Rate Change with Reflectivity Control Devices. In *4th International Symposium on Solar Sailing, 17048*, pages 1–6, Kyoto, Japan, 2017
- (C20) S. Campagnola, N. Ozaki, **K. Oguri**, Q. Verspiere, K. Kakihara, K. Yanagida, R. Funase, H. C. Yam, L. Ferella, T. Yamaguchi, Y. Kawakatsu, and G. D. Yarnoz. Mission Analysis for EQUULEUS, JAXA’s Earth-Moon Libration Orbit Cubesat. In *67th International Astronau-*

tical Congress, Guadalajara, 2016

- (C21) R. Funase, S. Ikari, N. Ozaki, S. Nakajima, K. Ariu, **K. Oguri**, T. Kudo, Y. Koshiro, K. Tokunaga, M. Tomooka, S. Nomura, A. Wachi, T. Arai, T. Iwata, M. Otsuki, and A. Tomiki. Close Flyby Observation of An Asteroid by A Small Probe PROCYON mini and Rendezvous Docking Experiment in Deep Space. In *60th Space Sciences and Technology Conference, 2016-2D08*, Hokkaido, Japan, 2016
- (C22) T. Ito, S. Ikari, **K. Oguri**, M. Fujimoto, K. Ariu, Y. Kawabata, T. Inamori, S. Sakai, Y. Kawakatsu, and R. Funase. Preliminary Study of Angular Momentum Control by Solar Radiation Pressure for 50 kg-class Spacecraft PROCYON. In *59th Space Sciences and Technology Conference, 2015-3J08*, pages 1–6, Kagoshima, Japan, 2015, **Young Researcher Award**

INVITED TALKS &
SEMINARS

1. Risk-aware Mission Design around Small Celestial Bodies, The University of Tokyo, Tokyo, Japan (Virtual), Apr 27 2021.
2. Sustainable Space Exploration with Reliable Mission Design and Safe Autonomy, Pennsylvania State University, University Park, PA (Virtual), Mar 4 2021.
3. Sustainable Space Exploration with Reliable Mission Design and Safe Autonomy, Purdue University, West Lafayette, IN (Virtual), Feb 17 2021.
4. Robust in-situ Asteroid Exploration, JAXA ISAS Planetary Exploration Workshop, Sagami-hara, Japan (Virtual), Sept 11 2020.

PRESENTATIONS

1. Risk-aware Mission Design for In situ Asteroid Exploration under Uncertainty, at *IEEE Aerospace Conference*, Big Sky, MT (Virtual), 2021.
2. Stochastic Primer Vector for Robust Impulsive Trajectory Design Under Uncertainty, at *AAS/AIAA Astrodynamics Specialist Conference*, South Lake Tahoe, CA (Virtual), 2020.
3. Autonomous Guidance for Robust Achievement of Science Observations around Small Bodies, at *AAS Guidance, Navigation, and Control conference*, Breckenridge, Colorado, 2020, **AAS GNC Conference Student Paper Competition Second Prize**
4. Convex Optimization over Sequential Linear Feedback Policies with Continuous-time Chance Constraints, at *2019 IEEE Conference on Decision and Control*, Nice, France, 2019.
5. Risk-aware Trajectory Design with Continuous Thrust: Primer Vector Theory Approach, at *AAS/AIAA Astrodynamics Specialist Conference, AAS 19-912*, Portland, ME, 2019.
6. Risk-aware Trajectory Design with Impulsive Maneuvers: Convex Optimization Approach, at *AAS/AIAA Astrodynamics Specialist Conference, AAS 19-893*, Portland, ME, 2019.
7. SRP-based Orbit Control for Asteroid Exploration, at *32nd International Symposium on Space Technology and Science, ISTS 2019-d-021*, Fukui, Japan, 2019.
8. Science Orbit Design with Frozen Beta angle: Theory and Application to Psyche mission, at *2019 AAS/AIAA Space Flight Mechanics Meeting, AAS 19-269*, Ka'anapali, HI, 2019, **Bahls Endowed Funds Travel Award**
9. SRP-based Orbit Control with Application to Orbit Stationkeeping at Small Bodies, at *2019 AAS/AIAA Space Flight Mechanics Meeting, AAS 19-415*, Ka'anapali, HI, 2019.
10. SRP-based Orbit Control with Application to Small body Landing, at *2018 AAS/AIAA Astrodynamics Specialist Conference, AAS 18-375*, Snowbird, UT, 2018, **John V. Breakwell Student Award**.
11. EQUULEUS Mission Analysis: Design of the Science Orbit Phase, at *26th International Symposium on Space Flight Dynamics, ISSFD-2017-072*, Ehime, Japan, 2017.
12. Precision Evaluation of Reduced Dynamics Model for Non-uniform Spinning Solar Sail Driven by Reflectivity Control, at *4th International Symposium on Solar Sailing, ISSS-17045*, Kyoto, Japan, 2017.
13. Mission Concept and System Design of World-First Cis-Lunar Space Exploration CubeSat EQUULEUS, at *17th ISAS/JAXA Space Science Symposium, 2016-P-24*, Kanagawa, Japan, 2017.
14. Attitude Maneuverability Estimation for Preliminary Mission Design of Spinning Solar Sail Driven by Reflectivity Control at *the AIAA/AAS Astrodynamics Specialist Conference, AIAA2016-*

5674, Long Beach, California, 2016.

15. Optimal Attitude and Orbital Control Strategy of Spinning Solar Sail Spacecraft via Reflectivity Control at *26th AAS/AIAA Space Flight Mechanics Meeting, AAS 16-329*, Napa, California, 2016.
16. Time-Optimal Attitude Control and its Application to Orbital Control of Spinning Solar Sail Driven by Reflectivity Control at *60th Space Sciences and Technology Conference, 2016-P34*, Hokkaido, Japan, 2016. **Outstanding Student Presentation Award**
17. On-Orbit Estimation of ADCS Parameters for micro-astrometry satellite ‘Nano-JASMINE’ at *59th Space Sciences and Technology Conference, 2015-3J13*, Kagoshima, Japan, 2015.
18. Time-Optimal Attitude Control of Spinning Solar Sail by Reflectivity Control at *25th Workshop on JAXA Astrodynamics and Flight Mechanics, 2015-C-11*, Kanagawa, Japan, 2015.
19. Optimal Attitude Control of Spinning Solar Sail with Reflectivity Control at *30th International Symposium on Space Technology and Science, 2015-d-26*, Kobe, Japan, 2015.

SERVICE

Professional Memberships

- American Astronautical Society (AAS)
- American Institute of Aeronautics and Astronautics (AIAA)
- American Astronomical Society (AAS), Division for Planetary Sciences (DPS)
- Institute of Electrical and Electronics Engineers (IEEE)
- Society for Industrial and Applied Mathematics (SIAM)

Technical Journal Referee Activities

- AIAA Journal of Guidance, Control, and Dynamics (2019, 2020, 2021)
- Advances in Space Research, COSPAR, Elsevier (2019, 2020, 2021)
- IEEE Transactions on Aerospace and Electronic Systems (2021)

University Community Service

- International Student Advisory Board (founding member), College of Engineering and Applied Science, University of Colorado Boulder

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