

Carlos Montalvo
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Associate Professor, Mechanical Engineering

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Education

Ph.D.

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Biography

Carlos Montalvo is an Associate Professor in the Mechanical Engineering Department at the University of South Alabama

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- [16] Carlos Montalvo and Mark Costello. "Avoiding Lockout Instability for Towed Parafoil Systems". In: Journal of Guidance, Control and Dynamics - Q1 39.5 (Jan. 2016), pp. 985{995. doi: 10.2514/1.6001545.
- [17] Carlos Montalvo and Mark Costello. "Meta Aircraft Flight Dynamics". In: Journal of Aircraft - Q2 52.1 (Jan. 2015), pp. 107{115. doi: 10.2514/1.6032634.
- [18] John Dykes, Carlos Montalvo, and Mark Costello. "Use of Microspoilers for Control of Finned Projectiles". In: Journal of Spacecraft and Rockets - Q2 49.6 (Nov. 2012), pp. 1131{1140. doi: 10.2514/6.2010-8246.
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Conference Proceedings

- [20] Olabode A. Olanipekun et al. "Unmanned Aerial Vehicles: A 21st Century Review of An Advanced Air Mobility Platform". In: AIAA AVIATION Forum - San Diego, CA. <https://arc.aiaa.org/doi/10.2514/6.2023-4044.c1>. June 2023. doi: <https://arc.aiaa.org/doi/10.2514/6.2023-4044>.
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- [22] Maxwell Cobar and Carlos Montalvo. "The Facility for Aerospace Systems and Technology Simulation: FASTSim - An Open-Source Configurable Software in the Loop Simulation Environment". In: AIAA AVIATION Forum - Chicago, IL. June 2022. url: <https://doi.org/10.2514/6.2022-3943>.
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- [42] Dylan Calhoun et al. "Electric Sail Space Tether Deployment Mechanism". In: AIAA Region II Student Conference Mobile, AL. Apr. 2018.
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Technical Reports

- [65] Ross Lambert, James Allen, and Carlos Montalvo. Deployment of an Electric Sail Tether System using a Smart Controller. 80NSSC18P2217 Bangham Engineering Incorporated, Feb. 2019. url: <http://www.sciencedirect.com/science/article/pii/S009457659785429X>.
- [66] Carlos Montalvo and John Rakoczy. Mars Ascent Vehicle Sensitivity Analysis. NASA Marshall Space Flight Center Faculty Fellowship TM, Aug. 2018.
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- [69] Mark Costello, Carlos Montalvo, and Frank Fresconi. MultiBoom: A Generic Multibody Flight Mechanics Simulation Tool for Smart Projectiles. ARL-TR-6232, Oct. 2012.

Online Segments

- [70] Andrea Ramey. Returning SpaceX capsule creates sonic boom. 2023. url: <https://mynews15.com/news/local/returning-spacex-capsule-creates-sonic-boom> (visited on 05/31/2023).
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Books

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- [89] Carlos Montalvo. Numerical Methods. Github https://github.com/cmONTALVO251/LaTeX/blob/master/Numerical_Methods_Montalvo/Numerical_Methods.pdf, 2020.
- [90] Carlos Montalvo. Project Based Engineering Instrumentation with CircuitPython. Github https://github.com/cmONTALVO251/LaTeX/blob/master/PBL_CircuitPython_Instrumentation/main.pdf, 2023.

Contracts/Proposals/Budgets/Grants

Current B48 (o.)TSubmittef (.)Tj /T1_1 1 Tf ()Tj / /T1_5[(83on)]TJ /to EMC /H3 <<MCID 1 >>BDC /T1_51.16ssedDepart/T1al

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5. Alabama Space Grant Consortium \$10,000 Grant for Alabama Burst Energtics Exploration Satellite Year 2 - Awarded 3/31/2021 - Start Date 8/14/2021 - End date 7/31/2022

6. Montalvo C., Richardson J., Kendall B., Patterson V., Box T., Davis C., Franklin C., Godfrey A., Patrick T., Alabama Space Grant for

~~06/24/2021-07/31/2021 (10/567) 1810 The University of Alabama at Birmingham (UAB) (Crayson Smith, Ph.D.) (The University of Alabama at Birmingham) 08/14/2021 Patrick Lee 30 End of~~

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25. C. Montalvo, E. Spencer, S. Lateef, S. Russ NASA Undergraduate Student Instrumentation Project , Contract Awarded March 2016, \$100,000 for equipment
26. C. Montalvo, Atmospheric and Geophysical Sensing using Autonomous Aerial Vehicles , The Facility for Aerial Systems and Technology, Internal USA Federal Development Council. Contract Awarded May 2016, \$5,000
27. Experimental Analysis of Atmospheric Data using Autonomous Sensing Quadcopters - Summer UCUR Proposal - Marina Swanopoe - \$2,000 (Student) - \$500 (equipment) - 3/20/2016
28. C. Montalvo, USALS Hazard Detection and Wind Turbine - Submitted to ASGC { 11/6/2015 - Contract awarded \$5,000 { 12/3/2015
29. Brandi Depineul - Summer UCUR Proposal { Coordinated Flight of Blimps - 3/13/2015 - Accepted 4/15/2015 - \$2,000 (Student) - \$500 (equipment)
30. Alicia Ratcliff - Summer UCUR Proposal { Orbital Mechanics of a 1U CubeSat - 3/13/2015 - Accepted 4/15/2015 - \$2,000 (Student) - \$500 (equipment)
31. C. Montalvo, Towed Magnetic Anomaly Detection with a Light-Weight Projectile, Subcontractor for AREA-I, Prime: Office of Naval Research, \$24,000, 2/28/2015
32. C. Montalvo, Robotic Landing Gear Blender Animations, Subcontractor for Georgia Tech, Prime: DARPA, \$25,000
33. N. Alley, B. Efsthios, D. Khueme, C. Montalvo, Multi-Agent Management System , NASA SBIR, Nov 2012 - Topic S3.05 Proposal No. S3.05-9503 Contract #: NNX13CL44P, SBIR (50% Contribution), Contract Awarded April 2013- \$120,000
34. M. Costello, C. Montalvo, Smart Projectile, Aerospace Engineering, U.S. Army Research Laboratory, \$313,000 Sept 2012-2015, Created detailed funding plan { (10% Contribution)
35. M. Costello, M. Ruzzene, C. Montalvo, Rotorcraft Robotic Landing Gear, Aero and Hydrodynamics System, DARPA, \$551,000 Sept 2012-2015, Created detailed funding plan { (10% Contribution)

Rejected Proposals

1. Lohar B., Russ S., Spencer E., Montalvo C., NASA EPSCoR FY 2024 - ISS Flight Opportunity Announcement Number: NNH24ZHA004C \$150,000- Submitted to ASGC 2/6/2024 - Rejected - 2/20/2024
2. Walker S., Montalvo C., Lohar B., Kimball S., Cleary J., Beebe D., Ferguson S., NSF: MRI Track 2 - Wind Tunnel - Submitted 11/15/2023 - \$2,090,571
3. Inness J., and Montalvo C., Unfurling the Electric Sail - NASA ECI STEP 1 Quad Charts , Proposal Submitted 4/17/2023
4. Montalvo C., Reveles N., Rapid Optimization and Trade Space Framework for Adapting Aerostructures - ATA Engineering Inc. - Submitted 6/18/2022 \$44,990- Rejected 8/16/2022
5. Montalvo C., Inness J., Lunar Hopper GNC System - Submitted to NASA STMD \$110,000- 7/1/2022 - Rejected 8/15/2022
6. Latif S., Montalvo C., Subcontract from UAH - Alabama Burst Energetics Explorer (ABEX) Mission Astrophysics Research and Analysis (APRA)-Submitted: #NNH21ZDA001N-APRA-12/17/2021, Rejected 8/15/2022
7. Dale Thomas and many other Alabama Experiment for Galactic-ray In-situ Shielding , Submitted to CubeSat Launch Initiative, NNH19ZCQ001O, 11/4/2019, No budget requested- NASA Removed Secondary Payloads
8. U Nair, University of Alabama in Huntsville, RII Track-2 FEC: Bridging Critical Gaps in Environment Prediction through Harnessing of Data Revolution - NSF EPSCoR - Subcontract award to University of South Alabama - Kimball, Terwey, Montalvo, Gong, Shaban- \$775,460- Submitted Jan 24th, 2020 - Rejected September 2020
9. University of Auburn in Partnership with many school including the University of South Alabama. Chakraborty, Imon - PI - Carlos Montalvo - Co-I, Advancing Design Paradigm for Revolutionary Vertical Lift Flight Vehicles, NASA Announcement NNH19ZEA001N-ULI: D.4 University Leadership Initiative (ULI) - Step A Proposal. No Budget Requested- Submitted 6/30/2020 - Rejected August 28th, 2020

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10. Buckner, Collin and Montalvo, Carlos

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26. Montalvo C., Electric Sail Dynamic Modeling and CubeSat Tether Deployment Demonstration Mission From ISS - Heliophysics Early Career Investigator Program - NASA - Submitted March 20th, 2018- Step 1 Proposal - No budget requested- Rejected July 18th, 2018
27. Montalvo C., Fault Tolerant Control Architecture of a Multi-Tilt-Rotor Air Taxi - Sloan Scholar Mentoring Network Seed Grant, March 5th, 2018- \$4,980- Rejected 7/6/2018
28. Montalvo, Carlos; Wiegmann, Bruce; Zank, Gary; Spencer, Edmund; Bryan, Thomas; Electric Sail Dynamics

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career. Theory is the foundation of engineeringbut engineersalso

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UCUR - Undergraduate Curriculum for Undergraduate Research

SURF - Summer Undergraduate Research Fellowship

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4. "Development of New Space Systems Architecture in SysML Using Model-Based Pattern Language" - Bhushan R. Lohar - July 2022
5. "Energy Dynamics of Geomagnetic Storms and Substorms Using the WINDMI Model" - Pavithra Srinivas - December 2019
6. "Zika Virus Transmission Using Two Overlapping Seir Models" - Audrey McGee - Spring 2018
7. "A Time Domain Impedance Probe Using Adaptive Filtering to Model Ionosphere Plasma" - David Clark - Fall 2017
8. "Dynamic Cone Penetrometer Testing of Two Mississippi Barrier Beaches: Cat and West Ship Island" - Jacqueline Wittmann - Summer 2016
9. "Characterization of a Three Dimensional Wind field Using a Boundary Discretization Numerical Technique" - Joshua Marshall - Spring 2016

Undergraduate Research Advisor

1. Hamza Ali - FASTPilot - (Fall 2023- Present)
2. Garrison Woods - Navy CUI - (Fall 2023- Present)
3. Zach Miller - FASTPilot - (Fall 2022- Spring 2023)
4. Julia Nelson - FASTsim - (Fall 2021- Spring 2022)
5. Aaron Godfrey - ABEX - (Fall 2021- Spring 2022)
6. Caroline Franklin - ABEX - (Fall 2021- Spring 2022)
7. Wei Min Patrick - ABEX - (Fall 2021- Spring 2022)
8. Drew Russ - JagSAT - (Fall 2019- Spring 2021)
9. Darcey D'Amato - AEGIS - (Spring 2020- Spring 2021)
10. Joseph Geuho - NOAA - (Fall 2019- Fall 2020)
11. Ruthie Hill - AEGIS - (Fall 2019- Spring 2021)
12. Will Sherman - NOAA, AEGIS - (Fall 2019- Spring 2021)
13. Maxwell Cobar - AEGIS/Meta/UAM - (Summer 2019- Spring 2021)
14. Kenneth Tucker - UAM (Fall 2018- Spring 2019)
15. Collin Carithers - MMMASS, Meta, UAM (Summer 2017- Spring 2019)
16. Rockwell Garrido - USLI - (Fall 2016- Spring 2017)
17. Matthew Wojociewksi - FASTPilot, USLI - (Fall 2016- Spring 2017)
18. Marina Swanepoel - FASTPilot - (Fall 2016- Spring 2017)
19. Bill Brown - USLI - (Fall 2016- Spring 2017)
20. Michael Wiesneth - USLI - (Fall 2016- Spring 2017)
21. Beecher Faust - USLI - (Fall 2016- Spring 2017)
22. Matthew Monkell - JagSAT - Summer 2017
23. Kent Lino - USLI - (Fall 2014- Spring 2016)
24. Nghia Huynh - USLI, TOMAD - (Fall 2014- Spring 2016)
25. Andrew Tindell - USLI - (Fall 2014- Spring 2016)
26. Lisa Schibelius - SAE - (Fall 2014- Spring 2016)
27. Alicia Ratcliffe - CubeSAT, TOMAD - (Fall 2014- Spring 2016)
28. Jake Magnin - Meta - (Fall 2015- Spring 2017)
29. Brandi Depineuil - Blimpage - (Spring 2015- Spring 2016)

Student Organization Faculty Advisor

- ^ Rock Climbing Club - 2021-Spring 2023
- ^ Disc Golf Club - 2020-Spring 2023
- ^ American Institute of Aeronautics and Astronautics - 2015-Present
- ^ University Student Launch Initiative - 2016-2019
- ^ Design, Build, Fly - 2014-2019

Senior Capstone Design Faculty Advisor

- ^ Design, Build, Fly, 2014-Present
- ^ University Student Launch Initiative, 2015-Present
- ^ Urban Air Taxi - 2018-2020
- ^ Low Speed Windtunnel Design - 2019-2020

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^ UAV Drone

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- ^ Official Chapter Kickoff - November 2015
- ^ Region II Student Conference Attendance - 5 Students 2015, 5 Student Presentations - April 2016, 5 Student Presentations April 2017 - Third Place Masters Division and Third Place Team Division, 20+ students April 2018, 1 student April 2019, 5 students April 2020
- ^ Region II Student Conference Host School April 5-6th 2018
- ^ Volunteer Activities: Paper Airplanes E-Week Open House 2016-2019, JROTC Summer Event 2017
- ^ Design, Build, Fly Faculty Advisor - 2015-Present
- ^ South Alabama Launch Society (Formerly - University Student Launch Society) Faculty Advisor - 2015-Present
- ^ CubeSat Faculty

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- ^ University and College Computing Committee - Member - (2020 - Present)
- ^ College of Engineering Faculty Affairs Committee -

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Citations

Journals [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19]

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[41] [42] [43] [44] [45] [46] [47] [48] [49] [50] [51] [52] [53] [54] [55] [56] [57] [58] [59] [60] [61] [62] [63] [64]

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