



Upcoming Local Events

Sept 29, 2021

Annual Technical Symposium (ATS)
University of Colorado Boulder

Fall (TBD)

Honors and Awards Banquet

Upcoming National Events

Nov. 15-17, 2021

ASCEND
Las Vegas, NV/Online (Hybrid)
[Event Link](#)

Note from the Editor

Did you know that you can connect with your AIAA Rocky Mountain Section (RMS) on social media? You can follow us on your favorite social media platform of choice, and stay engaged with your local section and get the latest info on our upcoming events!



[https://www.facebook.com/
AIAARockyMountain](https://www.facebook.com/AIAARockyMountain)



Instagram:
[@aiaa_rms](#)



[https://www.linkedin.com/
company/64965498](https://www.linkedin.com/company/64965498)



Twitter:
[@aiaa_rms](#)

Adrian Nagle
RMS Newsletter Editor
Ball Aerospace

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Section Officers

Elected

Section Chairman	Stacey DeFore
Vice Chair	Alex Dukes
Secretary	Kathleen Pirazzi
Treasurer	Dr. Taylor Lilly
Membership Officer	Marshall Lee
Communications Officer	Sally Hanley
Education Officer	William Carter
Honors & Awards Officer	Carolyn Overmyer
Programs Officer	Chris Zeller
Public Policy Officer	Joe Rice
STEM K-12 Officer	Susan Janssen
Young Professional Officer	Tyler Walston

Committees

Fellow-At-Large	Gene Dionne
TC Liaison	John Reed
Website Editor	John Grace
Technical Symposium Chair	Chris Zeller
Newsletter Editor	Adrian Nagle

We Need You! If you are interested in increasing your participation in AIAA Rocky Mountain Section, we need your help with positions in any of the committees. If you have an interest, please contact: Kevin Mortensen – kevin.mortensen@baesystems.com

Local Rocky Mountain Section Members Recognized by AIAA: Dr. Walter S. Scott, Executive Vice President and Chief Technology Officer, Maxar was awarded with the 2021 David W. Thompson Lecture in Space Commerce Award on the lecture topic of “The Advent and Growth of Commercial Satellite Imaging”. Dr. Jeanette Domber, Ball Aerospace, was elected as a Class of 2021 AIAA Fellow; AIAA confers the distinction of Fellow upon individuals in recognition of their notable and valuable contributions to the arts, sciences, or technology of aeronautics and astronautics. Congratulations to both Dr. Scott and Dr. Domber!

Congressional Visits Day (CVD) was Virtual and Engaging!

Tyler Walston, *York Space Systems*

Lisa Gregg, *Lockheed Martin Space*

2021 was my first year participating in the AIAA annual Congressional Visits Day (CVD) held virtually from March 13-19. This event was an opportunity for AIAA members of diverse ages and backgrounds to speak with elected legislative officials about the needs and concerns of the aerospace and aviation industry.

When I first learned about CVD, I knew that this could be a fantastic learning opportunity for both personal and professional development. I also felt that it was important to take advantage of any opportunity to take part in sincere conversation with elected officials about something that I am passionate about.

Going into the event, I was a little nervous on how the meetings with the elected officials and their staff members would go as this was completely new to me and public speaking can be intimidating. Despite the initial butterflies, each meeting went far better than I had expected.

The legislators and staffers who attended our meetings were friendly, engaging, and genuine in their support for aviation and aerospace. These meetings were a great opportunity to gain insight into the legislative process while discussing AIAA's key pillars and issues. CVD was also a chance to have a conversation with lawmakers on a more personal level about an industry that I care deeply about. I think that when you care about something passionately,

people can see that, and everyone present was very clearly so passionate about our mission. That passion made these meetings real meaningful conversations about our industry and how to continue to support and improve it.

As a young professional just starting out their career, participating in CVD really opened my eyes to the current state of the industry here locally as well as nationally. What I gained from these meetings on a personal level made all the preparation and nervousness worth it in the end. I believe that it is important to take advantage of the opportunities one has to meet with elected officials to make our voices heard and to make a meaningful difference. While it may be scary to put yourself out there for a cause, it can make a big difference and lead to positive change for all.

Editor's note:

Please consider joining the AIAA Rocky Mountain Section (RMS) Public Policy Committee (PPC)! Getting involved is one way to learn about the intersection of rocket science and political science. Then, if you choose, you can get involved to advocate for AIAA's public policy priorities at the federal, state, and local level, and help us get back to the Moon and onto Mars—and all the rest! If interested in the PPC, please contact Joe Rice at joe.rice@lmco.com.



AIAA RMS Prizes awarded at the Wyoming and Montana State Science Fairs

Sue Janssen, ULA (retired)

Spring of 2021 is the sixth year that AIAA RMS has awarded prizes for outstanding projects related to aerospace engineering, science or technology at state science fairs. Of course, this year is quite different because the science fairs are virtual. Judges attended orientation meetings via Zoom and the review of materials and student interviews were conducted through the ZFairs platform.

[Wyoming State Science Fair](#) activities were held on March 7 through 9. Mike Stoellinger (UWY), Mark Kettles, and Sue Janssen judged the virtual fair. Three prizes were awarded.

Second prize in the Junior division was awarded to Wiliam Hibbert of Big Piney Middle School for his project “Engineering a wind splitter for semi-truck cargo trailers to reduce sail effects of high crosswinds.” His inspiration was getting stranded by the closure of Wyoming highways at last year’s science fair. He designed and built a venture wind tunnel to test his design prototypes.

First prize in the Junior division is awarded to Jazlynne Gonzales of Wheatland Middle School for her project titled “Alien Life Forms?.” The purpose of her research is to determine if microorganisms can develop a resistance to ultraviolet light through mutation across generations of an organism in the same manner that has been documented for the development of resistance to antibiotics.

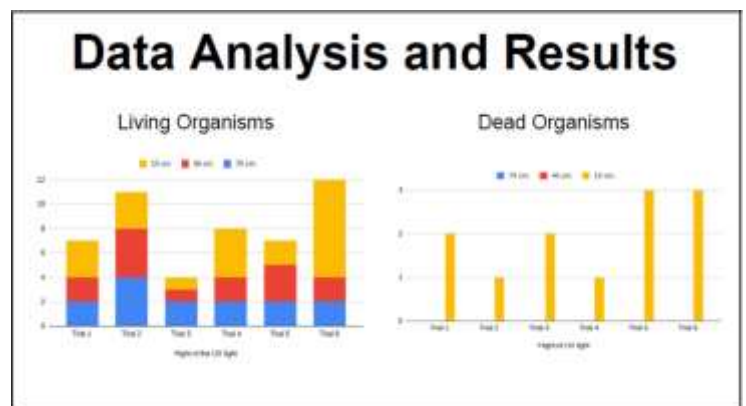
First place was awarded to Seamus Bercher of Greybull High School for his project “Utilization of a Polystyrene-Dense Metal Matrix to Reduce Radiation Exposure and Weight Characteristics.” He tested the effectiveness of a novel composite polystyrene/lead material to diffuse radiation.

[Montana State Science Fair](#) judging took place on 30 and 31 March. This is the first year we have been able to participate because the fair was virtual. Erik Eliassen, Mark Kettles and Sue Janssen were judges. Three prizes were awarded.

Second Place in the Junior Division was awarded to Conan Holmes, a 6th grader at Butte Central Elementary School for his project “How Extreme Temperatures Affect Different Types of Batteries?” He designed an experiment and the equipment to test his hypothesis that Lithium batteries would perform better than Nickel Metal Hydride (Ni-MH) or



WY Junior Division—Second Place Wind Tunnel



WY Junior Division—First Place Data

the Alkaline. He took 420 measurements over more than 33 hours of tests. That is a big commitment for a 6th grader.

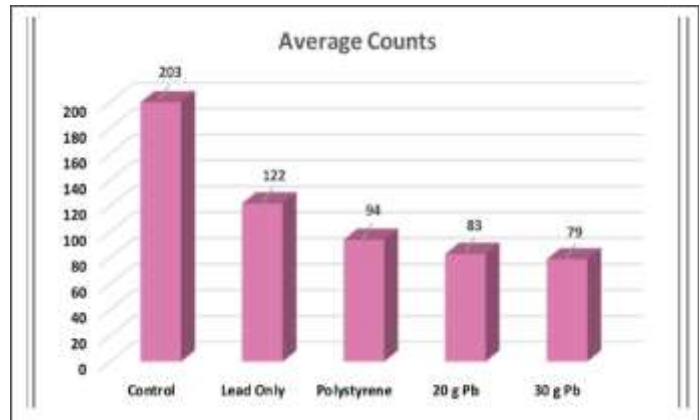
First Place in the Junior Division was awarded to Kimber Koteskey for project "Bullet Penetration in Kevlar." Her father is a police officer and she investigated the effectiveness of Kevlar against bullets.

Nicole Nau of North Toole County High School was awarded First Place in the Senior division for a novel idea to redesign a wind turbine. She incorporated a Savonius vertical axis wind turbine into a conventional vertical wind turbine configuration. She designed several airfoils and chose one to test in her scale model. Results showed a significant output increase over the configuration with only the vertical wind turbine.

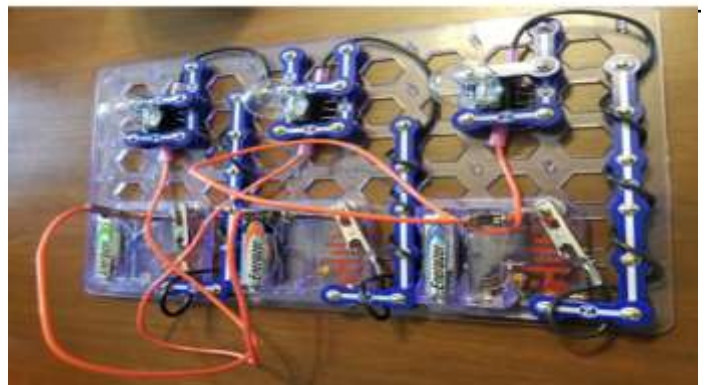
Special Awards judging for the Colorado Science is described in the next article.

Thanks go to Mark Kettles for coordinating AND to the volunteers who support this important initiative to encourage students interest in science and engineering.

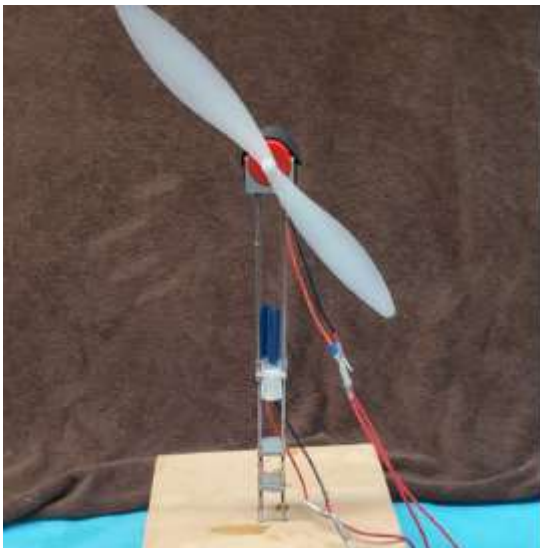
If you are interested to support next year's judging, please contact Mark Kettles (mark.kettles@gmail.com).



WY Senior Division—First Place Data



MT Junior Division—Second Place Test Setup



MT Senior Division—First Place



MT Junior Division—Fist Place Test Equipment

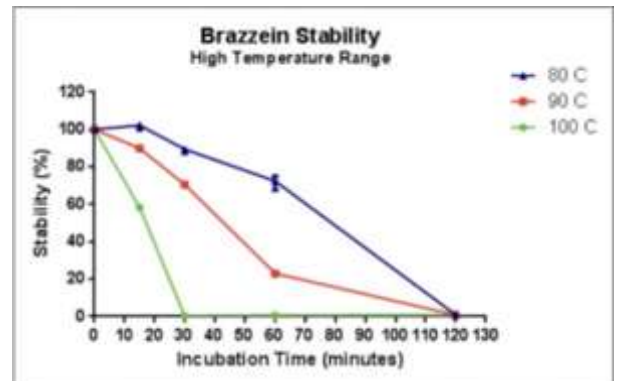
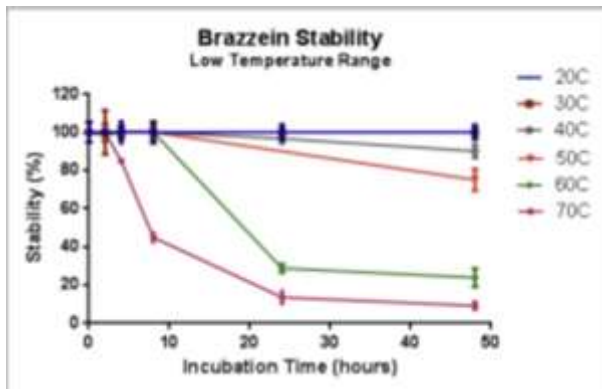
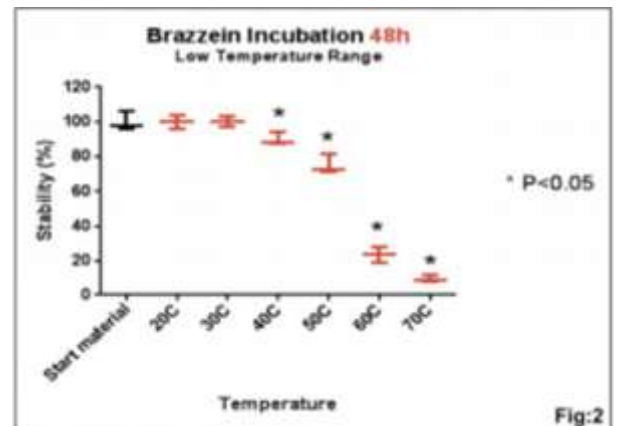
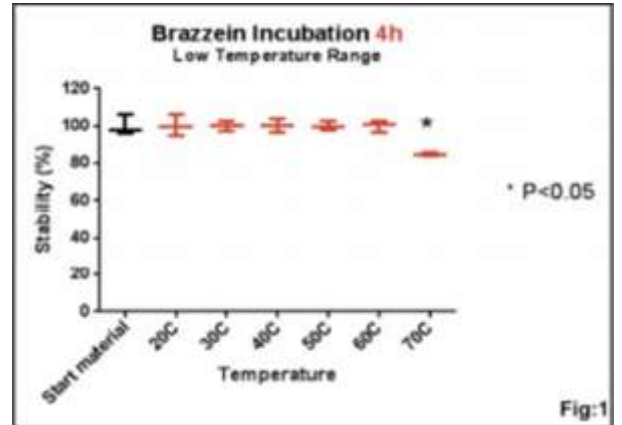
AIAA RMS Prizes awarded at the Colorado State Science Fair!

Mark Kettles, *Dish Network*

Spring of 2021 continued to find its way with one last virtual state level science fair focused in Colorado. Again, the judges reviewed materials and conducted student interviews through the ZFairs platform as noted in the previous article around Wyoming and Montana science fairs.

Colorado Science and Engineering Fair activities were held on the Week of April 12th with Special Awards interviews from AIAA judges on April 14th. Alires Almon (Mental Health Center of Denver), UB Ciminieri (Interview IA), and Mark Kettles (Dish Network) supported AIAA as judges for the virtual fair. Four prizes were awarded.

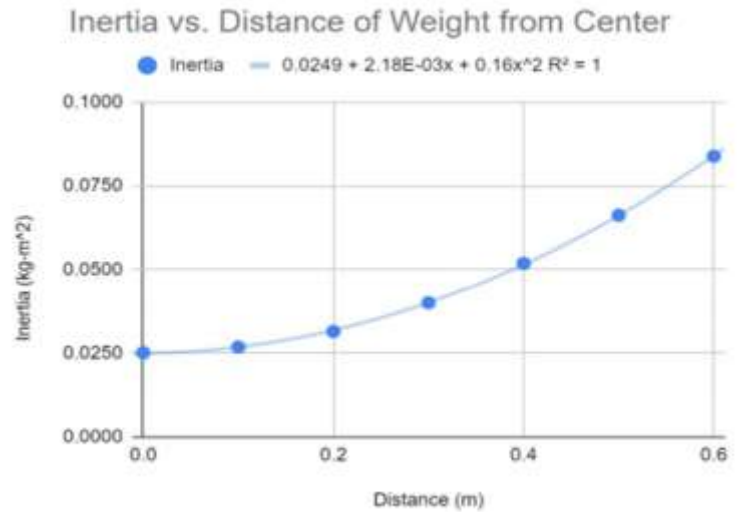
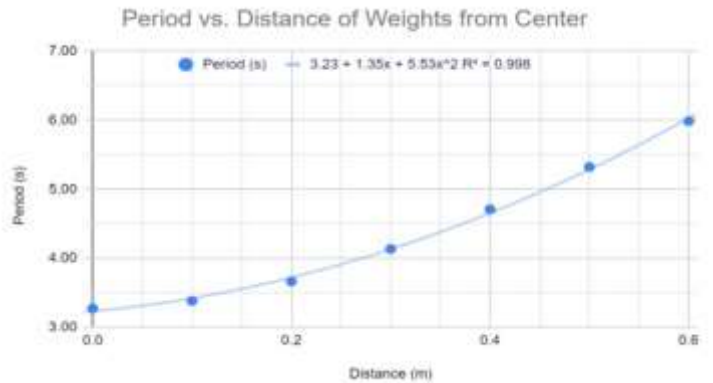
Second prize in the Junior division was awarded to Angelina Wang of Summit Middle Charter School for her project *"Identification and Characterization of the Natural Sweetener: Brazzein."* Her inspiration was to help those affected by diabetes by providing an alternative sweetener produced from fruit. Her area of study is chemistry and biochemistry applied to human health on Earth and potentially tested and applied with astronauts in space in the future. She designed an experiment to test this sugar substitute "Brazzein" (zero calories) in extreme temperatures .



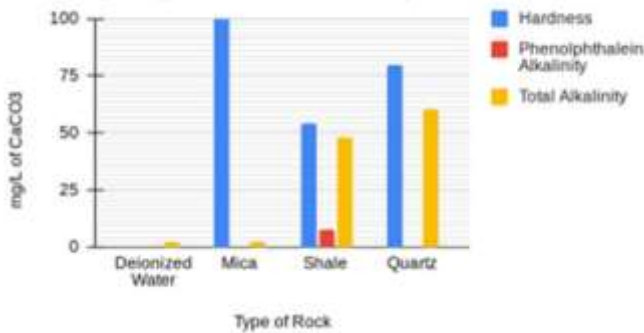
First prize in the Junior division was awarded to Lily Sobers of Bear Creek Elementary School for her project titled *“The Science of Spin: Mass and Inertia.”* The purpose of her research was to determine how inertia affects the spin of a given object based on the physics incorporated with the torsional pendulum that she built. See the data plots on the right and the experiment at the bottom of the page.

Second prize in the Senior division was awarded to Connor Sehnert of Mancos High School for his project *“Replicating Conditions of Asteroidal Water to Understand How it Affects Water Quality.”* He hypothesized that silicate materials would have the greatest water quality and have the highest absorption rate. His intent was to find potable water as we travel into deeper space for longer periods of time and can’t take it all with us.

First Place in the Senior Division was awarded to Abigail Ross of Lamar High School for her project *“Detecting Flares.”* She applied her efforts towards a better understanding of how solar flares affect us, how the sun is changing over time, and how to better predict solar flares in the future using antennas that she’s been developing over the past three years.

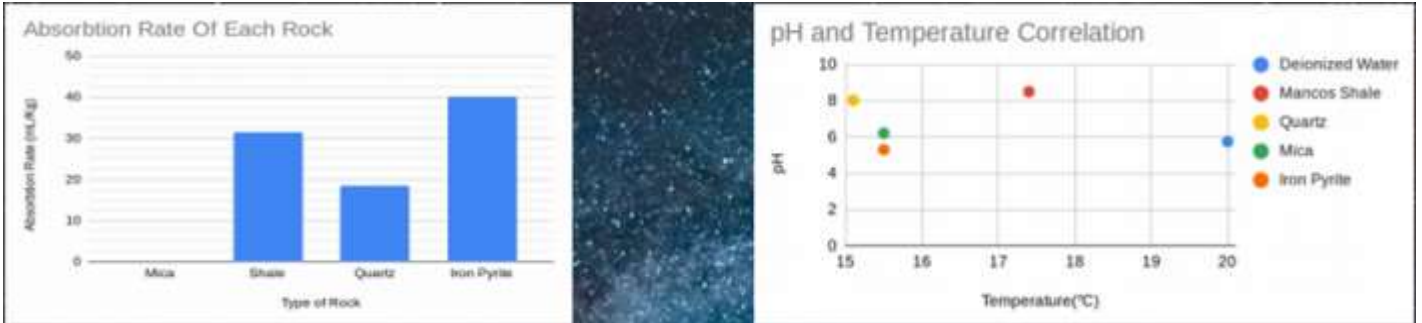


Water Quality Due to Rock Composition



Junior Division—Test Setup

Senior Division—Second Place Data



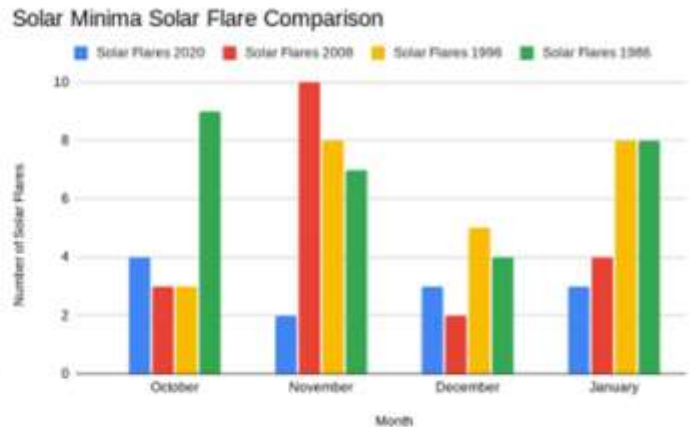
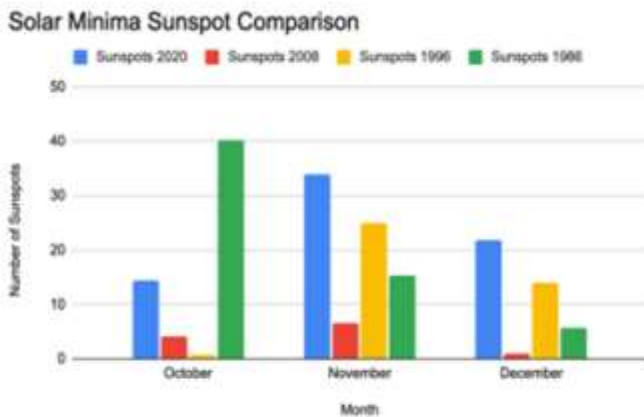
Senior Division—Second place Data



Senior Division—First Place Test Setup



Senior Division—First Place Test Equipment



Senior Division—First Place Data

Announcing a New Experiential Learning Experience

Sue Janssen, *ULA (retired)*

AIAA RMS is participating in a pilot experiential learning program called “Building Ships.” Gregg Cannady from STEM High School of Highlands Ranch requested our help with finding educators and mentors to pilot the program. The first project theme is a Martian Greenhouse. The pilot runs from 30 March (kickoff) to 4 May (presentations).

Below is a list Participating Schools, Mentors & Facilitating Teachers for the pilot.

Virtual Rural/STEM Team - Tiger Trades (La Junta, CO), Eads HS (Eads, CO), STEM School Highlands Ranch (Highlands Ranch, CO)

- Mentor: April Lanotte - STEM Integration Lead, Aeronautics Research Mission Directorate at NASA
- Mentor: Dr. Emily Matula - Extravehicular Activity (EVA, spacewalks) Flight Controller, NASA Johnson Space Center
- Mentor: Nicole Bayeur -Director Of Education at Estes Industries, LLC
- Mentor: William Peters – Optical Engineer at Lockheed Martin
- Facilitating Teachers: Tom Kirk (La Junta, CO), Dr. Joe Wagner (Eads, CO), Gregg Cannady (STEM)
- Peer Mentors: Gitanjali & Kennedy

University of Arizona Global Campus

- Mentor: Dave Murrow - Deep Space Exploration Business Development, Lockheed Martin Space
- Mentor: Dr. Karen Lynne-Daniels Ivy, Dr. Tahereh Daneshi, Michael Hayden MBA – (Forbes School of Business & Technology, The University of Arizona Global Campus)
- **Soroco HS (Steamboat Springs CO)**
Mentor: Rhonda Ahrens, Managing Partner, Glenair Rocky Mt. Group
- Facilitating Teacher: Raylene Olinger

Big Sky School District (Big Sky, Montana)

- Mentor: John Marcantonio, Subcontract Program Manager at Lockheed Martin
- Facilitating Teachers: Jeremy Harder, Dr. Kate Eisele

We'll report more details in the next newsletter.

AIAA Region V Student Paper Conference

Lt. Col. Barrett McCann, *United States Air Force Academy*

The AIAA Region V Student Paper Conference was a virtual conference for 2021, hosted by the AIAA Student Branch at the University of Iowa. 77 students representing the 20 colleges and universities in the 10-state region submitted 27 research and design papers in the Undergraduate Research and Team Design categories. Papers and presentations were judged by the AIAA professional members of the region. Participants also enjoyed presentations from Kenton Greene, University of Iowa space sensing researcher; Dan Dumbacher, AIAA Executive Director; John Reed, Chief Technologist, United Launch Alliance; and Don Thomas, retired NASA astronaut; and competed in an aerospace trivia contest.

After scores were tallied, the following results were announced:

Undergraduate Research

1st Place - Effect of Varying Propeller Pitch Angle on Efficiency and Noise Production. Cadet First Class Luca Zeitvogel, U.S. Air Force Academy

2nd Place - Experimental Investigation of Shark Skin-Inspired Surface Treatments. Cadet First Class Emily Berexa and C1C William Decker, U.S. Air Force Academy

3rd Place - Relationships Between Characteristic Detonation Length Scales. Cadet Second Class Noah Pritchard, U.S. Air Force Academy

Team Design

1st Place - Vibrissae Inspired Mechanical Obstacle Avoidance Sensor for the Venus Exploration Rover AREE. Benjamin Alva and team, Univ of Minnesota

2nd Place - Functional LiDAR Analysis of Structural Health (FLASH). Courtney Kelsey and team, CU-Boulder

3rd Place - Passive Orbit Determination Based on Time Delay of Arrival. Keith Poletti and team, CU-Boulder

First place finishers will be invited to compete in the International Student Paper Conference at the SciTech Forum in San Diego in January.

On-site student paper conferences should resume next spring, with the Rocky Mountain Section scheduled to host the 2022 Region V conference.