



Upcoming Events

April 27, 2018, 6-9 pm

Honors and Awards Banquet
The Falls, Littleton, CO

[Register](#)

May 10, 2018, 6-10pm

Young Professionals Event: "Hidden Figures Movie" with guest speaker Dr. Christine Darden

Alamo Draft House Cinema, Littleton, CO

May 14-18, 2018

Boulder Startup Week
Boulder, CO

[Aerospace Track](#) (see page 8)

May 18, 2018

"Good Vibrations" Volunteer at GESTEM
Auraria Campus, Denver, CO

<http://www.swe-rms.org/gestem.html>

(see page 8)

Note from the Editor

By Adrian Nagle, *Ball Aerospace*

This is an exciting issue of your local AIAA newsletter. After a great Speakers Program about the Lucy space Mission, a week in March turned very busy.

In one week, 20+ members were active supporting three big events: Congressional Visitors Day in Washington D.C, CU Aerospace Summit in Denver and the Colorado Aerospace Day at the Capitol building in Denver.

Please review what was accomplished at each event. These activities truly demonstrate the local efforts AIAA members perform to promote the aerospace industry in our Rocky Mountain region and at our Capitol. Without active membership, the public does not have tangible contact with the aerospace news the public hears. When the public interacts with AIAA members, I feel they walk away with a positive feeling of the work that is accomplished in aerospace, whether it is James Webb, rockets, UAVs, or DreamChaser. Keeping aerospace a prominent issue for citizens and legislatures helps us continue our important work and recruit new engineers.

Don't forget about the awards banquet on April 27th at The Falls Event Center. Register now (link on left) to attend and talk about these activities with some of participants. You can easily find yourself involved with other members and expanding your influence and support for aerospace.

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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

Aerospace in Denver News

Maxar Technologies is moving their headquarters to the Digital Globe location in Westminster, off of I-25 at 120th Avenue. According to [Built In Colorado](#), Maxar Technologies will bring 800 jobs to Colorado. Maxar Technologies was formed out of MacDonald, Dettwiler and Associates (MDA) after acquiring Digital Globe in 2017. Maxar Technologies builds and operates satellite communications, ground infrastructure, space robotics and more. According to Built In Colorado, "Maxar was also considering a move to Herndon, Va....[h]owever, the combination of talent, tax breaks and opportunity for rapid growth likely tipped the scales in favor of Colorado."

Lucy to Explore Celestial “Fossils”

Adrian Nagle, *Ball Aerospace*

The February Speakers Program was held at Lockheed Martin, Feb. 21, 2018 at the Waterton plant. Approximately 60 attendees arrived to learn about the mission of Lucy from the principal investigator Dr. Hal Levison from Southwest Research Institute in Boulder for the science perspective, and from Lockheed Martin project manager Tim Halbrook for the spacecraft mission point of view.

The first portion of the program was a review of early solar system objects by Dr. Levison. He revealed the Trojan asteroids are fossils in the Solar System, having been protected by being stationed at the Lagrange points around Jupiter. Understanding what these Trojan asteroids consist of will reveal what made up the early Solar System and the early position of the giant planets. These Trojan asteroids are remnants of giant planet formation.

The Trojan asteroids are interesting in that they are a very diverse group of asteroids with variations in mass and color (albedo). Therefore, the main goal of the Lucy mission is to visit as many varied types of Trojan asteroids. The Lucy mission is taking advantage of coincidental alignment of planets for an unusual orbit to encounter 5 different asteroids (one of which is binary!).



Launch is planned for 2021 with an assist from Earth a year later, and then two encounters with Jupiter Lagrange points 6 years apart and the last encounter in 2033.

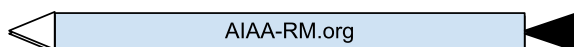
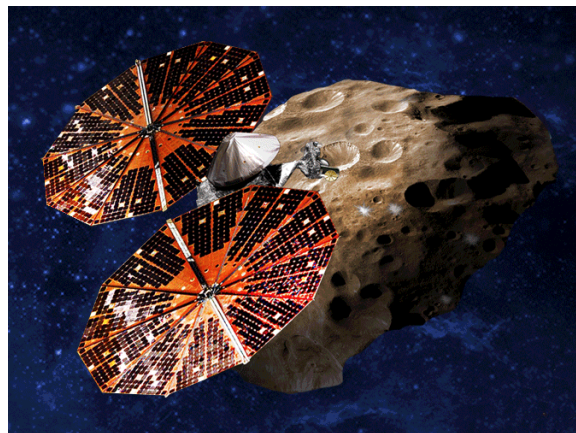
The remaining portion of the program discussed the spacecraft and some challenges with sending a spacecraft to the outer planets. The spacecraft will have approximately 400W of power from 2 disc shaped solar arrays 6 m in diameter (at 5 AU). As is typical for such missions, much of

the power is for thermal control. Some electronic components may be powered off to improve reliability during cruise. Science measurements will be automated with on board systems to point the spacecraft at the asteroids and fine point with an articulating payload instrument platform. Each encounter is on the order of 20 minutes, compared with 45 minute duration for a signal from the spacecraft to reach Earth.

There were many great questions from the audience. The audience included high school students, Colorado School of Mines students, and even an alumni from early in Lucy mission's proposal.

Much time was spent discussing the significance of the mission name Lucy which is based on the Lucy fossil discovered in Africa. As the Lucy fossil was important in discovering the link of human development, it is hoped the Lucy mission will understand

the “fossil records” of the variable Trojan asteroids to better link the development of the early Solar System and verify or disprove current understanding of the formation of the planets and solar system. That is at least the official reason. Some talk was also about the original name Lucy from the Beatles song “Lucy in the Sky With Diamonds”. Notice the shape of the mission patch?



Colorado Aerospace Day was Popular at the Capitol

Jason Kuchera, *Digital Globe*

Colorado aerospace once again outdid itself during this year’s Colorado Aerospace Day – turned aerospace week – at the state capitol! To start things off, Colorado Aerospace Day was celebrated on Monday, 19 March. Hundreds of participants and attendees (including several congressman and senators) interacted with over 40 exhibitors who covered an array of Colorado aerospace, from startups to the largest aerospace companies. There was a palpable enthusiasm at the event, which culminated in an Aerospace & Defense Caucus Panel Discussion in the Old Supreme Court Chambers. The subject: How to elevate the Aerospace Brand in Colorado.

The panel highlighted Colorado’s unique aerospace sector and how we – as an industry – must do a better job at aerospace advocacy. Other states have



made significant improvements in consolidating their message to Capitol Hill; Colorado must do the same. The panel also pointed out that our industry accounts for over \$330 billion in spending annually and is consistently growing year over year. Colorado must also do more to bring more of that industry to our state through financial incentives, such as venture capital. The industry cannot wait for government to create a plan to bring aerospace to Colorado. The industry and its advocates must come together and make it happen. Our government programs, like NASA,

understand Colorado's impact to the industry and they are doing what they can to leverage our universities, through federal grants, to foster research in aerospace. Ultimately, Colorado is seen as a serious player in aerospace industry in this country. Our future success depends on what we do from here.

The rest of the week was filled with other aerospace events. On Tuesday, Metro State University hosted an Aerospace Workforce Development Forum & Networking Reception. The Colorado Space Business Roundtable (CSBR) hosted a Citizens for Space Exploration event on Wednesday at their headquarters, which also happened to coincide with AIAA's annual Congressional Visits Day (CVD) in Washington, D.C. (see other article in this newsletter) The

University of Colorado – Boulder, held their third annual Aerospace Summit on Thursday evening at the Hyatt Regency. Finally, the week rounded out with a Defense Commercialization Roundtable at Catalyst Campus, in Colorado Springs.

Your AIAA Rocky Mountain Section, is a strong catalyst in helping to connect the dots in Colorado's aerospace industry. We hope that these events – and their successes – will inspire you to become more engaged to get that word out. Whether it's volunteering to talk about the planets at your children's school, or helping the Section in our annual CVD, every event helps strengthens our industry!

Keep looking up!



CU Aerospace Summit Extends CO Aerospace Week

Michaela Masciarelli, *Consultant and CU Aerospace Alumna*

AIAA supported the 3rd Annual CU Aerospace Summit on Thursday, March 22, 2018 hosted at the Hyatt Regency Hotel Denver. It was a great evening of booths, presentations, food and fun.

The lobby was lined with tables of aerospace firms displaying their models and projects, one for the University of Colorado, and of course AIAA was represented with a booth promoting membership. An interesting mix of students and professionals stopped by to learn about the

activities of the society. Many people from other industries that were CU advocates also stopped by to learn about AIAA.

They served treats like finger foods, fajitas, made to order- grilled cheese sandwiches, and a large table of cheese, meats, olives and delicious desserts!

Then the entertainment started with a series of talks by CU professionals. They spoke about the work CU provides in many areas from UAV's to spacecraft research. Ashley Bailey introduced the new space minor program. This program is offered to people outside of engineering that have a passion for space work. It was interesting to hear about the classes and connections of arts and science.



Next, CU's Laboratory of Atmospheric and Space Physics' (LASP), Mike McGrath, talked about their latest venture, the International Satellite Program in Research and Education called INSPIRE. This is a cooperative adventure led by CU/LASP with students from many countries and global universities to educate new engineers and scientists. They will build and run a satellite space program, driving leading-edge space technology. It was great to hear about the other countries' excitement to participate in space exploration.

Last, they had a panel of industry experts. Brian Argrow asked many interesting questions of the panel that included Dan Baker of LASP, Steve Jolly of Lockheed Martin and Mark Sirangelo of Sierra Nevada Corporation. He asked questions such as:

- With all the industry driven space adventures, does NASA have a clear leadership role for the next 50 years?
- Will the increase in "global literacy" in space education and technologies produce customers, competition, or both?
- With global cooperation what are some of the benefits that justify the risk and cost of such outreach activities?

Their answers talked about the value of international, corporate, government and university collaboration in space exploration and the aerospace fields, that will help us as a world, to reach even farther.

Here is the complete list of speakers for the evening:

Abby Benson, AVC for Research & Innovation, Industry Collaboration & Aerospace Ventures | Welcome

Jay Lindell, Major General (Retired) & Aerospace & Defense Industry Champion | Remarks

Russell L. Moore, Provost & EVC for Academic Affairs | Remarks

Ashleigh Bailey, Space Minor Program Manager | Space Minor

Mike McGrath, Senior Advisor, Professor Adjunct, Aerospace Engineering Sciences | INSPIRE

Brian Argrow, Professor and Chair of Ann and H.J. Smead Aerospace Engineering Sciences, and Director of the Integrated Remote & In-Situ Sensing Program (IRISS) (moderator),

Steve Jolly, Chief Engineer, Lockheed Martin

Dan Baker, Director of LASP

Mark Sirangelo, Executive Vice President, Sierra Nevada | Panel: International Collaboration

It was a great evening to celebrate Aerospace Week and the interesting work at CU Boulder.

Go Buffs! CU in Space!

Largest CO Delegation Attended Congressional Visitors Day

Nathan Vermeer, *Colorado School of Mines Student*

Members from Rocky Mountain's AIAA section took part in Congressional Visits Day (CVD) at our nation's capital on March 20th thru the 21st. Eleven members represented Colorado was composed of students from the Colorado School of Mines led by Tracy Copp of Ball Aerospace, and Lt Col Todd Nathaniel of the Air Force Academy. The goal of CVD, much like Colorado Aerospace Day taking place a day earlier in Denver, was to get a chance to remind our lawmakers that aerospace is a key



Colorado CVD participants (LtoR): Michael Szostak, Mariah Coultrip, Tracy Copp, Andrew Fleming, Katie Schneider, John Fuller, Nathan Vermeer, Rob Frazier, Matt Ryan, Eric Hampton, Lt Col Todd Nathaniel

component of an economically strong and secure nation.

The week began with a training session composed of participating state teams convening at the Boeing facility in Arlington Virginia. Teams from Florida all the way to California were in attendance, including most of the states where the aerospace industry plays a key role in their economies.

Discussed were three major policy pillars that would be highlighted by all the teams this year. This included a push for the government to enact stable levels of funding through the next couple of years. A stable and predictable budget for DOD and related aerospace agencies would ensure for a smooth year of projects focused on the actual work rather than waiting for the funding to come in. The next topic would be to push for better R&D involvement by the federal government in projects across the field of the aerospace industry from military defense to civilian applications. Finally, the last major issue to be discussed would be the enhancement and development of the workforce. Focus on the backlog of security clearance approvals and push for appealing to the next generation of engineers and scientists took center focus as the training came to an end for the night.

On Wednesday morning, the team split into two separate groups to better reach all 9 elected officials that have the honor of representing Colorado. Hit with a winter storm from the previous night, the government was shut down for the day, effectively closing all non-essential government agencies. Thanks in part to being used to Colorado's harsher snowfalls,

nearly all the meetings scheduled with Colorado officials remained on their calendars despite them not being required to.

For the remainder of the day the team was all over Capitol Hill, discussing the over 400 aerospace companies and suppliers that contribute to Colorado's economy, including a workforce of over 162,000 people providing roughly 3.2 billion dollars in annual payroll. Higher education plays a critical role in our state's economy with the University of Colorado Boulder being a top 10 school for aerospace engineering as well as the Colorado School of Mines creating the world's first Space Resources degree just this last year. The day was concluded with a reception for the teams with AIAA

Executive Director Dan Dumbacher and Representative John Culberson of Texas giving the closing remarks to the exciting week in the Capitol.

With a strong showing from the Rocky Mountain AIAA Section, it was easy to showcase why Colorado is the number 2 state in the nation's aerospace economy. Both members of Congress and their staff were extremely knowledgeable and aware of the role the aerospace industry plays back home and the good it brings with it. Accompanied with Colorado Aerospace Day in Denver, AIAA accomplished its job of advocating for the aerospace industry to both our state and nations leaders, ensuring the continued exploration of the final frontier.

Support AIAA "Good Vibrations" Workshop at GESTEM

Friday May 18, 2018
Auraria Campus, Downtown Denver, CO

GESTEM Website

The Girls Exploring Science, Technology, Engineering & Math program will be hosted at the Auraria Campus in Denver, CO. About 1200 7th grade girls attend hands on workshops. Over 350 volunteers are needed to help with the workshops and act as guides.

AIAA hosts a workshop "Good Vibrations" which requires 2 more volunteers to help the participants. A practice session is scheduled May 5. Contact Sue Janssen at susan.g.janssen@gmail.com to help support the "Good Vibrations" workshop.

Boulder Startup Week

Join the local community May 14-18th, where you can expect events that will give you best practices, insight on trends, and help to build successful strategies in the areas of:

- How to launch your own space startup
- Big Data in a Satellite's world
- Can a startup reach Mars?
- Jumping from software engineer to aerospace engineer
- Diversity in Aerospace

For information and to volunteer or register:
http://boulderstartupweek.com/aerospace-track-what-to-expect-for-bsw-2018?mc_cid=bc100895d1&mc_eid=cbd65686f5