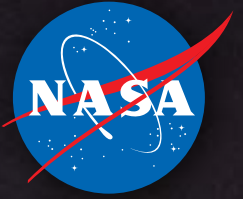
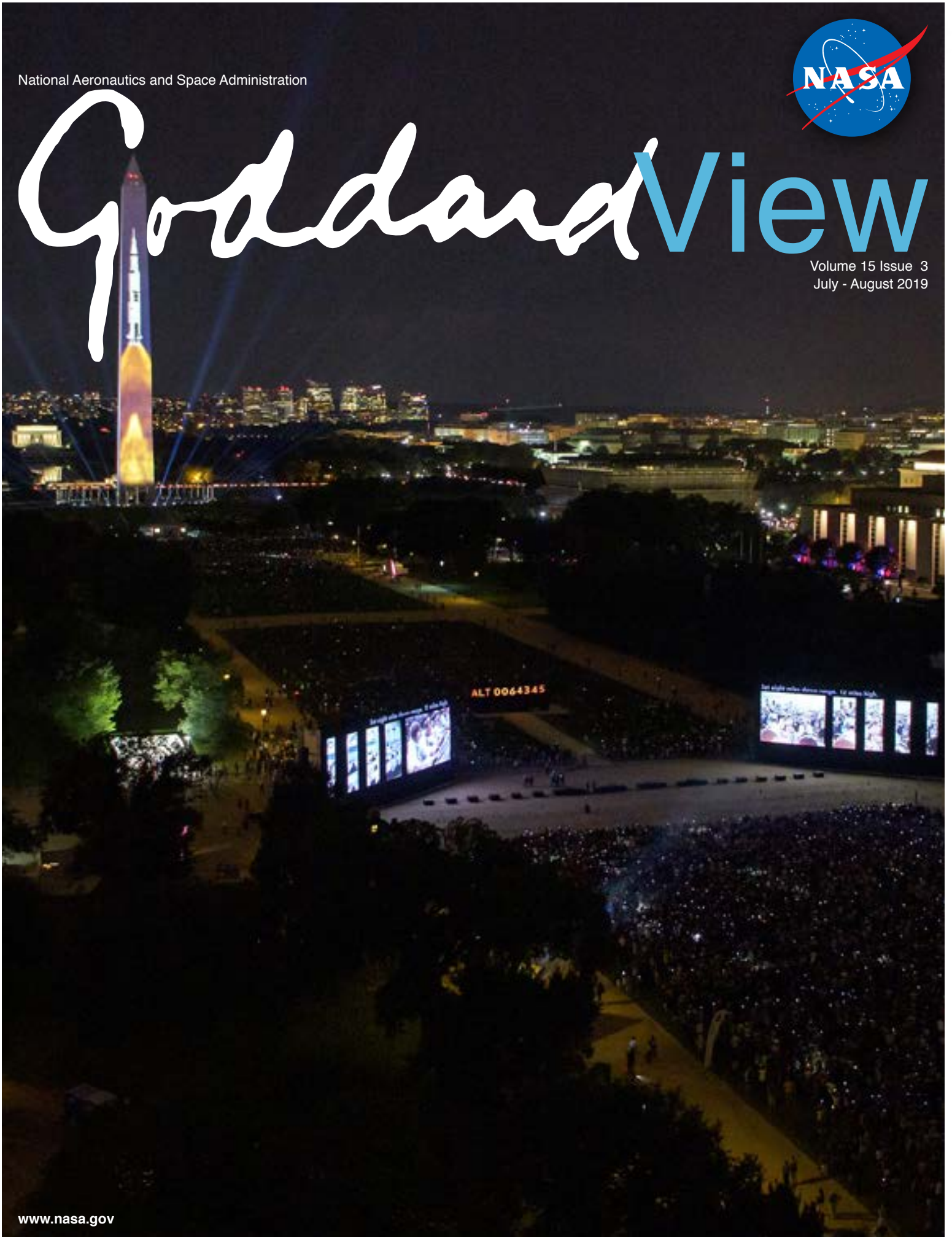


National Aeronautics and Space Administration



Goddard View

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TRENDING



Webb Telescope Fully Assembled for the First Time

The elements of the James Webb Space Telescope have been fully assembled for the first time, bringing the mission one step closer to launch and scientific discovery. Testing will continue ahead of a scheduled launch in 2021.

Interns Showcase Achievements During Summer Poster Session

Following weeks working on their respective projects, Goddard's summer interns presented their work to the center's workforce during the annual summer poster session in the Building 28 atrium.



Stuff-a-Truck Challenge Helps Families in Need

As part of the annual Feds Feed Families campaign, directorates engaged in the Stuff-a-Truck Challenge to see who could contribute the most food as part of a friendly competition. Donations will benefit families in the local area.

Friends and Colleagues Clean Park to Honor Former Project Manager

The Craig Tooley Initiative honors former Goddard Project Manager Craig Tooley by giving back to the community. As part of the effort, friends and former colleagues recently gathered to clean up Greenbelt Park.



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On the cover: The public gathers on the National Mall in Washington to watch a program celebrating the 50th anniversary of the Apollo 11 Moon landing.

Photo credit: NASA/Bill Ingalls

GoddardView Info

Goddard View is an official publication of [NASA's Goddard Space Flight Center](#) in Greenbelt, Maryland. Goddard View showcases people and achievements in the Goddard community that support the center's mission to explore, discover and understand our dynamic universe. [Goddard View](#) is published by the Goddard Office of Communications.

You may submit story ideas to the editor at darrell.d.delarosa@nasa.gov. All contributions are subject to editing and will be published as space allows.

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ONWARD WITH GODDARD'S MISSION

When I first passed through the gates of NASA's Goddard Space Flight Center in 1983, I knew this was a special place. Today, there continues to be no other organization in the world with a workforce more capable of advancing the frontiers of science, engineering and exploration across the universe.

I was humbled when NASA Administrator Jim Bridenstine named me Acting Center Director. Each day for as long as I hold the position, I will fulfill this new responsibility with energy and enthusiasm, knowing there is no limit to what we can achieve when our collective talents come together around a common purpose.

Thanks to the tireless support of Chris Scolese as Center Director over the past seven years, the state of Goddard is strong. Our scientific research continues to lead the world, and our missions continue to make pioneering scientific discoveries – or will in the future – while our engineering and technological capabilities remain on the cutting edge.

Through it all, Goddard has consistently been named one of the best places to work in the federal government.

Chris set a standard that is both a challenge and an inspiration. NASA and the Center are extremely grateful for his leadership and contributions to spaceflight over three decades of service. I look forward to working with the Goddard community to build upon this legacy to advance our standing as a top scientific and engineering organization.

Goddard's success to date is unparalleled, yet the nature of exploration means there is always more to achieve. I am excited to continue the Goddard journey with you as the possibilities ahead of us are extraordinary.

-- George W. Morrow, Center Director (Acting)

Photo credit: NASA/Goddard/Bill Hrybyk



WORLD JOINS NASA IN CELEBRATING APOLLO AS THE AGENCY LOOKS TO THE FUTURE

When Apollo 11 landed on the Moon, more than 600 million people – approximately one-sixth the world’s population – reportedly saw the television footage of Neil Armstrong and Buzz Aldrin taking humanity’s first steps on another world. Fifty years later, the world came together again around Apollo 11, but the advent of social media fundamentally changed how people did so, allowing them to interact much more directly by sharing imagery, memories and thoughts with their own global audience.

NASA led the celebrations with a commemorative program, “Giant Leaps: Past and Future”, featuring Apollo 11 Com-

mand Module Pilot Michael Collins and Flight Director Gene Kranz, among many others. On the National Mall in Washington, the Smithsonian National Air Space Museum’s multimedia program “Apollo 50: Go for the Moon” projected a 363-foot image of the Saturn V onto the Washington Monument, followed by a multiscreen film on the mission.



program that by 2024 will send the first woman and next man to the Moon. At NASA’s Kennedy Space Center in Florida, Vice President Mike Pence showed off the Orion capsule that will make the first Artemis test flight beyond the Moon.

“Our goal 50 years ago was to prove we could land humans on the Moon and return them safely to Earth,” Bridenstine said on the anniversary of Apollo 11’s launch. “Our goal now is to return to the Moon in a sustainable way, under the Artemis program, to prepare for the next giant leap – sending humans to Mars.” ■

Center: A crowd gathers on the National Mall in Washington to watch a screening of “Apollo 11: Go for the Moon” during the 50th anniversary of the Apollo 11 Moon landing. Elements of the program used the Washington Monument to display images from the landmark mission.

Photo credit: NASA/Goddard/Taylor Mickal

For NASA’s digital properties, the anniversary will be a highlight of the year. The celebration brought about the highest engagement of any 2019 story across the agency’s YouTube, Twitter, Facebook and Tumblr channels, and the third highest engagement of the year across Instagram. On NASA TV, approximately 25,000 people watched the “live” rebroadcast of the Apollo 11 moonwalk on NASA TV, and so far 1.5 million have watched video on YouTube. The anniversary may well prove to be the biggest online event in the agency’s history other than the 2017 solar eclipse.

Even as NASA is remembering the past, it is looking forward to its next giant leap. As part of the celebration, NASA Administrator Jim Bridenstine unveiled the logo for Artemis, the



JOHN MATHER ADDRESSES GODDARD INTERNS

By Ashley Balzer

On June 3, hundreds of interns poured through the gates of NASA’s Goddard Space Flight Center to get a taste of what it’s like to work at NASA. Seven weeks later on July 22, with their summer projects well underway, students from Goddard’s Greenbelt campus and the Katherine Johnson Independent Verification & Validation Facility filed into the Dr. Noel W. Hinners Auditorium, or tuned in remotely, to hear from John Mather, Nobel physics laureate and senior project scientist for the James Webb Space Telescope. Mather took the interns on a journey through space and time to explore the scope and fate of the cosmos.

“I want to tell you the whole history of the universe, from the big bang to what may happen to us in the future,” said Mather.

While many of the interns have backgrounds in STEM, the Goddard internship program also selects students who are studying history, journalism, video production and a host of other subjects. Hearing from scientists like Mather provides interns from all backgrounds the opportunity to learn about the discoveries that drive NASA’s work.

Mather leads the science team for Webb – a mission that will give us a glimpse of a period of cosmic history that we’ve never seen before, when the first objects formed as the universe cooled down after the big bang. He explained that by peering back in time and learning how the universe evolved to its present state, we can better understand how it may evolve in the future.

But just when we think we know something, surprises keep popping up! For example, Mather said, “We think quantum mechanics governs everything, but we’re still arguing about what it means. You’ve probably heard there’s such a thing

as a quantum jump, which seems to be instantaneous,” said Mather. “Well, now we know that it’s not instantaneous. You can actually turn one around and make it go back! That’s a new result of the last few months.”

He rounded out the talk by taking questions from the crowd on everything from space telescope construction to how to make science accessible to the public. Mather’s brimming passion for astrophysics spilled over into the audience, leaving the interns with a renewed scientific vigor.

“Dr. Mather absolutely astounded me not only with the advanced technology of the James Webb Space Telescope, but also with the idea that the universe is boundless yet constantly growing,” said Alyssa Kaewwilai, a software engineering intern. “I felt inspired by the future space devices he spoke about, and I’m excited to incorporate his research into my current Earth systems project!” ■

Above: John Mather, Nobel physics laureate and senior project scientist for the James Webb Space Telescope, addresses summer interns from Goddard’s Greenbelt campus and the Katherine Johnson Independent Verification & Validation Facility on July 22.

Photo credit: NASA/Goddard/Debra McCallum



GODDARD COMMUNITY COMES TOGETHER AT SCIENCE JAMBOREE

By [Natalie DiDomenico](#)

Interns, postdocs and researchers all gathered to learn about the scientific research at NASA's Goddard Space Flight Center at the 11th annual Science Jamboree. Through this event, the community of scientists educated the crowd, as well as each other, about the groundbreaking work done at Goddard.

Stations were equipped with activities – both visual and interactive – as a means of connecting the work they do with the public. The Global Precipitation Measurement mission team presented 3D prints of Hurricanes Irma and Maria that were synthesized using data collected from a storm. A team from Juno, a mission currently orbiting Jupiter, presented a model of the planet's electromagnetic field through small magnets. Amid the displays and posters, interns were encouraged to ask questions and network.

The Science Jamboree had pieces of NASA history as well; one station displayed original photographs taken by astronauts during the Apollo 11 Moon landing to commemorate the mission's 50th anniversary. The images depicted a blurry, cratered lunar surface, with the American flag planted firmly in the regolith.

Researchers also had the opportunity to learn about other projects at Goddard. Postdoc Adam Greeley recognizes that at Goddard, researchers working on different projects rarely get to interact. The Science Jamboree gives them the means to learn from each other. "Everyone is busy, but here you can meet people to learn about their projects," he said. "When you work at NASA, everyone assumes you're a NASA rep. Someone will ask, 'Do you know about Cassini?'" I don't know a lot, but here I can talk to someone who does."

Goddard intern Cat Azizi sees the Science Jamboree as a valuable way to engage with the work done on-site and learn about science beyond her comfort zone. "As an intern, it is so valuable to be exposed to the fantastic science and being able to ask questions firsthand," she said.

Christopher Shuman, associate research professor at the University of Maryland, Baltimore County, finds value in the Science Jamboree because it allows him to connect with upcoming and aspiring researchers. "Being able to reach out to this many young people is a wonderful way to connect with the next generation," he said. ■

Above: Employees at NASA's Goddard Space Flight Center gather for the 11th annual Science Jamboree. Photo credit: NASA/Goddard/Jay Friedlander and Gabby Garcia

Below: Science Jamboree attendees participate in a cryogenic experiment. Photo credit: NASA/Goddard/Jay Friedlander and Gabby Garcia



By [Elizabeth Goldbaum](#)

On a vinyl race car track resembling the surface of the Moon, summer interns took turns racing a toaster-sized autonomous car. Their goal? To see whose algorithm could propel the car the fastest while staying on the track.

The shoe-shaped track for the NASA DeepRacer Challenge – which took place on Aug. 8 in the Building 28 atrium – required participants to come up with an algorithm that would steer the vehicle as it approached both left and right turns, as well as straightaways.

"Nice, that's a good turn!" said a representative from Amazon AWS, which developed the DeepRacer autonomous cars, as intern Akshay Anil watched the race car run on his algorithmic model, dubbed "Lil'Carty A."

The event's ultimate purpose was to provide a fun, engaging way to demonstrate how machine learning works. Prior to the big race, interns attended a workshop with representatives from Amazon AWS to learn how to program a model and guide the car as it attempts to complete laps around a racecourse.

Models relied on reinforcement learning, meaning they would be rewarded when they followed the track and penalized when they strayed off course. These same principles can help in

real scientific endeavors, like guiding a future planetary rover as it attempts to navigate new terrains.

"I hope that this project will spark more interest in reinforcement learning as a means to produce cost-effective methods for automating tasks that need to be done," Anil said. He hopes to become a software engineer when he graduates with a computer science degree from the University of Maryland, College Park.

Fellow competitor and intern Emma Zimmerman is also studying computer science at Seattle Pacific University. "I'm in a club for women in engineering and computer science, and I would absolutely love to get them involved in things like this," she said. She named her model "Tracy Chapman" in reference to the singer's song "Fast Car." "One of the most valuable parts of my experience with the race is being able to bring my knowledge back to others," Zimmerman said. ■

Above: Participants look on as an autonomous car makes its way around a track during the NASA DeepRacer Challenge.

Photo credit: NASA/Goddard/Debora McCallum

IN DEEPRACER CHALLENGE, ALGORITHMS PROVIDE PATH ACROSS THE 'MOON'



Jordan McDonald

Code 111, Pathways Student Trainee

Why Goddard?: NASA has been pushing the boundaries of human achievement.

Hobbies/interests: biking, reading, hiking



Paul Trotter Jr.

Code 450, Resource Analyst/Student Trainee

Why Goddard?: New challenges and support for various discovery efforts.

Hobbies/interests: family, sports, reading, volunteering, travel



Evana Gizzi

Code 587, Science Data Processing/Pathways Intern

Why Goddard?: NASA has been a large part of my Ph.D. career so far, and I have always felt at home here.

Hobbies/interests: family, socializing, working out, concerts, beach



Demetrious Dowdell

Code 551, Pathways Intern

Why Goddard?: An environment where you are challenged to succeed, but not left alone in the process.

Hobbies/interests: Rollerblading, parkour, running, diving, soccer, other sports



Mark Carroll

Code 606, Research Scientist

Why Goddard?: All of the different opportunities to advance science.

Hobbies/interests: family, getting out on the water, hockey



Megan Bock

Code 592, Restore-L Servicing Payload Systems Engineer

Why Goddard?: Combining my love for STEM and helping solve problems unique to NASA.

Hobbies/interests: daughter, travel, baseball

EMPLOYEE SPOTLIGHT

Goddard is pleased to welcome these new employees to the NASA community.



Robert Pritchett

Code 595, Pathways Intern

Why Goddard?: I have been interested in space from a young age.

Hobbies/interests: running, podcasts, reading

DECADES LATER, MOON BRINGS MUSIC DOWN TO EARTH

In 1971, Apollo 14 touched down on the Moon, becoming the third such mission to land on its surface. Among his personal items, Command Module Pilot Stuart Roosa brought with him nearly 500 various seeds – provided by the U.S. Forest Service – which were then planted around the world upon their return to Earth. NASA’s Kennedy Space Center in Florida planted a sycamore tree in 1976, which lived until Hurricane Irma’s destruction in 2017.

Many decided that this first generation “Moon tree” must live on, and its wood scraps were used for several artistic projects. Scott “Shuttleman” Phillips – who worked on the Space Shuttle Program as a technician at NASA’s Marshall Space Flight Center in Huntsville, Alabama, and presented during the Goddard Engineering Colloquium in 2016 – commissioned for a guitar to be made from the tree at the Martin Guitar Factory in Nazareth, Pennsylvania.

Mark Hubbard, Goddard management systems internal auditor, visited the factory during a NASA event for the 50th anniversary of the Apollo 11 Moon landing and played the American treasure.

The guitar will eventually be displayed to the public at the U.S. Space & Rocket Center in Huntsville. ■

Photos courtesy: Mark Hubbard



GODDARD CELEBRATES THE

NASA CAREER OF CHRIS SCOLESE



Chris Scolese began his career at NASA's Goddard Space Flight Center in 1987 as an engineer. He would later serve as center director from 2012 until his retirement from the agency in July.

Friends, family, and current and former colleagues recently gathered to celebrate his contributions during a Star Trek-themed gathering in the Hinners Auditorium in Building 8. ■

Photo credits: NASA/Goddard/Taylor Mickal

THERMAL ENGINEER FRANKLIN ROBINSON KEEPS IT COOL – OR HOT

By [Elizabeth M. Jarrell](#)

What do you do and what is most interesting about your role here at Goddard? How do you help support Goddard's mission?

We develop thermal technologies, new ways to keep hardware at the desired temperature, whether that's very hot or very cold or somewhere in between. The customers usually tell us that they have a component that they want to keep at a certain temperature. We then have to figure out what methods and technologies to use to achieve that temperature range. Heat transfer, as a means of cooling or heating, becomes very important.

When did you know that you wanted to become an engineer?

When I was still in elementary school, I was fascinated with building things and taking them apart. The challenge was always to take something apart and put it back together without having any extra pieces. It was all trial and error. I especially liked working with remote-controlled cars and boats. I also loved Legos, perfect building blocks for young engineers.

How did you come to Goddard?

While I was an undergraduate at the University of Maryland working on a mechanical engineering degree, I interned in the Goddard Thermal Engineering Branch. I earned my master's in mechanical engineering while working as a co-op in our branch, and I am currently working on a doctorate in mechanical engineering. It's unusual that all of my degrees are in mechanical engineering and are all from the same university while working at the same place.

What did Blue Origin's New Shepard rocket help you validate?

Blue Origin's New Shepard, named for astronaut Alan Shepard, is a suborbital test platform. New Shepard flies high, so the conditions of microgravity are clean and long, lasting about three minutes. It is a one-shot deal, so we get only one three-minute period of microgravity per flight. The goal of our payload was to determine whether gravity affected the boiling

performance in a new cooling system we hope to use on future space missions.

In January 2019, our payload was launched on New Shepard. Watching the launch via webcast, I felt that it was incredible that I could be a part of the team that did all of this. Of course, I also felt relieved that the launch went well.

As much as I enjoyed watching the flight, getting the data back was even more exciting. I am very happy to report that our experiment worked!

Who has inspired you the most?

Richard Feynman, the late physicist, is one of the three physicists who won the Nobel Prize in physics in 1965 for work on quantum electrodynamics. He was an enthusiastic teacher and prolific writer. He was remarkably approachable, especially given his status within the scientific community. There is a book that documents letters he wrote throughout his life, and many of them are responses to ordinary people asking questions about physics. He wanted to make physics accessible to everyone, which I think is admirable. He was such a wonderful combination of intelligence, exuberance and approachability.

Is there something surprising about you that people do not generally know?

I was born in Maryland and have lived in Maryland my whole life. I have worked for Goddard my entire career, too, in the same branch. I guess that I got lucky and was born in the right place.

So, it is no surprise that I am a tremendous fan of all of Maryland's many fine sports teams. I especially love watching the Baltimore Orioles. I am a much less talented Frank Robinson than the late, great Orioles Hall of Fame player and manager. I am actually the third Franklin Robinson in my family, so probably our family used the name first. ■

Center: Franklin Robinson

Photo credit: NASA/Goddard/Bill Hrybyk

