STELLARXPRESS

JANUARY 2021 NEWSLETTER

Program Update

StellarXplorers will be hosting a coach-to-coach StellarCamp in July. More info to come!

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Notable Quote

"When AFA developed CyberPatriot, I saw first-hand how difficult this effort could be. Despite a good appreciation for the 'mechanics' of a youth online competition, I believed developing a comprehensive competition including space systems design and launch would be a nearly impossible task. I was wrong. Thanks to a small group of dedicated volunteers the team accomplished what I will always see as a near miracle. "

-Buck Buckwalter

Space Careers

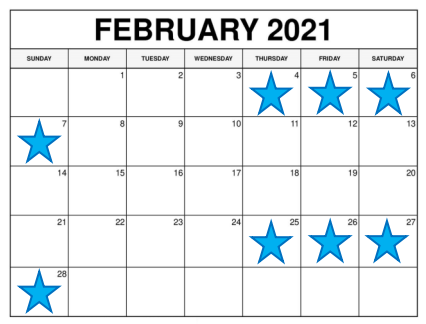
Radio Frequency Engineering

Radio Frequency Engineers develop RF payload and subsystem solutions and the RF / electronic components for Space and Missile platforms. They work with RF from the MHz range all the way up through Optical systems. Communications subsystems or RF payloads are needed for every platform and serve missions ranging from human space flight, commercial broadband services, national intelligence, protected communications, navigation and more. Their product portfolio includes a wide range of international and domestic programs, addressing the important needs of our commercial, civil and military customers.

"A satellite must be capable of receiving and interpreting data that has been transmitted from Earth in order to command its mission objectives. Just like the modem in your home, a satellite's communications payload bridges the gap between analog signals (radio waves) that can propagate through space and digital signals (bits) which represent the data we care about. However, unlike your modem at home, the radio frequency signals to/from a satellite can be transmitted sometimes hundreds of millions of miles through space, and still be received and interpreted with very few errors!"
– Paul Bucci, RF Engineer, LM Space

Careers in Radio Frequency Engineering include working on Antenna Systems and Components, Electronically Steerable Arrays, RF Transmitters and Receivers, RF Photonics and Optical Communications, and much more.

STLX VII DATES



Qual Round 3: 4-7 February 2021
Semi-Final Round: 25-28 February 2021

Coming up:
Final Round: 14-17 April 2021
STLX VIII Registration: May 1 2021

Stellar Spotlight

Bill Yucuis
Chief, Academics and Training

In September 2014, I was a member of AFA's Aerospace Education Council (AEC). The Secretary of the Air Force office asked AFA if they could develop a national space competition, similar to AFA's first national education competition, CyberPatriot. I had just retired from teaching, where for my previous 12 years, I had taught a 4-year HS Aerospace Magnet Program. The AEC asked me to chair a committee to develop such a program and I had no idea how to proceed. Fortunately, Air Force retired space experts Tim Brock and Stephen Gourley stepped forward and volunteered to help, along with Buck Buckwalter, who was the primary AFA person responsible for developing CyberPatriot. I went to my USAFA 40-year reunion in October and talked to some classmates who had taught with me in the Astro Department in the 1980s. One was the head programmer for STK at AGI. He suggested talking to the AGI Education office and this is how StellarXplorers started. In seven years, with the help of many other volunteers, I feel we have developed a one-of-a-kind space education and competition program.

To me, StellarXplorers is an extension of my goals with my high school Magnet Program. I always told my students that engineers work as teams, using Math, Science, and Technology, to solve problems and then communicate their results. Many of my students were initially intimidated by Math and Engineering and only explored "easier" career paths. StellarXplorers shows students of varying backgrounds and abilities that they can accomplish great things. My hope is that StellarXplorers becomes the pathway to STEM careers, and especially in the space field. Thanks to a generous grant from Lockheed Martin, we are now able to bring on board a full-time staff which can help StellarXplorers achieve those goals.

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Aerospace News

SpaceX rocket launces on 8th flight carrying 60 Starlink satellites, nails landing

A SpaceX Falcon 9 rocket launched on a record 8th flight to send a new fleet of the company's Starlink internet satellites into orbit on Jan 20 and then nailed a landing at sea.

With this launch, SpaceX has sent more than 1,000 of it's satellites into space—more than enough for them to start rolling out their internet service. They have plans for a massive constellations of tens of thousands of satellites that will send down high-speed, low-latency internet signals.

"Bumblebee gravity" may explain why the universe is expanding so quickly

Physicists have long assumed that the universe is nearly the same in any direction, and now they have a new way to test that hypothesis: by examining the shadow of a black hole.

If the shadow proves to be smaller than predicted, it could help prove bumblebee gravity, which describes what would happen if the perfect symmetry of the universe isn't so perfect after all.

NASA's Perseverance Rover set to touchdown next month

Perseverance, the core of NASA's Mars 2020 mission, is set to land February 18, kicking off a new era of Red Planet exploration. It will be lowered into the Jezero Crater, a 28 mile wide area which hosted a lake and river delta billions of years ago. Perseverance will search for signs of ancient Mars life over its 10 year mission.

SoaringXplorer

Carol Bonn, South High School

Four years ago Carol remembers researching Space programs and realized that StellarXplorers competitions were very much like what she did in industry, and recognized the value that would provide students. That first year she was able to get 3 teams.

"As we went through these competitions I realized how real-world they are. This is exactly what we did at Boeing. It's not very often in schools we have the opportunity to bring something so valuable into the classroom. This is exactly what we want the kids to takeaway when they graduate – to have real-world skills like teamwork, collaboration, and problem solving "

Carol emphasizes that a StellarXplorers Team Director does not have a space background to run this club. She encourages that teachers seek out mentors in industry to help train the kids. "It's invaluable to have someone from industry to work with the kids directly. It also gives them insight and a connection to someone in the industry world".

StellarXplorers Board of Advisors

The StellarXplorers Board of Advisors is pleased to welcome Sonia Phares aboard. She brings with her 30 years of experience with Lockheed Martin, concurrently serving as Vice President of Engineering and Technology, Lockheed Martin Space. In this role she is responsible for overseeing the engineering performance on all Space contracts. We look forward to Sonia bringing her drive and passion to the StellarXplorers Board and helping the program continue to grow and transform.

Aerospace Opportunities!

The Lockheed Martin Vocational Scholarship Program is open to seniors graduating in 2021 that are pursuing an associate degree, credit-bearing certificate or an industry-recognized credential.

Up to 150 scholarships of $6,600 each are offered for study at a U.S. accredited vocational-technical school, trade school, two-year community college or state college.

The deadline to apply is March 11, 2021.

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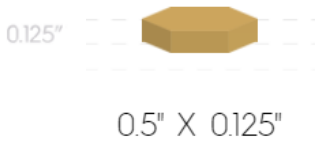
Civil Air Patrol Mission to the Moon

Civil Air Patrol, in coordination with Cornell University. is sending names to the moon on a chip in 2021. StellarXplorers has been given the opportunity to share names of our competitors and team directors to be imprinted onto the chip.

To date, payload space has been secured onboard Astrobotic's Peregrine Lunar Lander. Cornell University NanoScale Science and Technology Facility has agreed to provide Electron-beam Lithography for the microchip.



The micro chip will be delivered to Astrobotic to be mated to the Peregrine lander inside its Moon Pod. From there it will go to Kennedy Space Center where it is mated to a SpaceX Flacon 9 rocket. Finally, after liftoff, it will be an approximately two-week flight to the moon.

Follow StellarXpress in the coming months for continual updates on the mission and its progress as we work towards getting all of StellarXplorers participants names on the moon.

We sent each team director information on how their team can opt in to getting their names on the chip. Due date for name submissions is January 28.