

ORBITER NEWS

News, announcements, and more.

Understanding Kelvin Wakes: Keeping Oceans Secure With WINDS

April 28, 2020

Measuring and monitoring human activity at sea is critical for a variety of reasons: national defense and security, resource management and environmental monitoring are just a few areas that rely on this. However, the ability to effectively detect vessels in expansive ocean settings remains challenging, even with tried-and-true technology like sonar and radar.



To combat this, scientists at The Aerospace Corporation are working on a new alternative that analyzes something that all sea-faring vessels leave upon the water: Kelvin wakes. These ephemeral V-shaped impressions that trail vessels as they move are typically 38 degrees across, with wave characteristics influenced by the speed of the vessel itself.

The project is known as Wake Infrared Night/Day Sensing (WINDS) and it utilizes a polarized longwave infrared (LWIR) sensor to detect wakes. Last year, the WINDS prototype was integrated onto an Aerospace flight test gimbal on a Twin Otter aircraft and performed its first flight test, during which it looked for boat wakes in both day and night scenarios. This initial pathfinder project went from concept to flight in six months and now has the critical data needed to evaluate phenomenology for this type of application.

“We now have the capability to geo-reference images to locate vessels, and to couple our sensor with another spectrometer (MAHI) that can detect carbon monoxide and other exhaust fumes emanating from

vessels at sea," said Dr. John A. Hackwell, a Technical Fellow at Aerospace.

Read the full story about WINDS on Aerospace.org.

Press Release: Solar Gravity Lens Concept Receives \$2M NASA Grant for Technology Maturation

April 20, 2020

EL SEGUNDO, Calif., Apr. 20 2020 –

The Solar Gravity Lens (SGL) concept to send a fleet of optical telescopes to image habitable planets far beyond our solar system received a \$2 million grant by NASA's Innovative Advanced Concepts (NIAC) program. This two-year grant will support the further maturation of SGL technologies. The mission is led by NASA's Jet Propulsion Laboratory (JPL) with [The Aerospace Corporation](#) ([Aerospace](#)) as the mission architect.



Utilizing swarms of cooperating smallsats to observe the images of exoplanets, the SGL architecture can simultaneously explore many exoplanetary systems, which could bring mankind closer to the discovery of distant life in the universe.

“NASA’s selection of the SGL mission for the NIAC III award is a boost for the nation’s efforts to explore deep space,” said Steve Isakowitz, Aerospace president and CEO. “The SGL concept is enabled by an exciting set of breakthrough technologies in solar sails, artificial intelligence, nano-satellites, and formation flying that promise to revolutionize what we do with satellites closer to home.”

The SGL team previously received NIAC Phase I and II awards. The first two phases demonstrated basic concept feasibility and invented a novel mission architecture using multiple low-cost spacecraft. This architecture permitted phased launches by multiple partners to observe exoplanets, which are planets that orbit around other stars. The team also defined a viable roadmap toward building the required SGL mission capability, beginning with a technology demonstration mission in the 2023–24 time frame, and leading to a full-scale SGL mission a decade later.

“This award brings us toward a proof-of-concept flight that would exit the solar system faster than any previous spacecraft,” said Tom Heinsheimer, Aerospace’s technical co-lead for SGL. “Then we would fly swarms of cooperating smallsats to observe the images of exoplanets substantially magnified by the predictions of Einstein as how light behaves around massive objects. Using techniques developed by our principal investigator, Dr. Slava Turyshev of JPL, this data is converted into exoplanet images. Our smallsat architecture can simultaneously explore many exoplanetary systems, bringing us closer to the discovery of distant life in the universe.”

The SGL mission flies farther and faster than any previous mission. Exoplanetary targets can only be seen once the spacecraft arrive at the solar gravity focal line, over 500 times the distance of the Earth to the sun.

The SGL architecture therefore employs “sun-skimming” solar sails that accelerate each spacecraft to arrive at the observing region within 20 years of launch, and taking more than another 10 years to collect data.

Henry Helvajian, senior scientist in Aerospace’s Physical Sciences Laboratories and technical co-lead of SGL said, “When the collection of exoplanet images is complete, hundreds of SGL spacecraft will sail outward toward the cosmos, carrying microchips that portray life on Earth—building on the legacy of the Voyager Golden Records launched on Voyager Spacecraft in 1977.”

About The Aerospace Corporation

The Aerospace Corporation is a national nonprofit corporation that operates a federally funded research and development center and has approximately 4,000 employees. With major locations in El Segundo, Calif.; Albuquerque, N.M.; Colorado Springs, Colo.; and the Washington, D.C., region, Aerospace addresses complex problems across the space enterprise and other areas of national significance through agility, innovation, and objective technical leadership. For more information, visit www.aerospace.org. Follow us on Twitter: @AerospaceCorp.

AEHF-6: Space Force's First Launch Was A Decade In The Making

April 09, 2020

The Atlas V AEHF-6 mission, launched on March 26 from Cape Canaveral Air Force Station, was one of firsts and lasts. It was the last of the AEHF spacecraft to be delivered to orbit, nearly 10 years after the first was launched in August 2010. This mission was also the first launch for the United States Space Force. Continuing the standard of mission success established for Air Force launches, Aerospace exercised its comprehensive launch verification process to augment ULA's internal mission assurance process to ensure success for this inaugural flight.



The U.S. Space Force launches its first National Security Space payload with AEHF-6 aboard an Atlas V rocket. (Photo via ULA)



However, with the threat associated with COVID-19 and the need to observe social distancing requirements, the launch and spacecraft teams needed to modify their standard processes to protect their people while retaining focus on mission success.

Want to know how they did it?

[Read the full story on Aerospace.org](#), written by Mark A. Brosmer, PhD, General Manager, Launch Operations Division, The Aerospace Corporation.

Now Streaming: The Space Policy Show with Aerospace's CSPS

April 07, 2020

In March, Aerospace's Center for Space Policy and Strategy (CSPS) kicked off *The Space Policy Show*, a new virtual series of online webcasts and virtual meetings that enables the broader space policy community to stay engaged and to help educate audiences about key topics shaping the future of space.

Over the years, CSPS has done a lot of valuable work in the area of policy research and strategic analysis, helping to inform key decision-makers adapting and evolving the space enterprise for the modern environment. Their policy papers and reports, [available on Aerospace.org](https://aerospace.org), are always recommended reading. CSPS's events are typically well attended by members of government, civil and commercial space.



*You can learn more about The Center of Space Policy and Strategy at aerospace.org/policy.
(Illustration: Joseph Hidalgo)*

With *The Space Policy Show*, CSPS now has a new dynamic way to share their thought leadership discussions. The show airs twice a week and already has four episodes under its belt.

"I wanted to create an opportunity to engage with the space policy community as multiple conferences and meetings were getting cancelled," said Josef Koller, Systems Director for CSPS. "Producing *The Space Policy Show* out of our homes across the country has been challenging at times but also very rewarding."

Today's episode covers "Large Constellation Disposal Hazards" with Bill Ailor, and will air at 1 pm EST/10 am PST. You can register for [the webcast here](#).

The episodes are also available to watch on demand through the show's Vimeo channel. Viewers from all around the world have tuned in, with the first three episodes attracting over 3,000 viewers from over two dozen countries.

If you want to catch up on previous episodes, here's a rundown that will help:

- Understanding the National Security Space Budget with Russell Rumbaugh

- Game Changer: Blockchain in the Space Sector with Karen Jones
- Developing a Sustainable Spectrum Approach for 5G Services & Critical Weather Forecasts with David Lubar
- What the Expiration of New START Could Mean for U.S. Space Forces with Mick Gleason

The show encourages user participation through live polling and Q&A segments. For the best experience, users are encouraged to view in the Chrome web browser and should not be connected to VPN or use a Proxy server. It is also recommended to check your sound settings to ensure audio is working properly. For a list of upcoming topics and speakers, visit the [CSPS Events](#) site.

Aerospace Announces New Leaders In Place

April 02, 2020

EL SEGUNDO, Calif., Apr. 2, 2020 – The Aerospace Corporation (Aerospace) announced that Todd Nygren, senior vice president for the Engineering and Technology Group (ETG), and Dr. Chuck Gustafson, senior vice president and chief velocity officer, assumed their new roles today.

Nygren transitioned from vice president of special studies to senior vice president for ETG, the largest organization in the company, comprising 1,500 world-class engineers and scientists who bring their deep knowledge to solve the hardest technical problems of the nation's space systems. Their work includes innovating technologies, architecting new solutions, and discovering breakthroughs in areas such as materials, optics, and artificial intelligence in Aerospace's state-of-the-art labs.

With Nygren taking the lead in ETG, Gustafson stepped in to lead the Office of the Chief Velocity Officer (OCVO) until his retirement in December 2020. Dr. Willie Krenz retired as senior vice president of OCVO after 35 years of technical leadership and dedicated service to his customers. OCVO includes enterprise corporate functions that are on the front lines of the corporate response to the global pandemic of COVID-19.

ABOUT THE AEROSPACE CORPORATION

The Aerospace Corporation is a national nonprofit corporation that operates a federally funded research and development center and has approximately 4,000 employees. With major locations in El Segundo, Calif., Albuquerque, N.M., Colorado Springs, Colo., and the Washington, D.C., region, Aerospace addresses complex problems across the space enterprise and other areas of national significance through agility, innovation, and objective technical leadership. For more information, visit www.aerospace.org. Follow us on Twitter: [@AerospaceCorp](https://twitter.com/AerospaceCorp).

April 2020 Obituaries

Sincere sympathy is extended to the families of:

- **John Allen**, member of administrative staff, hired July 9, 1973, retired Oct. 1, 1999, died Dec. 7, 2019
- **Barbara Bebeck**, office of technical support, hired Sept. 4, 1979, retired July 1, 1994, died Feb. 29, 2020
- **Bernard Cooley**, member of technical staff, hired Sept. 14, 1981, retired Dec. 1, 1990, died March 26, 2020
- **Alan Daurio**, member of technical staff, hired Nov. 3, 1980, retired Jan. 1, 2006, died March 15, 2020
- **Steven Frost**, member of technical staff, hired Aug. 19, 1974, retired Dec. 1, 2003, died Nov. 10, 2019
- **Ross Kobayashi**, member of technical staff, hired March 7, 1983, died March 18, 2020
- **Paul Leo**, member of technical staff, hired March 7, 1966, retired Oct. 1, 1996, died March 14, 2020
- **Michael Loomis**, member of technical staff, hired Sept. 17, 2007, retired April 1, 2018, died Feb. 25, 2020
- **Richard Luke**, member of technical staff, hired Nov. 15, 1965, retired July 1, 2002, died March 9, 2020
- **Ashok Mathur**, member of technical staff, hired April 3, 2000, retired June 1, 2012, died Dec. 12, 2019
- **Allen Silverman**, member of technical staff, hired Sept. 19, 1960, retired Aug. 1, 2004, died March 13, 2020
- **D. Irene Spikol**, member of administrative staff, hired Oct. 6, 1986, retired Aug. 1, 2008, died Feb. 21, 2020

To notify Aerospace of a death and have it included in the Orbiter, please contact People Operations at (310) 336-5107.

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