



Ad Astra Kansas Newsletter

Volume 23 / Issue 1

Spring 2024

AD ASTRA KANSAS FOUNDATION PRESENTS:

Space CELEBRATION

FREE FAMILY FUN
EVENT

1 pm - 4 pm Saturday, April 27, 2024
Washburn University - Stoffer Hall
1700 SW COLLEGE BLVD.— Topeka

- VIRTUAL REALITY
- FLIGHT DEMOS
- MAKE-AND-LAUNCH ROCKETS
- 3-D PRINTING
- METEORITES
- COLOR CHANGING SLIME
- DRONES TO FLY
- ASTRONAUT TEAM BUILDING

The graphic contains several space-themed illustrations: a large orange sun on the left, a blue star with a yellow center on the right, a pink planet with a blue ring, a blue planet with a blue ring, and a green planet with a brown ring at the bottom right. There are also several smaller stars in various colors.

TELESCOPES
SOLAR ACTIVITY
APPEARANCE BY THE MANDALORIAN
GAMES, DRAWINGS AND MUCH, MUCH
MORE

Co-sponsored by the Ad Astra Kansas Foundation
and Washburn University Department of Physics /
Astronomy. Questions? contact@adastra-ks.org



14th annual event

To the Stars Again...

at this FREE fun family event. Co-sponsored by the 501c3 Ad Astra Kansas Foundation and the Washburn University Dept. of Physics and Astronomy to inspire youth in STEM.

Generous participants include: The Cosmosphere, Exploration Place, Foundation for Aeronautic Education, Kansas Children's Discovery Center, Kansas Water Office, KSU Solar Club, KSU Salina Polytech, KSU Society of Hispanic Professional Engineers, KU STEMTeach Club, KU Dept. of Aerospace Engineering, KU Dept of Health, Sport and Exercise Science, NASA Solar System Ambassadors (SSA) Brenda Culbertson, Mark Brown and Rick Heschmeyer, Geoffrey Gorup—70th Explorers Garrison , Space Age Publishing Co., Washburn University Chemistry Club, WU Dept. of Science Education, WU Physics Club and more.

Stoffer Map

Since 2002, AAKF board member Steve Durst has chronicled the evolution of Interstellar R & D globally in our newsletter. And has participated in reaching for the stars--He is founder / editor of Space Age Publishing Company, and Director of International Lunar Observatory Association (ILOA /Hawaii). ILOA's two small ILO-X astronomical cameras were on the Intuitive Machines Nova-C payload launched and landed on the Moon in February 2024.


A total of 340 images were taken between the Earth and Moon and two from the Moon due to the Odysseus' inopportune landing position. Durst has put together a video presentation "Astronomy from the Moon and ILOA Hawaii'i" about this historic event which will be shown at the Ad Astra Space Celebration.



AAKF spreads the word

On February 7, 2024 AAKF premiered a display at the capitol building in Topeka, to publicize our organization and its mission. It was a busy traffic area, with all types of visitors, according to AAK member Kay Neill. She especially enjoyed the students. "There were a lot of high schoolers on field trips. We visited with them about science and technology and avenues of student interest like space, stars, astronomy space missions and what we are trying to do," said Neill.

Photo: AAKF members Kay Neill (l.) and Jodi Spindler are ready to greet visitors at the capitol. Photo credit: Steve Durst



Happy Ad Astra
STEM Day!
APRIL 24, 2024!



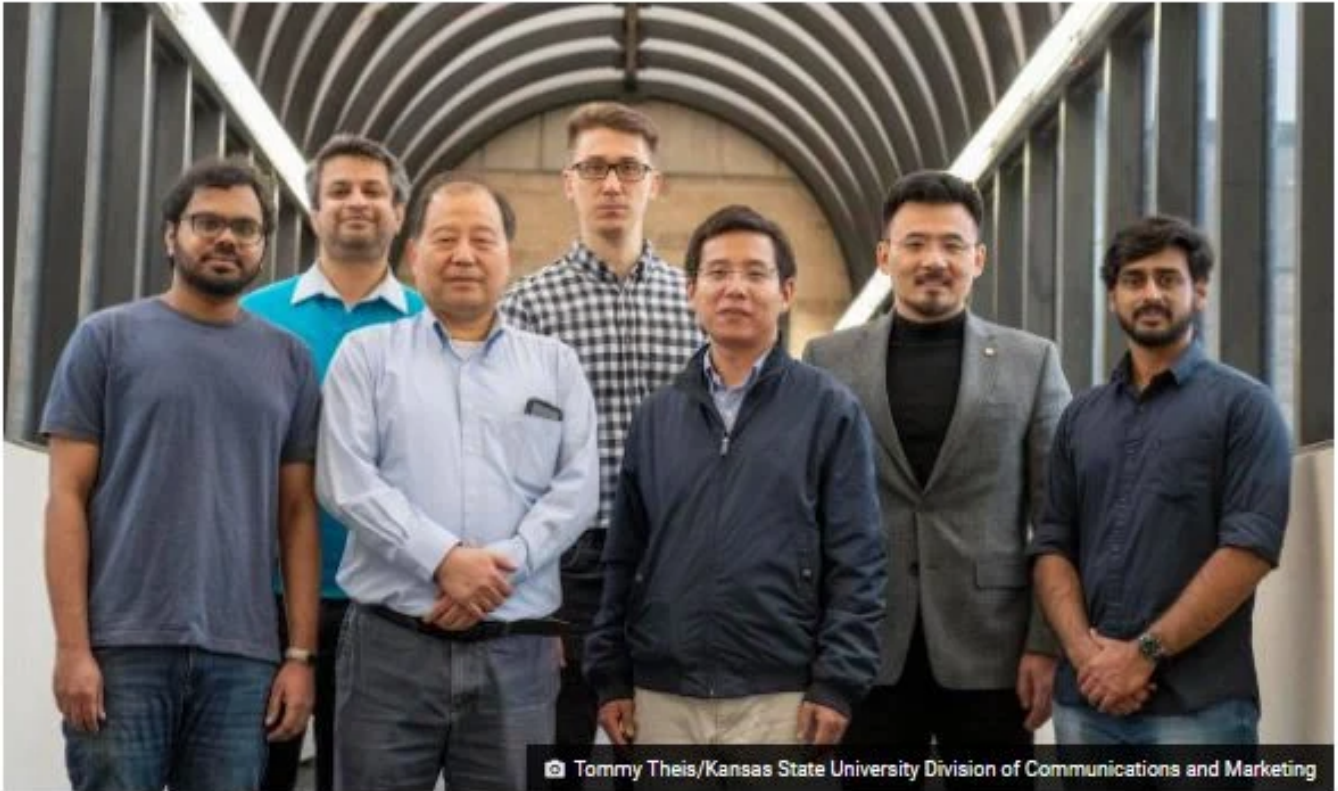
One step closer

AA STEM Day recognized

Resolution #1744 passed the Kansas State Senate March 6, designating April 24, 2024, "Ad Astra STEM Day" to celebrate scientific achievement in the state.

We would like to thank Topeka Senator Kristin O'Shea for sponsoring it.

Our next step in 2025 will be to pursue a legislative bill to make April 24 Ad Astra STEM Day annually throughout Kansas. Interested in such a cause? Let us know at contact@adastra-ks.org



Members of the in-space manufacturing research team. Front row (from left): Kansas State University student Sabari Rajendran, Kansas State professor Jun Li, Wichita State professor Wujun Si, University of Kansas professor Lin Liu, Kansas State student Nathan Somasundaram. Back row (from left): Wichita State professor Atri Dutta, Wichita State student Adrian Aruste.

Three Kansas universities to focus on improved in-space manufacturing

WICHITA--Led by WSU, the collaboration with KSU and KU will use a three-year \$750,000 NASA grant to focus on improved in-space manufacturing (ISM) technology based on electrospinning. Electrospinning, which is unaffected by microgravity, may be a good complement to additive (3D) manufacturing which can be affected by weightlessness. The project is in cooperation with three NASA centers, and four government agencies / industry partners.

What is electrospinning? Electrospinning is used to create micro- or nanofibers using electric force. In its simplest form high voltage is applied to a liquid polymer solution encased in a syringe needle. At a certain point a stream of solution extrudes from a nozzle as a charged jet, followed by a stretching and elongating process to generate fibers.

[Read More](#)



2024 Kansas State University State High School Science Teachers of the Year named

MANHATTAN--Recipients of Kansas State University's Kansas Science Teachers of the Year 2024 were honored at the Manhattan campus in late March. The awardees are:

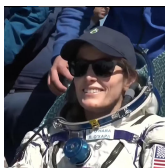
- Biology: Brian McCandless, Hutchinson High, **Hutchinson**, and Emma Stroyan, Thomas More Prep-Marian High School, **Hays**.
- Chemistry: Rhonda Reist, Olathe North High School, **Olathe**, and Carl Behrens, Wamego High School, **Wamego**.
- Geology: Eric Nelson, Bishop Seabury Academy, **Lawrence**.

- Physics: Josh Cochran, Labette County High School, **Altamont**, and Sundara Ghatty, Manhattan High School, **Manhattan**.



Above: (l to r.) Sundara Ghatty, Josh Cochran, Eric Nelson.

Below: (l to r) Carl Behrens, Rhonda Reist, Brian McCandless. Not pictured Emma Stroyan. *Photos: KSU news*



O'Hara returns

NASA astronaut (KU alum) Loral O'Hara returned April 6 after logging 204 days of research aboard the International Space Station. (NASA photo) [Read More](#)

See YouTube video of the April 15 NASA press interview with O'Hara [Here](#)



Free STEM Camp for teachers

The Cosmosphere Teachers' STEM Camp runs June 25-28. Camp cost is \$100 (refunded upon completion of camp). Also, valuable for PD or college credits thru WSU.

[Read More](#)



Eclipse Soundscapes

Anyone with access to a computer can do this project. [Read Project Summary](#)

[Go to Project Website](#)



SunSketcher

People along the April 8 eclipse path can do this project. [Read Project Summary](#)

[Go to Project Website](#)



GLOBE Eclipse

This project requires a cellphone and a thermometer.

[Go to Project Website](#)



Eclipse Megamovie

This project requires a DSLR camera. [Read Project Summary](#)

[Go to Project Website](#)



Cloudspotting on Mars

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

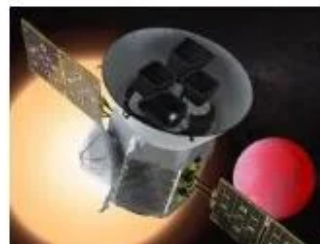
[Go to Project Website](#)



Dark Energy Explorers

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

[Go to Project Website](#)



Planet Hunters TESS

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

[Go to Project Website](#)



Exoplanet Watch

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

[Go to Project Website](#)



NeMO-Net

Anyone with a cellphone or laptop can do this project.

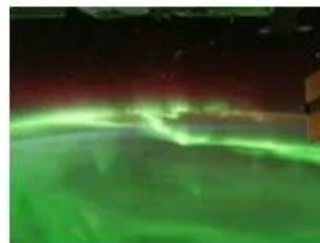
[Go to Project Website](#)



Are we alone in the universe?

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

[Go to Project Website](#)



Aurorasaurus

[Read Project Summary](#)

[Go to Project Website](#)



Disk Detective

Anyone with a cellphone or laptop can do this project. [Read Project Summary](#)

[Go to Project Website](#)

April is Citizen Science Month

Help NASA in its research!

NASA's citizen science projects are collaborations between scientists and interested members of the public. For a list of almost 50 projects, check the buttons below.

[NASA Citizen Science Projects](#)

[Science for Everyone](#)

[Download GLOBE Observer App](#)

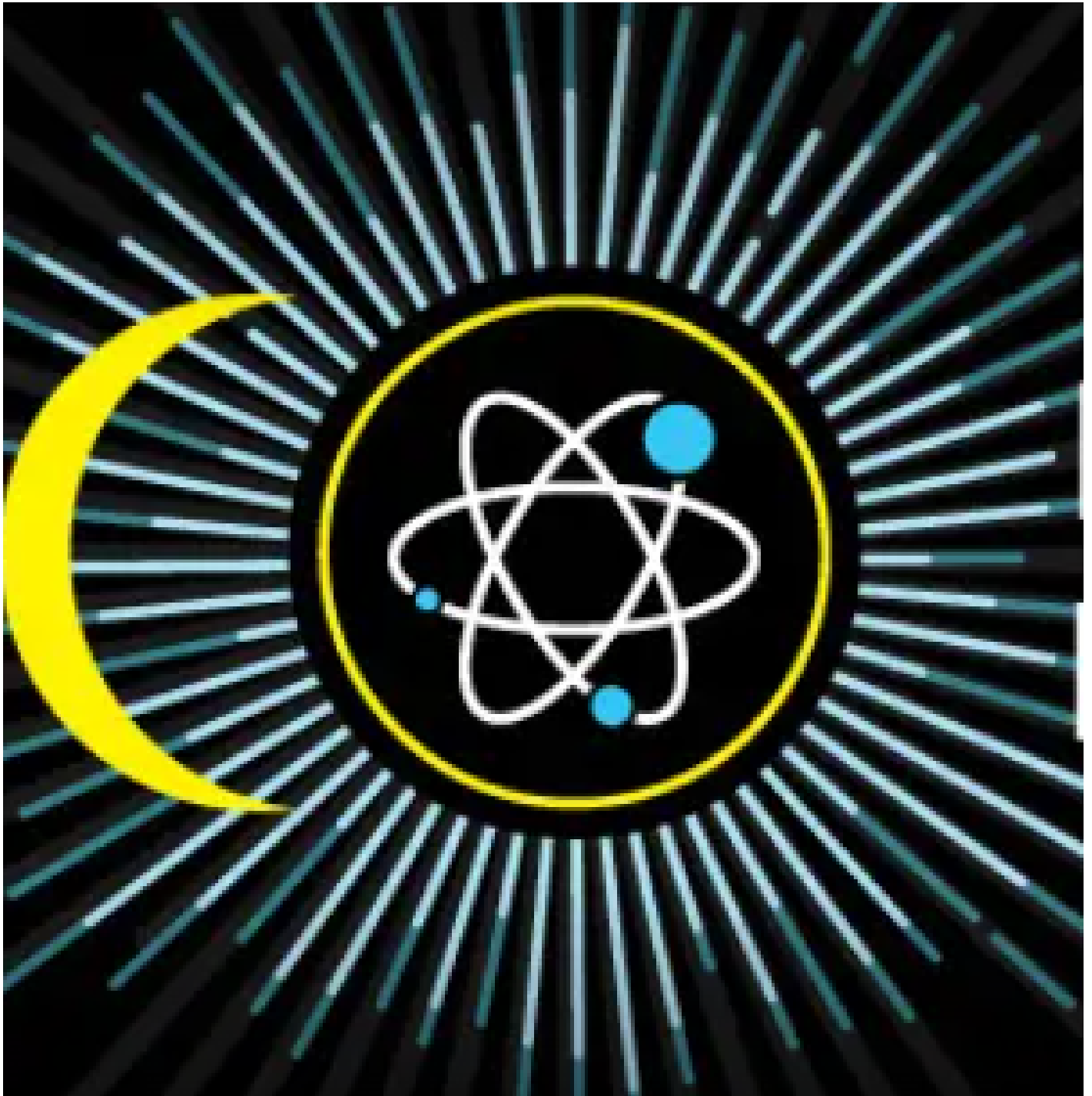
Rural Education Center (REC) Grant offers STEM training to rural teachers and schools

MANHATTAN--A \$2.7 million federal grant will help Kansas State University's College of Education to offer rural teachers and schools free training and thousands of dollars in resources to take advantage of funding designed to promote students' interest in degrees and careers in STEM fields.

Participating schools receive funds for professional development sessions and \$3,000 to purchase technology...



[Read more](#)



Kudos

Student powers to explore

An essay, "Sending a Rover to Ganymede", earned Madeline Male of Fairway a slot as one of three national high school finalists for the NASA 2024 "Power to Explore Challenge." The contest, which named finalists on April 8, is designed to teach K-12 kids about the power of radioisotope power

systems. These nuclear-type batteries are needed for many of NASA's far-reaching space missions. Immersing themselves in learning about the isotopes, students then had to write an essay about a mission of their own enabled by these space power systems.

--April 18 update--Though her journey ended at finalist, Madeline has a lot to be proud of. Kudos!

Graphic: NASA PTE website

[Read Madeline's Essay](#)



WSU rises to No. 2 for industry-funded engineering R&Ds

WICHITA-- For fiscal year 2022, WSU R&D expenditures totaled \$261 million, according to data compiled by the National Science Foundation's Higher Education Research and Development Survey. Industry-funded R&D expenditures totalled \$116.3 million (second only to SUNY Polytechnic Institute).

These rankings put Wichita State among other prestigious engineering universities such as the Georgia Institute of Technology, Johns Hopkins, Notre Dame, Massachusetts Institute of Technology, Purdue and Stanford.

Courtesy photo

[For more, click here](#)



KU professor receives NSF award to study black holes

LAWRENCE--In March, Elisabeth Mills, KU assistant professor of physics and astronomy, was awarded a prestigious Faculty Early Career Development (CAREER) Award from the National Science Foundation. The \$821,724 grant will help Mills continue research on how supermassive black holes grow.

Photo: KU press release

[More](#)



Did you know?

NASA's 2022 DART mission...

...crashed a spacecraft into the asteroid Dimorphos to test our ability to nudge an asteroid should any threaten Earth.

According to NASA, Dimorphos' orbit around its parent asteroid was shortened by 32 minutes.

And, the once oblate (earth-shaped) spheroid precrash is now an elongated (watermelon) shape.

Looking forward to other findings!

Image credit: NASA

AAKF's chronicle of interstellar research spans 2002-2024

Since 2001/2002, board member Steve Durst has chronicled the evolution of Interstellar R &D globally in our newsletter. And has participated in reaching for the stars--He is Founder / Editor of Space Age Publishing Company, and Director of International Lunar Observatory Association (ILOA /Hawaii). ILOA's two small ILO-X astronomical cameras were on the Intuitive Machines Nova-C payload launched and landed on the Moon in February 2024.

Durst's most recent entry is below. Past entries are archived in his "Interstellar R & D" collection which can be accessed [here](#)

INTERSTELLAR R & D

This "Interstellar R&D" forty-fifth feature in the Ad Astra Kansas News continues a 23-year enterprise to research and gather information on the most important developments preparatory to humanity's greatest adventure – voyaging to the stars. Now, at millennium's turn, is an appropriate time for grand vision and forward thinking, and there are strong signs of a renaissance in interstellar travel, thought and activity. This new feature and newsletter, thus, now set forth to develop a 21st-century national / international / global clearing center and storehouse of knowledge and know-how for travel to the stars. Ad Astra, Galactically – Steve Durst

Observation

Astronomy from the Moon 2024-26

ROLSSES 1 and 2, ILO-X and ILO-1

Aboard first American Moon landing in the 21st Century, the IM-1 Nova-C Odysseus supported pioneering radio and optical astronomy instruments ROLSSES and ILO-X during the first ever independent (non-government) Moon landing mission February 22-29 at Malapert A region elevation 2,579 meters near the Moon South Pole.

NASA Goddard Radio wave Observation at the Lunar Surface of the photo-Electron Sheath (ROLSSES) with University of Colorado PI Jack Burns obtained ground-based data from 3 of its 4 antennas to help determine the radio activity environment for future lunar science; ROLSSES 2 to the near side and LuSEE Night to the far side are projected as NASA Commercial Lunar Payload Services missions for 2026.

International Lunar Observatory Association (ILOA Hawai'i) ILO-X narrow field-of-view and wide field-of-view small optical camera-telescopes demonstrated operational capability during Earth-Moon transit and Deorbit, Descent and Landing with NFoV "Ka 'Imi" in-transit image of Pleiades, Taurus, Orion, Cetus, Eridanus and WFoV now dubbed "Lunar Codex" successfully receiving high-resolution imagery from the lunar surface. ILO-1 flagship tasked to achieve Milky Way Galaxy / Center imaging, other Astronomy observations and communications from Malapert Summit about 2026.

Communications

Voyager 1 Still Phoning Home, even with Memory Issue

Launched September 5, 1977 to study the Solar System and beyond, the Voyager 1 spacecraft is now 15.1 Billion miles (162 AU) from home in the constellation of Ophiuchus.

It took about 35 years for Voyager 1 to enter Interstellar Space, Voyager 2 made it in 41 years.

Despite being the farthest human-made object in space, Voyager 1 is using its 23-watt radio and 14-foot diameter transceivers to transmit steady radio signals to the Deep Space Network (DSN). Its one-way light time to Earth is currently more than 22 hours 33 minutes.

The science and engineering data received since March 3, however, has been compromised due to a faulty memory bank. A chip containing the flight data subsystem memory is estimated to have ~3% corruption, which engineers are optimistic to overcome. The steady radio signals from Voyager 1 and 2 are a testament to the very long-distance communication systems on the spacecraft, and improvements made to DSN receivers over the decades.

Science data may not be collected after 2025-26, but as long as the Voyagers' Radioisotope Thermoelectric Generators continue producing enough power, their communications will continue through 2036 as the craft should remain in the range of DSN.

Transportation

Nuclear-Powered Starships

SpaceX CEO Elon Musk predicts that an iteration of Starship, a prototype of which is currently being prepared for IFT-4, will travel past the edge of our Solar System, into the interstellar Oort cloud, and that 'a future Starship will travel to other star systems'.

What might such a craft look like, and how would it be powered?

The NASA / DARPA funded Demonstration Rocket for Agile Cislunar Operations (DRACO), which is scheduled for NET 2027 launch, is being developed under US\$500M contract by Lockheed Martin and will employ a thermal nuclear propulsion system built around a BWX Technologies fission reactor.

General Atomics, Blue Origin, and X-energy are working towards realization of similar concepts, which aim to reduce transport time for Astronauts heading to deep space.

Helicity Space of Pasadena is also building nuclear-powered spacecraft; however, its approach is based on a novel form of fusion. Helicity Space Advisor Dr. Pete Worden claims this technology 'could enable humanity's extensive access to the entire solar system and might even enable missions to the nearest stars'.

Mission of the Ad Astra Kansas Foundation

Our mission is to advance the Kansas State Motto, “Ad Astra Per Aspera” (to the stars through difficulties), by promoting space science and education in Kansas.

Vision: We envision a Kansas known in the 21st century as the Ad Astra State and as a leader in space science research, development and education. Our goal is to: Interest Inform Inspire

Ad Astra Kansas Foundation

www.adastra-ks.org 534 So. Kansas Ave, Suite 1000, Topeka, Kansas United States



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