



Spring 2023 NEWSLETTER

## AAK Day + cool science = Fun

*Hooray! There will be Crane Observatory viewing! 8-9:30 pm  
(weather permitting)*



**SCIENCE Fun** for all ages

**Saturday APRIL 22**

**1 p.m.—4 p.m.**

**Stoffer Science Hall at Washburn University SW 17th & SW Washburn / Topeka**

**FREE !!**

Rain or shine



Extra:  
Crane Observatory  
viewing : 8-9:30 p.m.

"Majestic Beauty of the  
Cosmos"  
NASA video of Hubble  
images

- **Astronomy**
- **Telescopes**
- **Space ice cream**
- **Flight**
- **Cosmic Crafts**
- **Geology**
- **Games**
- **3-D Printing**
- **Virtual Reality**
- **Laser Communications**
- **Space Physics**
- **K-State UAS (Drone)**
- **Drawings, take-aways**
- **... and MORE**

Individuals who would like to request an accommodation to this event should email : [contact@adastra-ks.org](mailto:contact@adastra-ks.org) or call 316-722-3503



**Co-Sponsors**



**Department of Physics / Astronomy**

For more information about the celebration, plus a map, click [HERE](#).

Interested in volunteering? Let us know. [Contact by email](#)



## KU physics major awarded Goldwater Scholarship

LAWRENCE-- Physics major Kate Wienke is KU's newest Barry M. Goldwater scholar.

This congressionally-established science award recognizes achievement in the STEM fields. Nominees must be sophomores or juniors with outstanding academic records, significant research experience and high potential for careers in STEM fields.

Wienke aspires to earn a doctorate in astrophysics and lead a team conducting research on astrobiology or exoplanets, as well as to teach at the university level and start a physics mentorship program for youth.

She is now doing research within the NASA Exoplanet Science Institute. [Read more](#) about her impressive work and research. *Courtesy photo*



## Kansas high school selected for NASA TechRise Student Challenge

Osage City High School is one of 60 student teams selected as a winner in the 2022-23 nationwide TechRise student challenge. The team will work together to build a science and tech experiment for a suborbital balloon flight test. They receive \$1500 to build an experiment involving UV light and seeds. It will be launched on one of two NASA flights scheduled for this summer. Read [more](#).



## K-State chemist receives prestigious NSF Career Award

MANHATTAN--Tendai Gadzikwa, assistant professor of chemistry at K-State, has received a \$779,556 National Science Foundation Faculty Early Career Development Program Award. It "recognizes outstanding scientists and engineers who, early in their careers, show exceptional potential for leadership at the frontiers of knowledge."

The award is to fund a catalysis project. According to Gadzikwa, "We design and study metal-organic frameworks (MOFs) that structurally resemble

enzymes, [which are] nature's catalysts. Enzymes are our best catalysts by far, so we try to mimic their structure to make more efficient synthetic catalysts.

MOFs can also be thought of molecular sponges that can absorb small molecules from the atmosphere, so they could help keep the atmosphere in space cabins safe to breathe. Similar to cat litter, but with a much larger range of molecular contaminants that they can capture. And if the MOFs were catalytically active, not only could they capture toxins, they could also convert them to something less harmful. " *Courtesy photo*

[Read More](#)

## Robotics teams qualify for VEX World Tourney

The 2202-2023 Kansas State Championship VRC High School Vex Robotics Championship was held March 3-4 at Textron Activity Center in Wichita. These winners qualify for the Vex Robotics World Championship to be held in Dallas on April 25-May 4 2023.



### Excellence Award

Maize Career Academy  
Centrifuge Team 67101C

### CHAMPIONS AWARD

Maize Career Academy  
Centrifuge

Hesston HS Duckies  
7862D



### Tournament Finalists

Hillsboro M/HS  
Team Off Balance 4101J

Maize Career Academy  
Team Unhinged 67101X



### Other Awards

**DESIGN:** Seaman HS /  
Topeka Team Vex Ed  
15352B

**ROBOT SKILLS:** Maize  
CareerAcad. Centrifuge



### Other Awards

**JUDGES:** Maize Career  
Academy Unhinged

**INNOVATE:** Hesston HS  
Duckies

## K-State award recognizes outstanding high school science teachers

Manhattan--Five outstanding Kansas high school science teachers are being honored with the inaugural Kansas State University High School Science Teacher of the Year Awards.

The awards highlight and reward inspirational and impactful high school science teachers throughout the state. The chemistry, geology and physics departments in K-State's [College of Arts and Sciences](#) selected the five award recipients.

Read [more](#). Photos courtesy of K-State.



### CHEMISTRY

Nikki Chamberlain--gifted facilitator and former chemistry teacher, Salina South H.S., Salina



### GEOLOGY

Staci Cavanaugh--earth and space science teacher at Olathe North H.S., Olathe



### PHYSICS

Drew Smith--Olathe Northwest H.S. Olathe



Mitchell Spade--Shawnee Heights H.S., Tecumseh



### INTEGRATED SCIENCE

Mariah Ramos--Spring Hill H.S., Spring Hill



## Flint Hills Discovery Center awarded NASA STEM education grant

Manhattan--The FHDC has been awarded a Community Anchor designation by NASA as well as funding for a series of aerospace-themed STEM education programs.

The Center is one of 17 institutions named in 2023 as a Community Anchor, an official NASA STEM and space science hub to reach students and families in traditionally underserved areas.

The FHDC project is titled "Flying Cleaner and Faster: Connecting Kansas Kids to the Future of Aviation" and will focus on reaching / inspiring youth in STEM fields to pursue education and careers in aerospace. The one-year grant award of \$40,000 will directly support onsite programming at the Discovery Center, including aerospace summer camps, field trips, and a special community event.

The community event includes a planned "Aerospace Day" at the FHDC on Saturday, August 26 in partnership with K-State University Salina Aerospace and Technology Campus. This ties in with the summer traveling exhibit titled "Mission Aerospace", which will be on exhibit at the FHDC from May 20 through September 10, 2023.

This grant is part of NASA's Teams Engaging Affiliated Museums and Informal Institutions (TEAM II) Community Anchor Awards, funded through NASA's Next Generation STEM program. More details and a list of all funded NASA projects can be found [HERE](#). For more about the FDHC and Community Anchor award, [e-mail](#) here.

## Upcoming Events:

April 22-Ad Astra Space Celebration--Topeka

See flyer at the top of the newsletter.

April 22-- 2023 SWE Engineering Expo--Wichita

FREE fun and hands-on STEM activities for families since 1998.

More info [here](#).

April 29--Kansas Science Festival--Manhattan

More info [here](#) or [contact](#)

May 19 & 20--2023 National Science Olympiad Tournament--Wichita

Wichita State University will host over 1800 middle and high school students from across the U.S., Canada and Japan competing in 23 science events. Read more [here](#). On the 19th will be a STEM Expo, part of the tournament with a full day of talks, lab tours and activities involving STEM. This is part of the event, but it is also FREE and open to the public.

May 20-Sept. 10, 2023--"Mission Aerospace Exhibit"- Flint Hills Discovery Center--Manhattan

Explore the history of flight, navigation and NASA's vision for the future. With activities. Read [more](#).



This “Interstellar R&D” forty-third feature continues a 22-year enterprise to research and gather information on 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 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

### *Galaxy Imaging From the Moon*

Galaxy studies, science and exploration continues acceleration through the 21st century, and soon galaxy imaging and observation from Earth’s Moon may open new frontiers for astrophysics and cosmology. From the Far-Ultraviolet Spectrograph Camera astronomy images captured by Apollo 16 Moonwalker John Young in April 1972 to the Lunar Ultraviolet Telescope (LUT) first galaxy spiral observed from the Moon M101 aboard the Chang’e-3 lander in December 2014, Galaxy imaging from the Moon may take big steps in 2023 with the NASA Commercial Lunar Payload Services (CLPS) program advancing a number of astrophysical payloads and experiments, including ROLSES from the University of Colorado and ILO-X from ILOA Hawai’i aboard the Nova-C lander in Summer 2023.

First images of the Milky Way / Galaxy Center from the surface of the Moon are the prime astronomical objective of ILO-X using its 2 proof-of-concept NFOV and WFOV cameras, with galaxy first light and galaxy imaging invitations extended to astronomers in Thailand, Canada, China, Chile, Austria, Arizona and Hawaii, with India, Japan upcoming. ILOA flagship ILO-1 and backup ILO-2, following ILO-X, seek galaxy imaging missions at the Moon South Pole with proposals to CNSA for Chang’e-7 and to NASA for Artemis 3 to the Malapert / Shackleton regions in 2025-2026.

## Communication

### *Novel Approaches to Interstellar Communication*

A keynote topic of the upcoming 8th Interstellar Symposium at McGill University in Montreal (Silence is Golden: SETI and the Fermi Paradox, Stephen Webb), the lack of any recognizable signal indicative of intelligence outside of the Solar System is a perplexing issue, motivating new approaches to detection.

Utilizing Green Bank Telescope radio data, a University of Toronto-led international team supported by Breakthrough Listen is applying machine learning techniques to facilitate pattern recognition which filters out terrestrial interference. So far, the team has identified 8 previously undetected signals emanating from 5 stars between 30-90 light years distant which may warrant further investigation, *per A deep-learning search for technosignatures from 820 nearby stars.*

Another approach to achieving a form of interstellar communication is advocated by researchers at Applied Physics Advanced Propulsion Laboratory (Stockholm, Sweden) in *Searching for Intelligent Life in Gravitational Wave Signals Part I: Present Capabilities and Future Horizons*, in which utilizing gravity interferometer observatories LIGO, Virgo and KAGRA to search for emissions from interstellar superstructures and/or warp drives. Training the JWST on interstellar objects transiting through the Solar System may also be a method of breaking the ‘silence’, as argued by Avi Loeb in *Dating interstellar objects with the Webb Space Telescope*. If interstellar probes do exist locally, identifying them would be a natural first step toward communication.

## Transportation

### *Breakthrough Concepts Presented at IRG 8th*

With an influential program committee including Les Johnson, Andrew Higgins, Joseph Meany, Kenneth Roy and Stephen Fleming, the 8th Interstellar Symposium (IS8) themed ‘In The Light of Other Suns’ is going international & being held in Montreal, Canada July 10-13. It is supported by IRG (formerly TVIW), McGill University, IAA and Breakthrough Initiatives.

Of the Plenary Lectures, René Heller of MPI is speaking on “Maneuvering Interstellar Light Sails”. Proposed techniques using solar sails include lasers to increase velocity, articulating sail sections to tack toward the Sun for flyby acceleration, and increasing sail size (ideally up to 1 sq km, potentially using graphene) to maximize surface areas of photon pressure.

New Horizons was the fastest craft ever launched (36,000 mph) by traditional chemical rocket, and a less-limited class of propulsion will be discussed by Jeff Greason under plenary “Sunbeam: Near-Sun Statives as Beam Platforms for Beam-Driven Rockets”.

Robert Freeland II (speaking “Infrastructure Development Leading to the First Long-Duration Interstellar Probe”) is the primary lead for BIS 1978 Project Daedalus follow-up project “Icarus Firefly” which plans for z-pinched nuclear fusion using a current driven through plasma.

[For full-sized copy click here.](#)

Ad Astra Kansas Foundation

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