

# Welcome to the NGCP National Webinar

Hosting 'Girls STEAM Ahead with NASA' events: Tips  
for using free NASA resources

Wednesday, November 3, 2021

Please respond to the poll and introduce yourself in the chat.  
Use the chat to ask questions, respond to one another, and share resources.



# NGCP Vision

The vision of the National Girls Collaborative Project is to **support and create STEM experiences that are as diverse as the world we live in.**



# OUR GOALS

1

**Maximize access**  
to shared resources within projects, and with public and private sector organizations and institutions

2

**Strengthen capacity**  
of existing and evolving projects by sharing exemplary practice, research, and program models, outcomes, and products.

3

**Create the tipping point**  
for gender equity in STEM by using the leverage of a network and the collaboration of individual girl-serving STEM programs

# NGCP Activities



**Leap**  
into  
**science**  
— Engineered by —  
THE FRANKLIN INSTITUTE



 **YOUTH**  
ADVISORY BOARD

 **THE**  
**CONNECTORY**



MILLION GIRLS MOONSHOT

**IF/THEN**<sup>®</sup>  
*Collection*



 **FabFems**

# National Network of Collaborative Teams



NATIONAL GIRLS COLLABORATIVE PROJECT

# Speakers:



**Quyen Hart**

Senior Education & Outreach  
Scientist at the Space Telescope  
Science Institute



**Bree Oatman**

Education Director at the South  
Dakota Discovery Museum



**Lorena Harris**

Director of STEM Programs  
(CSTEP & LSAMP) at SUNY  
Schenectady



**Melanie Uebele**

Program Coordinator & Educator  
for SUNY Schenectady's Liberty  
Partnerships Program



# Girls STEAM Ahead with NASA



NASA'S UNIVERSE OF  
**LEARNING**

Hosting 'Girls STEAM Ahead with NASA'  
events: Tips for using free NASA resources  
November 3, 2021

Speakers:  
Dr. Quyen Hart (STScI)



NASA'S UNIVERSE OF  
**LEARNING**

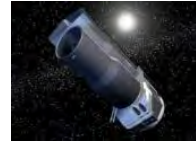
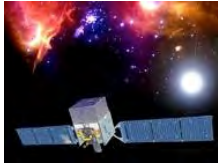
**An Astrophysics STEM informal learning  
program funded by NASA SMD**

***Learners of all ages and backgrounds are engaged  
and immersed in exploring the universe for  
themselves.***

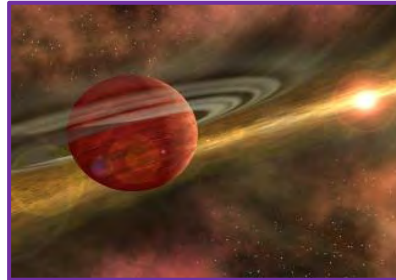


# Our Content

Providing a Direct Connection to the Science



How does the universe work?



Are we alone?



How did we get here?



# Girls STEAM Ahead with NASA

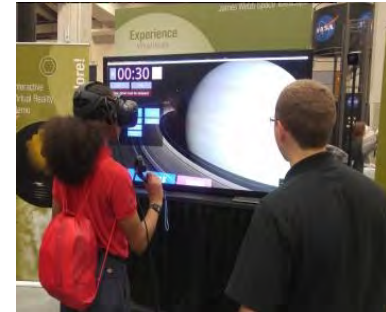
Empower public libraries and community-based organizations to engage girls and their families in STEM



- Increase awareness of how we know what we know about our universe and foster STEM identity.
- Provide accessible **exhibits, community programs, hands-on resources** that feature NASA Astrophysics science and technology, and interactions with **Subject Matter Experts (SMEs)**.

# Our Priorities

- Increase scientific literacy
- Reach underserved/underrepresented communities
- Reinforce scientific practices
- Support the development of a scientific identity
- Employ emerging technologies



# Exhibits

- Light: Beyond the Bulb
- Here, There, Everywhere
- AstrOlympics (Winter and Summer)
- Visions of the Universe
- From Earth to the Universe



Supplemental information available

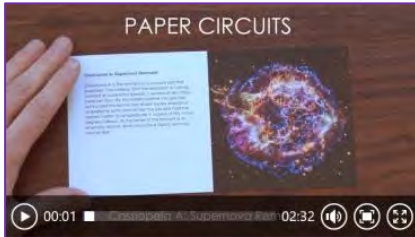
Some available in Spanish, Portuguese, German




# Hands-on STEM Activities



## Maker Space: Paper Circuits



## Activity Guides



### Activity Guide

#### The Expanded Universe: Playing with Time

**Overview:**  
In this activity, participants use balloons to model the expansion of the universe and observe how expansion affects wavelengths of light and distance between galaxies.

**Main Takeaways:**

- The universe is expanding and has done so since the big bang.
- As the universe expands, the distance between the galaxies increases.
- Light from galaxies stretches the wavelength or gets increased as the universe expands and the galaxies move apart.

**Type of Activity**  
 Independent activity  
 Facilitator Activity

**Audience**  
 Families or other mixed-age groups  
 Youth ages 12+

**Prep Time**  
 ~ 5 - 20 min

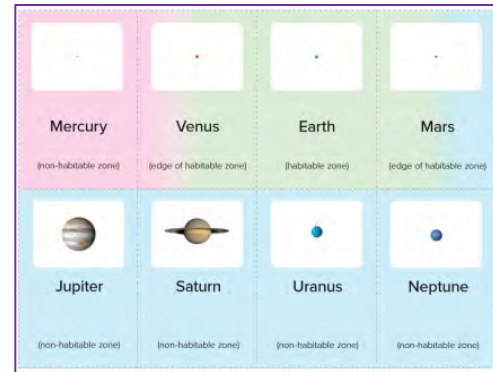
**Activity Time**  
 ~ 15 - 45 min

**Supply Cost**  
 ~ \$20 - \$40 (varies by location)



## 3D Printing

## Coding Activities



## Scale Models



# Posters



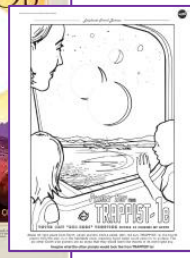
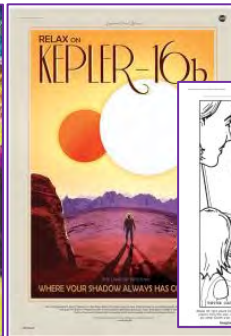
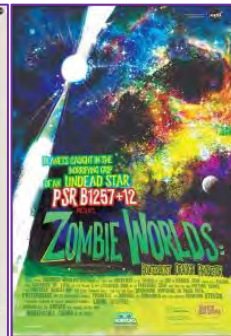
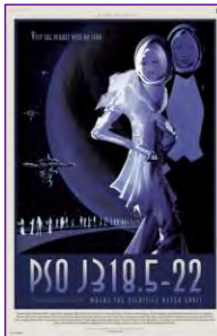
Women in STEM series



Women of Color: Pioneers and Innovators



Some available in Spanish



Exoplanet Posters

# Web-based STEM Activities

## Recoloring the Universe



**1**

De-Coding Starlight Activity:  
From Pixels to Images

# RECOLORING the UNIVERSE

**The Scenario**

You have just discovered a brilliant new supernova remnant using NASA's *Chandra X-ray Observatory*. The Director of NASA Deep Space Research has requested a report of your results in his office in 45 minutes. But, unfortunately, your computer crashed fatally while you were creating an image of the supernova remnant from the numerical data and you also lost a small amount of back up data. To fix the situation you will create, by hand, an image of the supernova remnant.

To do so, you will use raw (unprocessed) data from the *Chandra* satellite. Additionally, you will prepare a written explanation of your discovery and answer a few of the Director's questions.

www.nasa.gov | chandra.nasa.gov

## Using data



### Binary Pins

This activity will allow you to write your initials in binary code to create beaded pins.



### Binary Bracelet



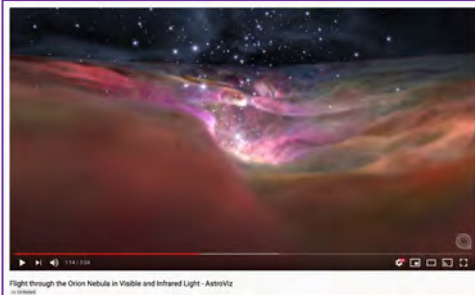
## MicroObservatory

- *Observing with NASA*
- *DIY Planet Search*



# Multimedia: Interactives and Videos

## Science Visualizations



## ViewSpace Interactives



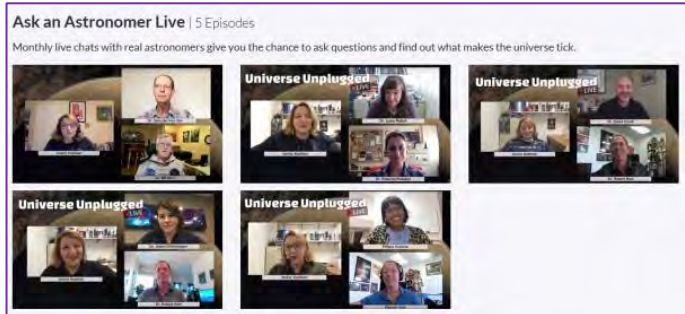
## ViewSpace videos



## Exoplanet Travel Bureau



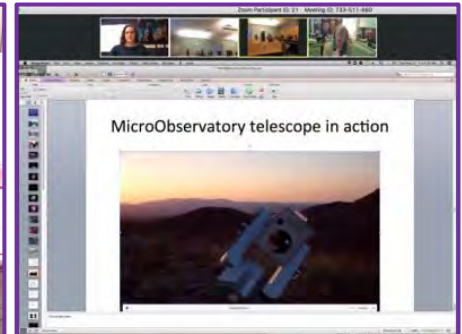
## Ask an Astronomer Live Video Series



# Subject Matter Expert Involvement

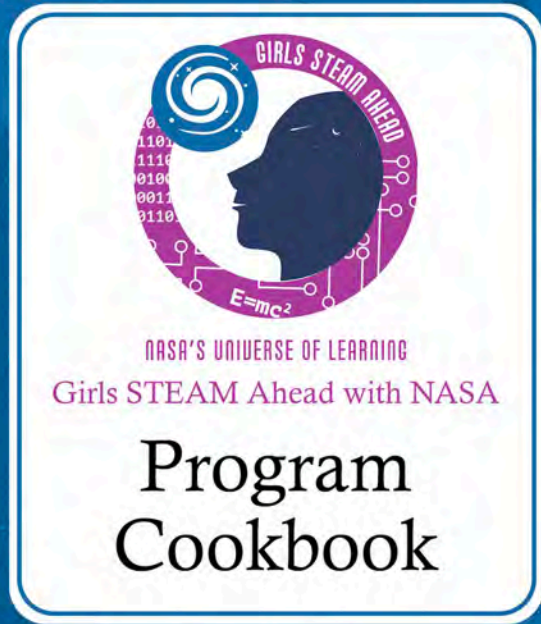
**Subject matter experts are embedded in everything we do.**

- They work hand-in-hand with education and communications experts to design and implement activities.
- They present the latest scientific results behind our resources.
- Request a subject matter expert for your planned event!  
**<https://www.universe-of-learning.org/sme-request>**





# Program Cookbook for Facilitators



- Developed for facilitators to guide you as you create your own event
- Organized by topic (the “Recipes”)
  - Electromagnetic Spectrum (light)
  - Data and Image Processing
- Contain menu of activities and resources for each topic
- Several sample event scenarios to get your started
- Tips and Adaptations are embedded into the guide
- New content coming soon!





# **Starry Saturday at Oahe Downstream Recreation Area**

**South Dakota Discovery Center  
Pierre, SD  
By Dr. Bree Oatman, Education Director**

# Event Overview

Hosted a planetarium star show at a state park with activities prior to sunset and telescope access after the star show.

Activities/Resources used from UoL/Girls STEAM Ahead:

- Logo for promotional material
- Trappist Activity
- Expanding Universe
- Other activities from NISE Network or other resources

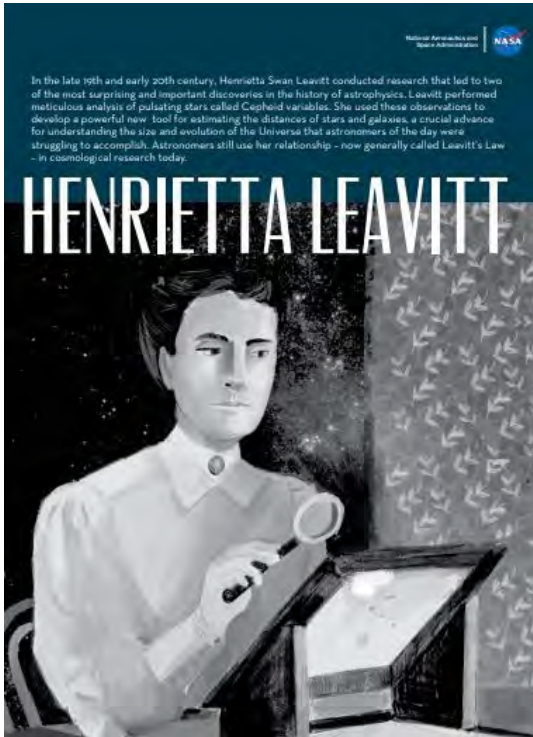
Gave out NASA swag bags with stickers, temp tattoos, milkyways and starbursts.







# Inspirations Moving Forward



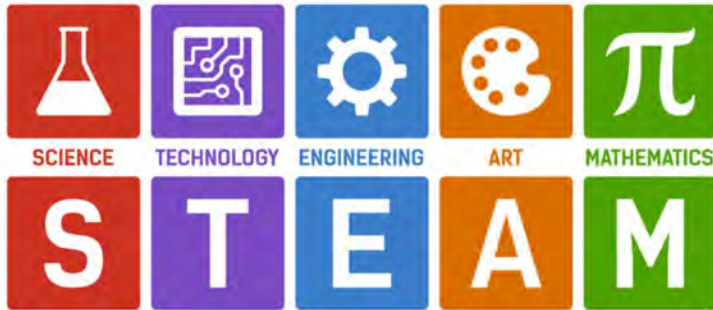
## Webb Space Telescope Launch Celebration

- production of Silent Sky about Henrietta Leavitt
- two Saturday events at the Discovery Center in Dec
- kits for after school programs



# Welcome to STEAM Ahead with NASA

Presented by Melanie Uebele and Lorena Harris



**SUNY**  
SCHENECTADY  
COUNTY COMMUNITY COLLEGE



# You are a scientist!

## Physics

the study of matter, energy, space, time, and of the relations between them.

**Astrophysicists** seek to understand the universe and our place in it. At NASA, the goals of astrophysicists are "to discover how the universe works, explore how it began and evolved, and search for life on planets around other stars"

Snack Time  
Youth Pre-survey

"We look at science as something very elite, which only a few people can learn. **That's just not true.** You just have to start early and give kids a foundation. Kids live up, or down, to expectations."

Mae Jemison



# Astrolympics



Teaser: <https://www.youtube.com/watch?v=GRE3NEsYx8o>

Explore: <https://chandra.cfa.harvard.edu/astrolympics/>

Name: \_\_\_\_\_

Use the resources

**Astrolympics**  
Everybody learned about the metric system Applied their learning in four stations: **Mass, Time, Speed, Distance**

By CSTEP @SUNY Schenectady

**SUMMARY**  
**ASTROLYMPICS**

Source: <http://shanku.04.edu/olympics/olympic/>

Thanks for participating

INDEPENDENT WEBB Telescope SCC 11/09/21

ROTATION  
SPEED  
DISTANCE  
PRESSURE  
TIME  
MASS  
ACCELERATION



**GIRLS STEAM AHEAD WITH NASA**

Thursday, October 28, 2021  
4:00-7:00 p.m. | SUNY Schenectady

RSVP: <https://forms.gle/G6GkwbY1wtJZ6>

**SUNY SCHENECTADY**

The above information, if used without the express written or implied permission of the University of the State of New York, is the property of the University of the State of New York, Office of the State Education Commissioner, CSTEP and SUNY.

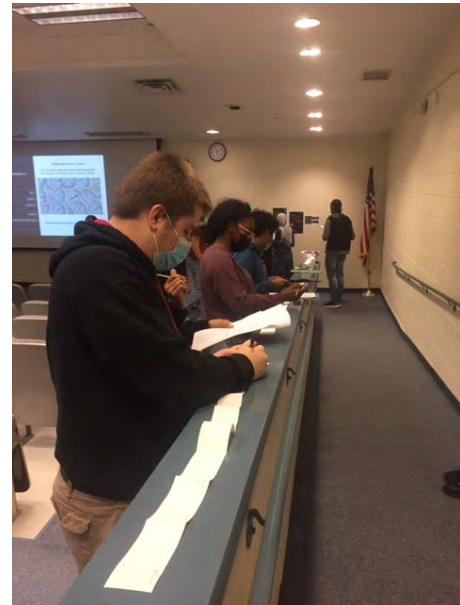
We develop the following support materials and four activities connecting the audience to apply their learning in regards to Mass, Time, Speed and Distance

# Distance

Definition: how far away an object is or the amount of ground an object has covered in its motion.



Make a scale model Solar System





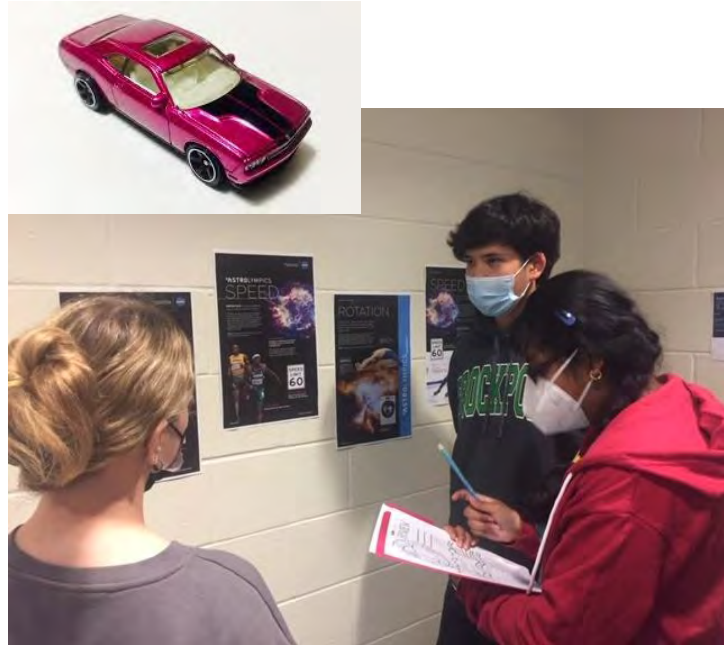
# Speed

Definition: distance traveled over a certain period of time

Units: miles per hour (mph), kilometers per hour (kph), meters per second (mps)(m/s)

Average Human Running	2.2 m/s
Usain Bolt Sprint	12.4 m/s
Speed Skater	14.8 m/s
Car at 60 mph	26.8 m/s
Sound	340 m/s
ISS Orbit	7,600 m/s
Earth Orbit	30,000 m/s
Pulsar IGRJ	2,000,000 m/s
Light	299,792,458 m/s

**Predict:** How fast will the toy car go in meters per second (m/s) ?



# Time

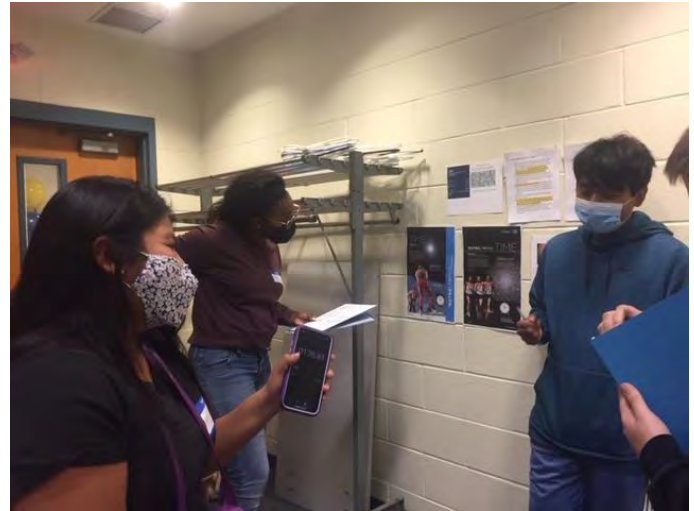
Definition: the accurate measurement of repeating patterns

Units: seconds

One minute	60 s
One hour	3,600 s
Cross Country Ski Race	4,265.2 s
50 KM race	12,939 s
Age of Globular Cluster 47 Tucanae	400,000,000,000,000 s

## Seven Minutes of Terror

Can you wait 7 minutes to know what happened? How long do you have to wait to see your photo?



<https://www.jpl.nasa.gov/videos/curiositys-seven-minutes-of-terror>

# Mass

Definition: how much matter an object contains.



# Weight

Definition: a force on an object's mass multiplied by the acceleration



**Next:** Save the date for the Webb Community Events leading up to launch.



**SUNY Schenectady CSTEP Presents**

# James Webb Telescope Launch

**WHAT:** Introducing the Science and Engineering of NASA's James Webb Space Telescope. Join us to celebrate the Webb Telescope Launch as a community.

**WHERE:** SUNY Schenectady  
Stockade Building Room 101

**WHEN:** November 9, 5:00-7:00PM

**CONTACT:** Dr. Harris Lorena  
harrislb@sunysccc.edu

**REGISTER** <https://tinyurl.com/JWebbSCCC>

*Cosponsored by the Community and Cultural Events Committee*

**WEBB**  
SPACE TELESCOPE

[www.nasa.gov/webb](http://www.nasa.gov/webb) | [webb.nasa.gov](http://webb.nasa.gov) | [webbtelescope.org](http://webbtelescope.org)



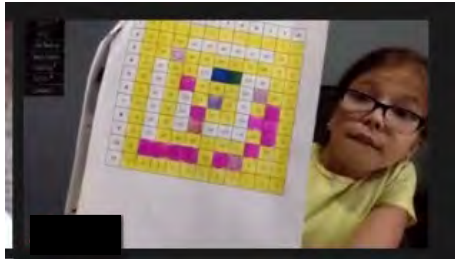




# Question & Answer



# GSAWN Implementation Stipends



**Above Photo Credits:** Jennifer Hartsell Stockdale  
Williamson County 4-H,  
Tennessee

**Above Photo Credits:**  
Shannon Jones  
Museum of Discovery,  
Arkansas

- Every year GSAWN works with NGCP to award 'Girls STEAM Ahead with NASA' implementation stipend awards to encourage facilitators to design and host their own event using NASA's Universe of Learning resources.
- Stipends are \$400. Host sites can only receive the award one time.
- Funds can be used to support materials and resources needed for the event itself.
- Request for Proposal announcement anticipated in February of next year.

# Questions?

## Contact us...

**Web:** <https://www.universe-of-learning.org/gsawn>

**Email:** [girlsSTEAMahead@universe-of-learning.org](mailto:girlsSTEAMahead@universe-of-learning.org)

**Link to recordings of past webinars:**

<https://www.universe-of-learning.org/gsawn#girls-steam-webinars>

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CENTER FOR  
**ASTROPHYSICS**  
HARVARD & SMITHSONIAN



# Upcoming NGCP Events



**Innovative Strategies from the Field: Leveraging the  
IF/THEN® Collection**  
November 8, 2021 at 11:00am Pacific / 2:00pm Eastern