NISE Net Online Workshop

The Science Behind the 2018 Explore Science: Earth and Space Toolkit – Looking Beyond the Solar System

March 13, 2018

Welcome!

Today's presenters are:

Darrell Porcello, Ph.D., NISE Net Earth & Space Co-I
Katherine Kornei, Ph.D, Astrophysicist and Science Educator
Jeannie Colton, Program Coordinator, Arizona State University
Lindsay Bartolone, M.S., NISE Net Earth & Space Content Expert

As we wait to get started with today's discussion, please:

- **Update your display name.** Include your first & last names, institution and location.
- **Introduce yourself**! Type your name and institution into the Chat Box
- **Questions?** Feel free to type your questions into the Chat Box at any time throughout the online workshop or use the raise your hand function in the participants list and we'll unmute your microphone.

Today's discussion will be recorded and shared on nisenet.org at: nisenet.org/events/online-workshop

Online Workshop Overview

5 min
NISE Network introductions & toolkit overview

30 min
Dr. Katherine Kornei on Looking Beyond the Solar System

AND

Jeannie Colton with highlights from "Pack a Space Telescope", "Exoplanet Transits", and "Objects in Motion" activities

20 min
Q & A from our audience

Image Credit: NASA, ESA, and the Hubble Heritage Team (AURA/STScI)

Your Friendly NISE Net Webinar Crew

Dr. Katherine Kornei
NISE Net Earth & Space Content Expert
Portland, OR

Jeannie Colton
Program Coordinator
School for the Future of Innovation in Society, ASU

Dr. Darrell Porcello
NISE Net Earth & Space, Co-I
Children's Creativity Museum

Lindsay Bartolone, M.S.
NISE Net Earth & Space Content Expert
Chicago, IL

2018 Explore Science: Earth & Space Toolkit

NISE NATIONAL INFORMAL STEM EDUCATION NETWORK

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Kits

- Explore Science: Earth & Space toolkit
  - Earth & Space 2017 toolkit
  - Earth & Space 2017 toolkit recipients
  - Earth & Space 2018 toolkit
  - Earth & Space 2018 toolkit recipients
  - Explore Science: Earth & Space 2017 toolkit
    - Explore Science: Earth & Space toolkit recipients
- Building with Biology Kit
- Explore Science: Earth & Space toolkits
- Frankenstein200 kit
- SustainABLE Kit
- Explore Science - Zoom into Nano kit
  - Museums & Community Partnerships
- NanoDays

Explore Science: Earth & Space 2018 toolkit

In collaboration with NASA, the NISE Network has assembled a new set of engaging, hands-on Earth and space science experiences with connections to science, technology, and society.

EXPLORE SCIENCE Earth&Space

Links to download the entire digital toolkit (zip files):

Digital version of the Explore Science: Earth & Space 2018 toolkit

Zip file 1 - Open Me First	22.92 MB
Zip file 2 - Promotional Materials	32.85 MB
Zip file 3 - Explore Science Logos	39.63 MB

Submit your questions…

We will be collecting your questions in the chat window to your right throughout the talk.

We will go through these questions in the Q&A section of the webinar. Those we don't get to today we will reply over email.

The Science Behind the 2018 Explore Science: Earth and Space Toolkit Looking Beyond the Solar System

Image Credit: NASA/JPL-Caltech/T. Pyle (SSC)

Hi. I’m Katherine.

Astrophysicist

Program Developer

Solar storms can weaken Earth’s magnetic field

By Katherine Kornei | Oct. 31, 2016 , 3:00 AM

The sun’s warm glow can sometimes turn menacing. Solar storms can shoot plasma wrapped in bits of the sun’s magnetic field into space, sweeping past Earth and disabling satellites, causing widespread blackouts, and disrupting GPS-based navigation. Now, a new study suggests that one such “coronal mass ejection” in 2015 temporarily weakened Earth’s protective magnetic field, allowing solar plasma and radiation from the same storm to more easily reach the atmosphere, potentially posing a danger to astronauts. The study also suggests a potential way to predict such storms in the future.

On 21 June 2015, a NASA spacecraft called the Solar and Heliospheric Observatory recorded a coronal mass ejection blasting off the sun at roughly 1300 kilometers per second. When the burst reached Earth roughly 40 hours later, its magnetic field was oriented opposite to Earth’s own magnetic field, which caused the fields to be attracted to each other and to interact strongly. “It is like bringing two magnets close together,” says physicist Sunil Gupta of the Tata Institute of Fundamental Research in Mumbai, India, and lead author of the new study.

Science Journalist

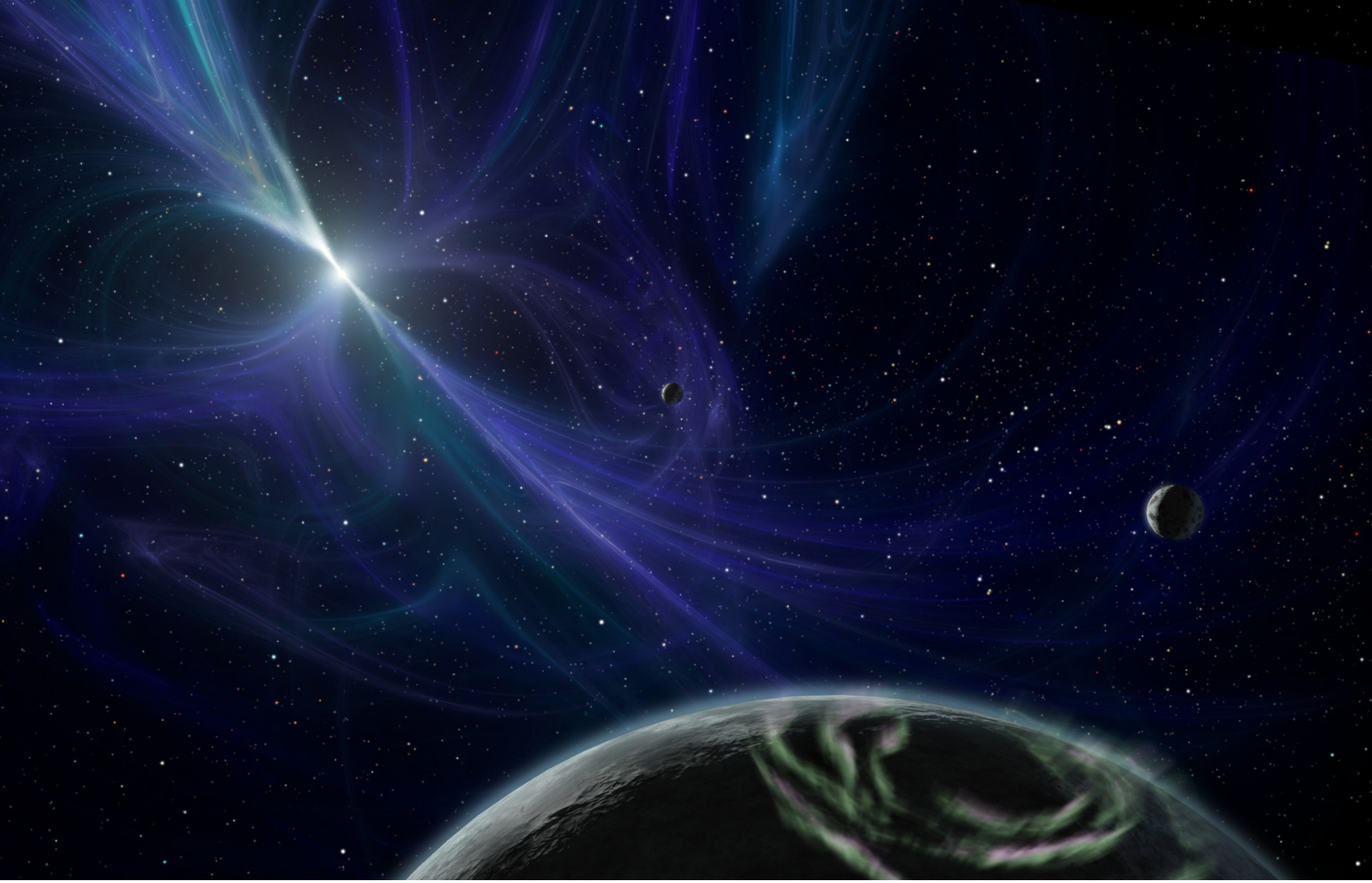


Image Credit: NOAA and NASA

Q: What mysteries beyond the solar system interest you?

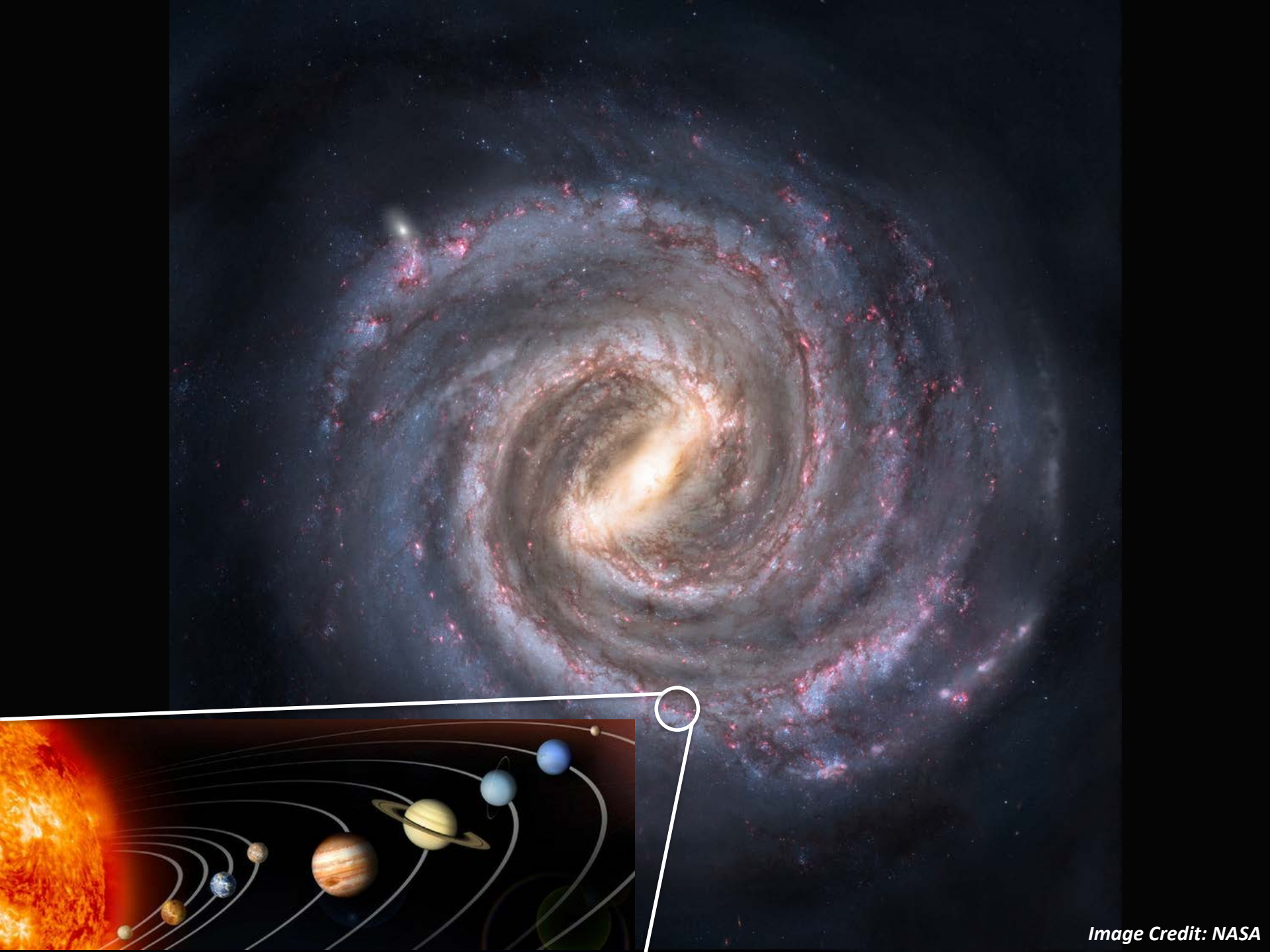


Image Credit: NASA

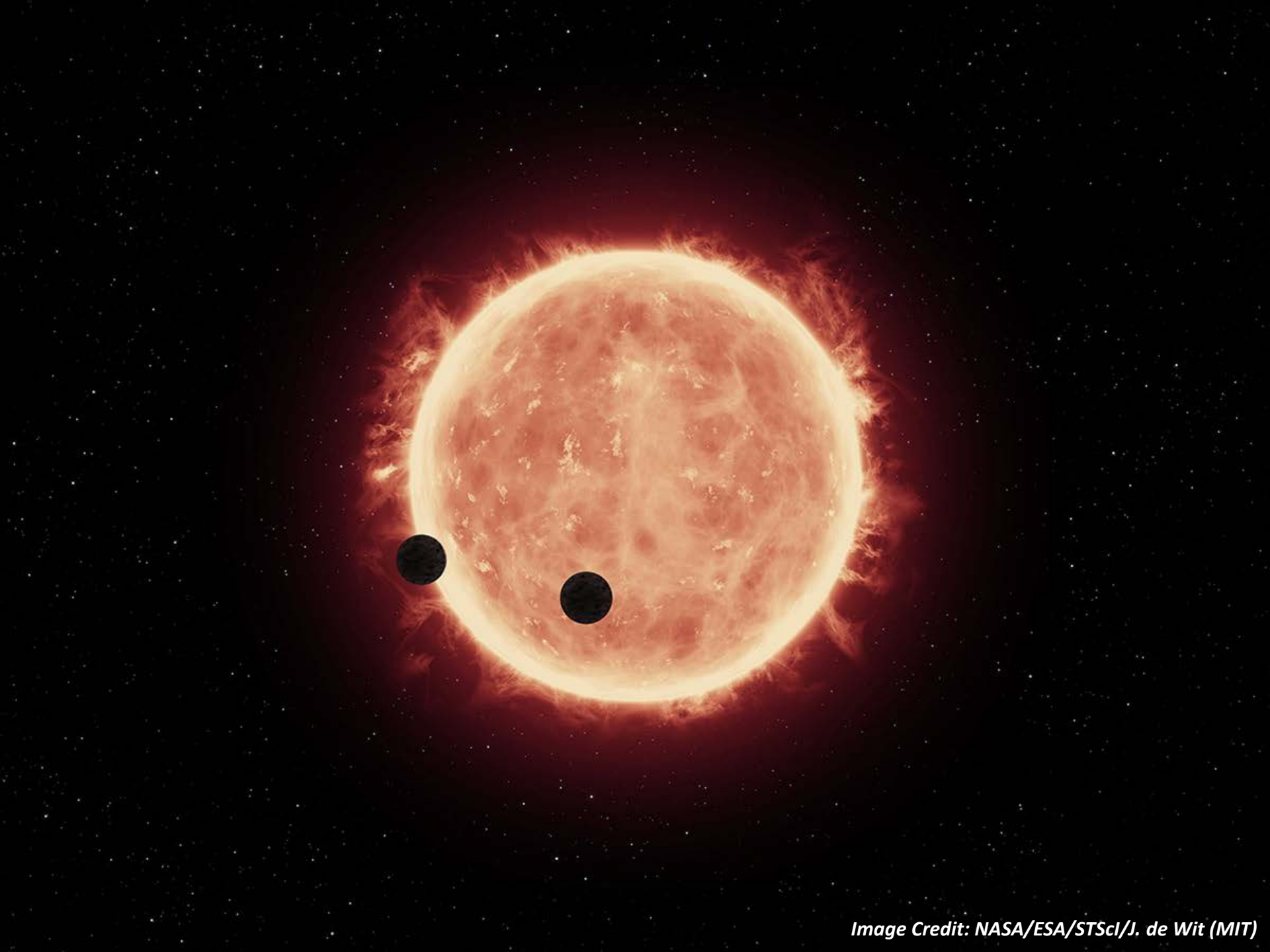


Image Credit: NASA/ESA/STScI/J. de Wit (MIT)

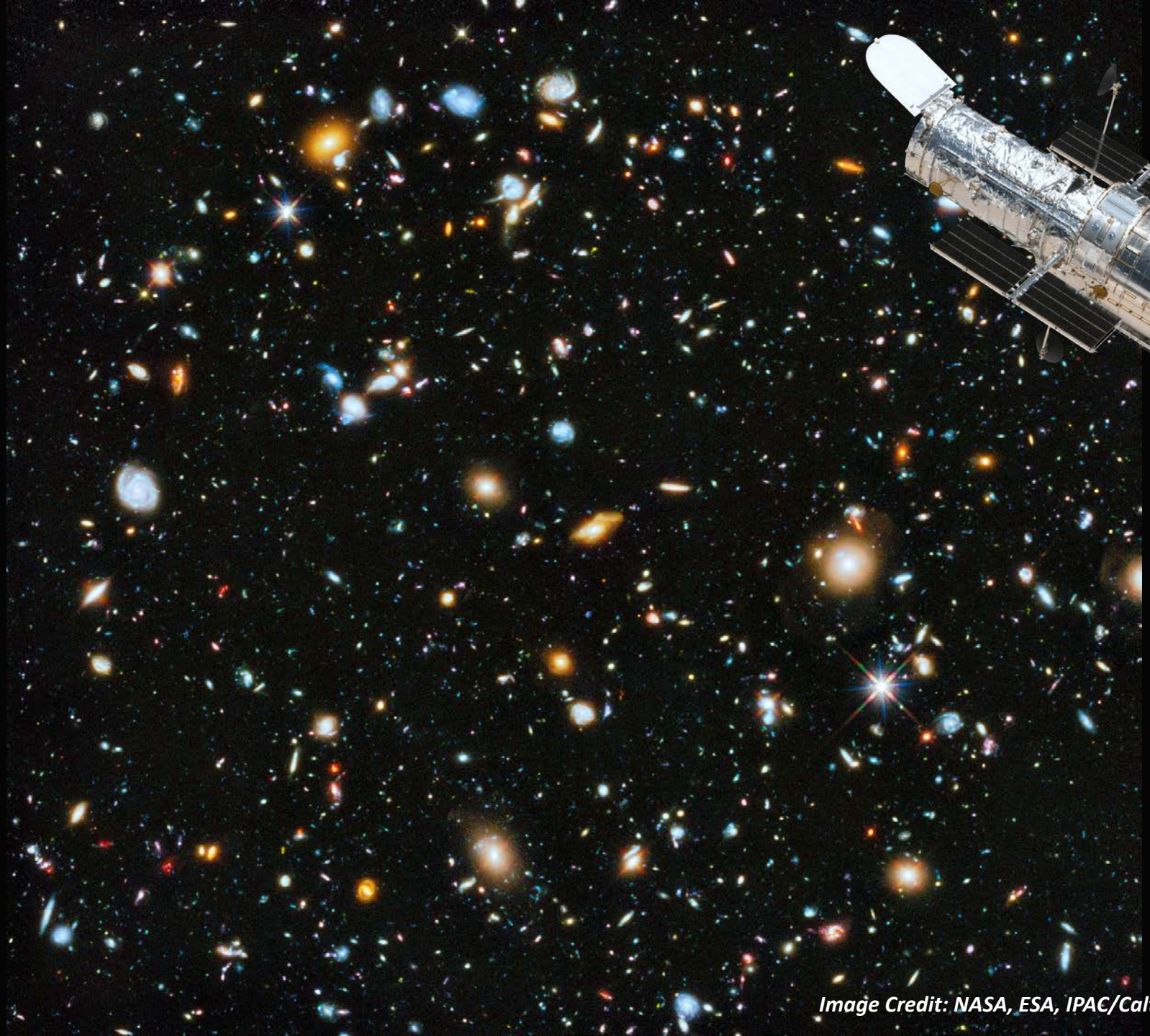
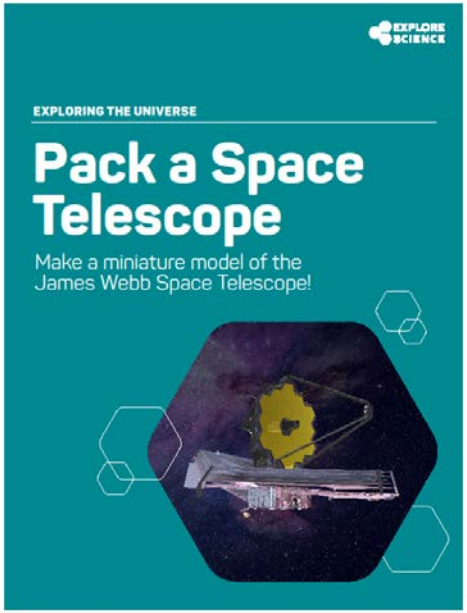
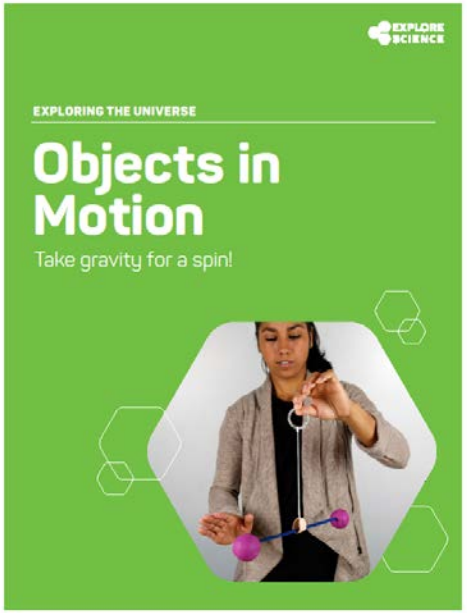
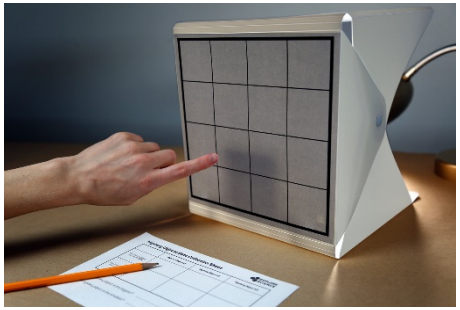


Image Credit: NASA, ESA, IPAC/Caltech, STScI

2018 Explore Science: Earth & Space Toolkit
Looking Beyond the Solar System







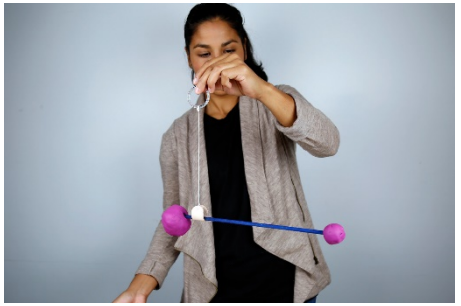
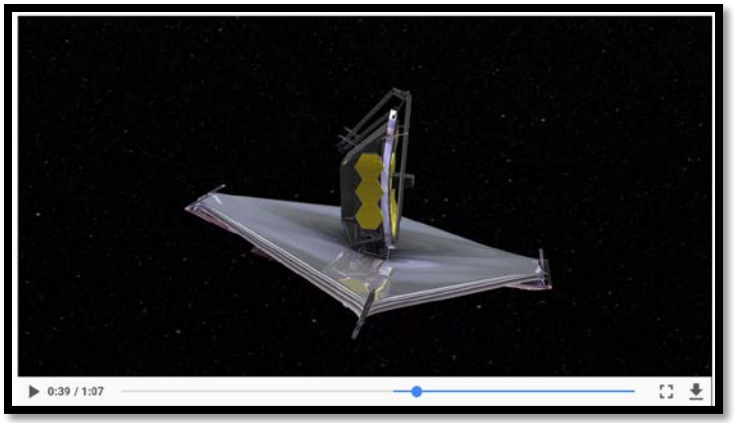
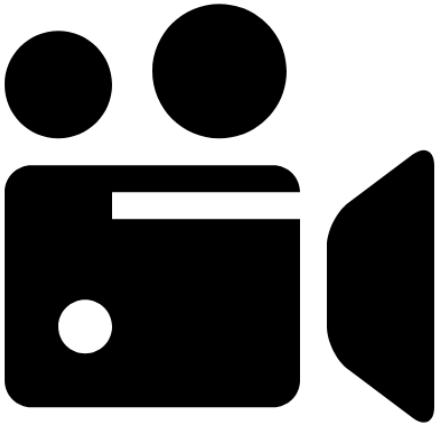


Image Credit: NASA

Image Credit: NASA

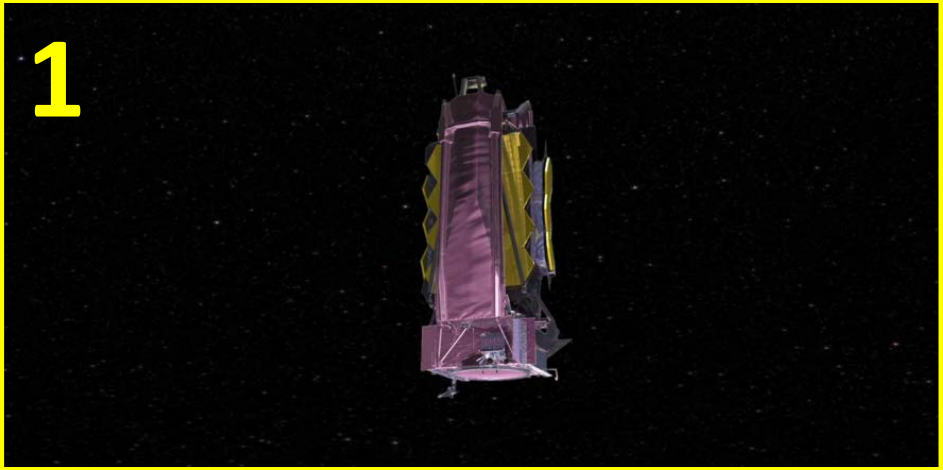




Video (includes sound):
https://www.youtube.com/watch?v=vpVz3UrSsE4

Download:
https://svs.gsfc.nasa.gov/10660

Credit: NASA/Goddard Space Flight Center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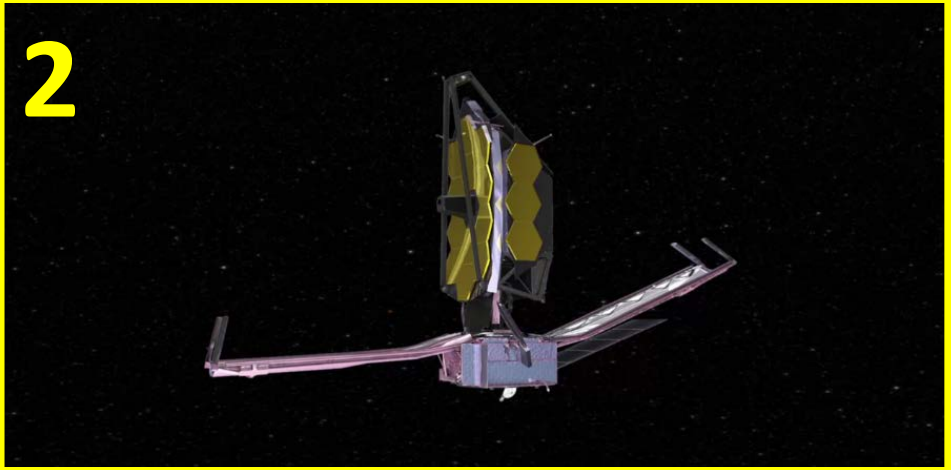
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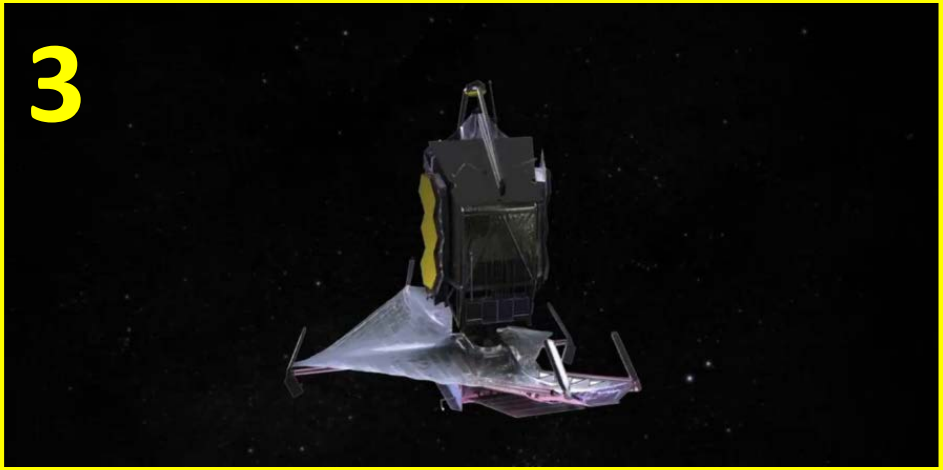
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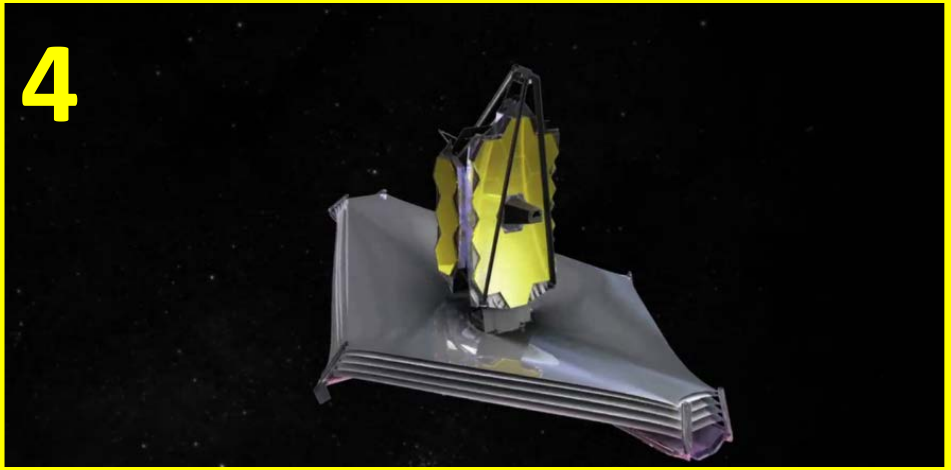
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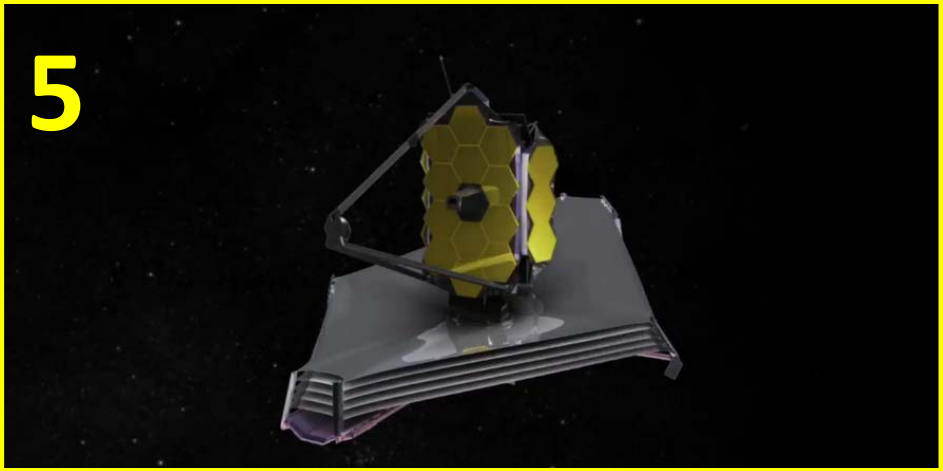
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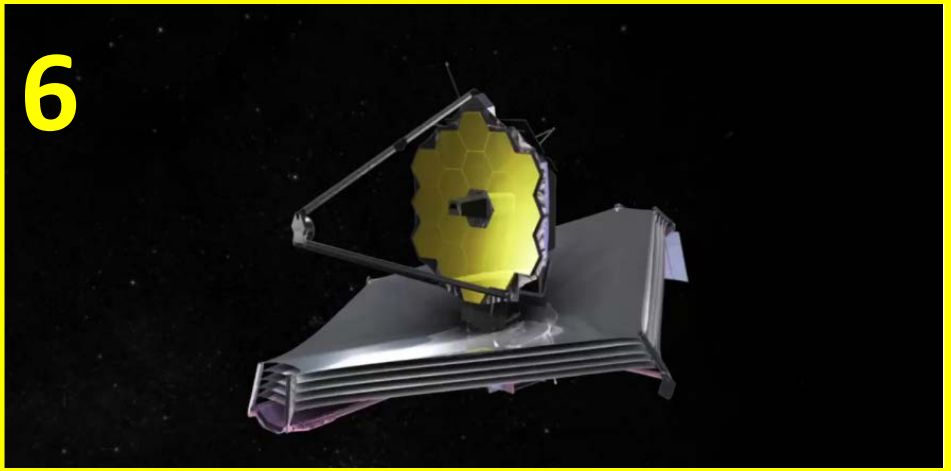
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Pack a Space Telescope

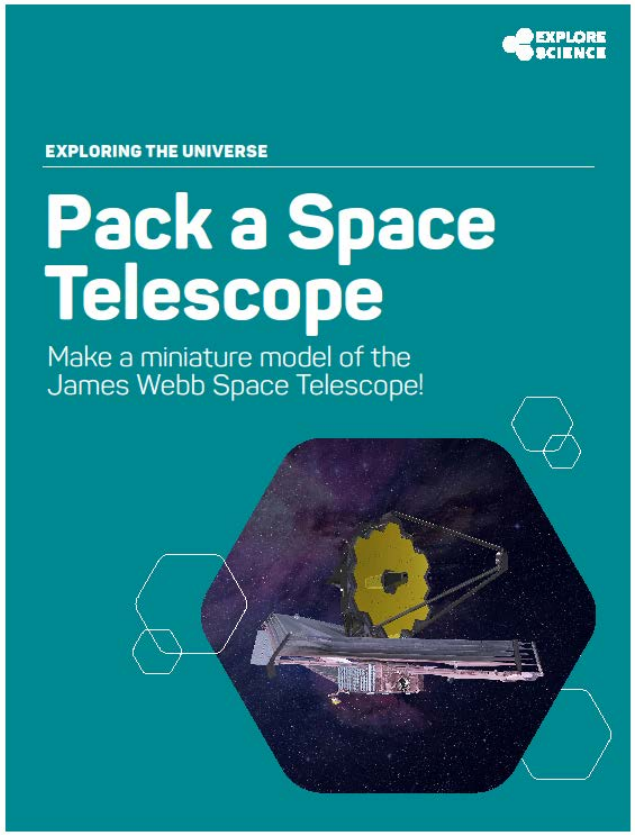


Image Credit: Michael J. Bennett

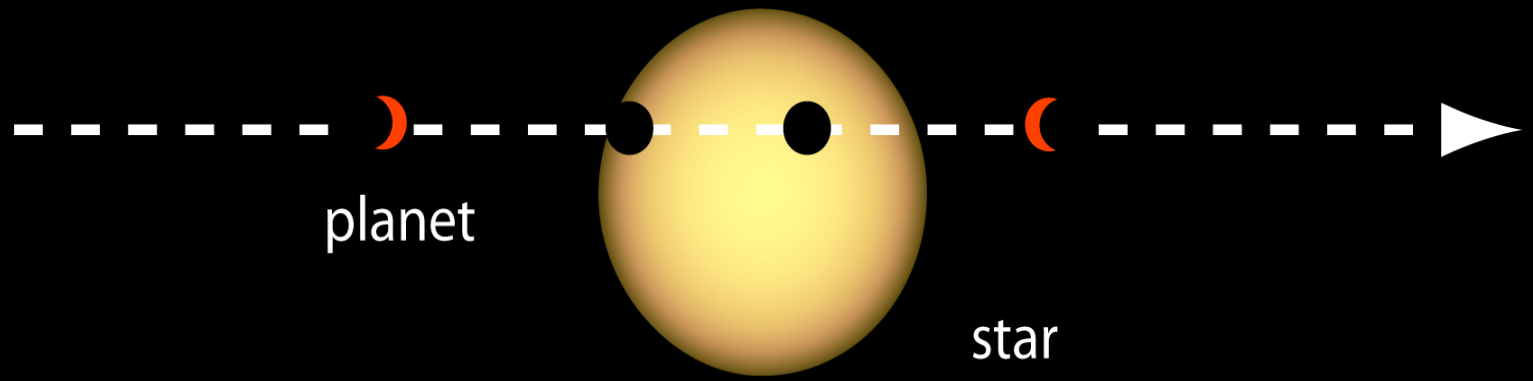
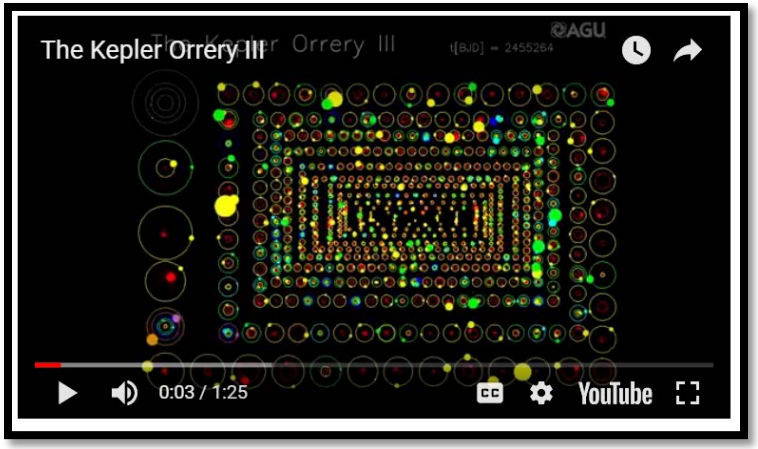


Image Credit: NASA



Video (includes sound):
https://www.youtube.com/watch?v=qeRIkxIyr_0

More info:
https://eos.org/features/kepler-a-giant-leap-for-exoplanet-studies

Credit: Daniel Fabrycky, University of Chicago

The Kepler Orrery III

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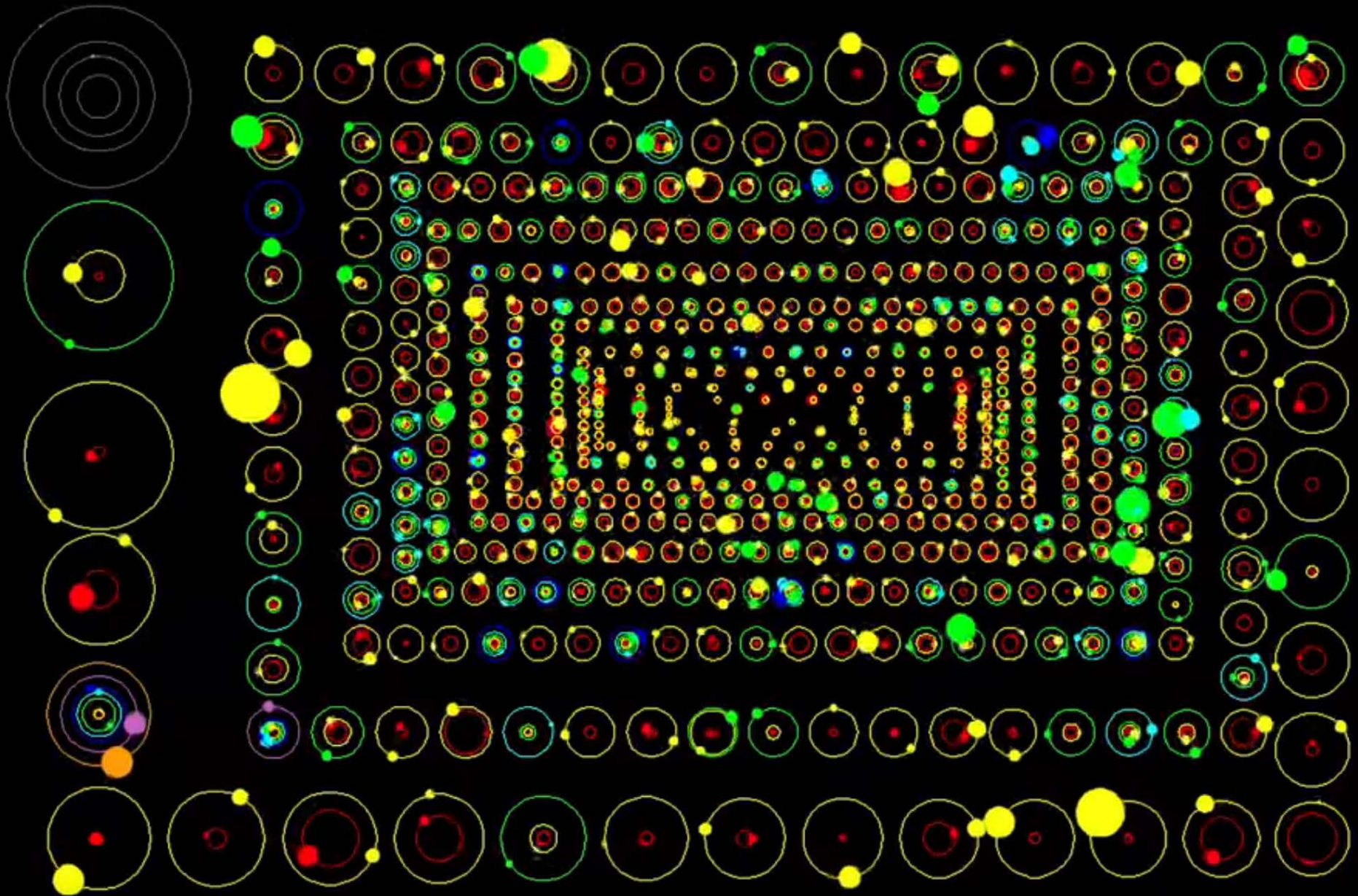
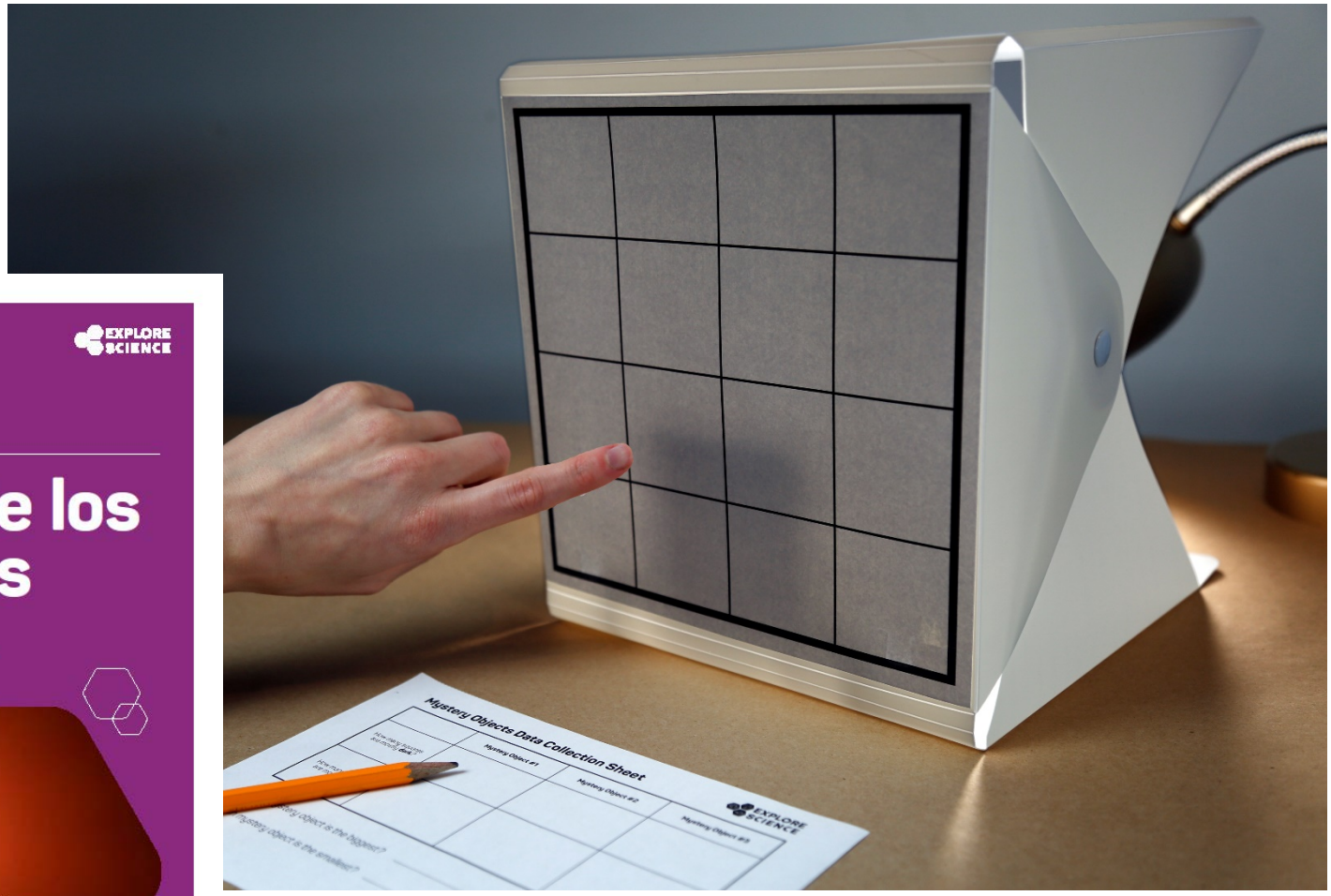
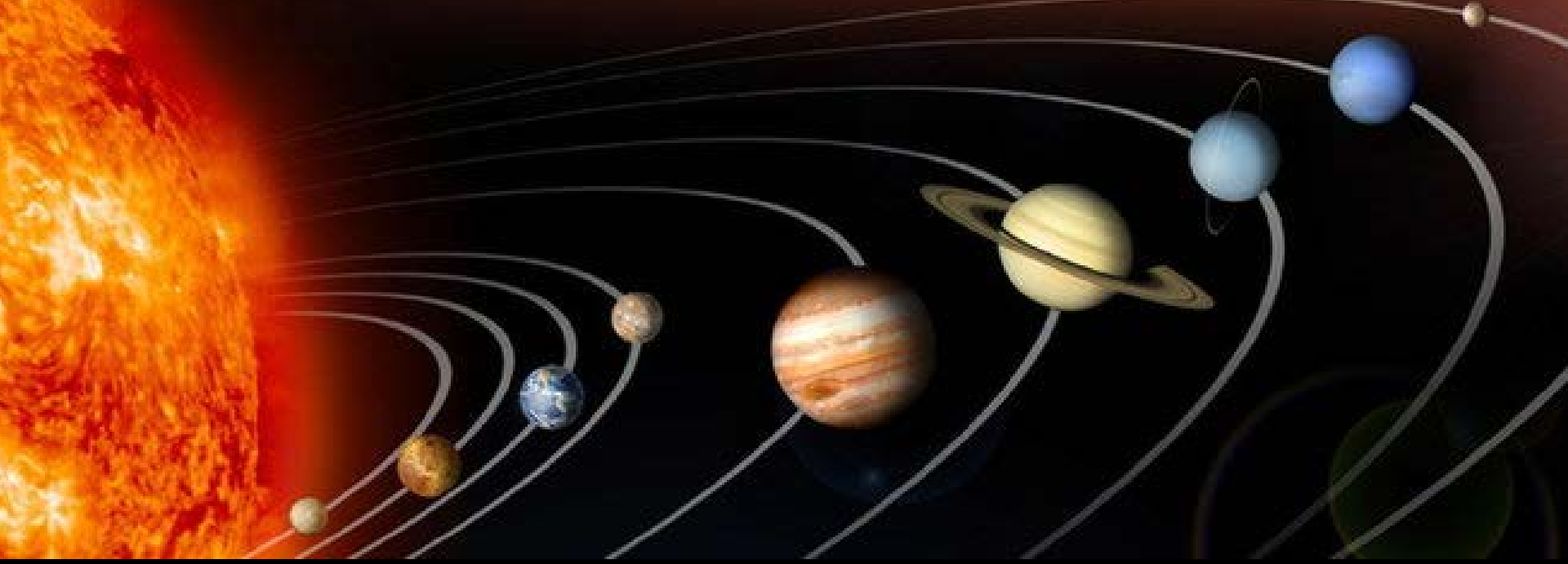


Exoplanet Transits





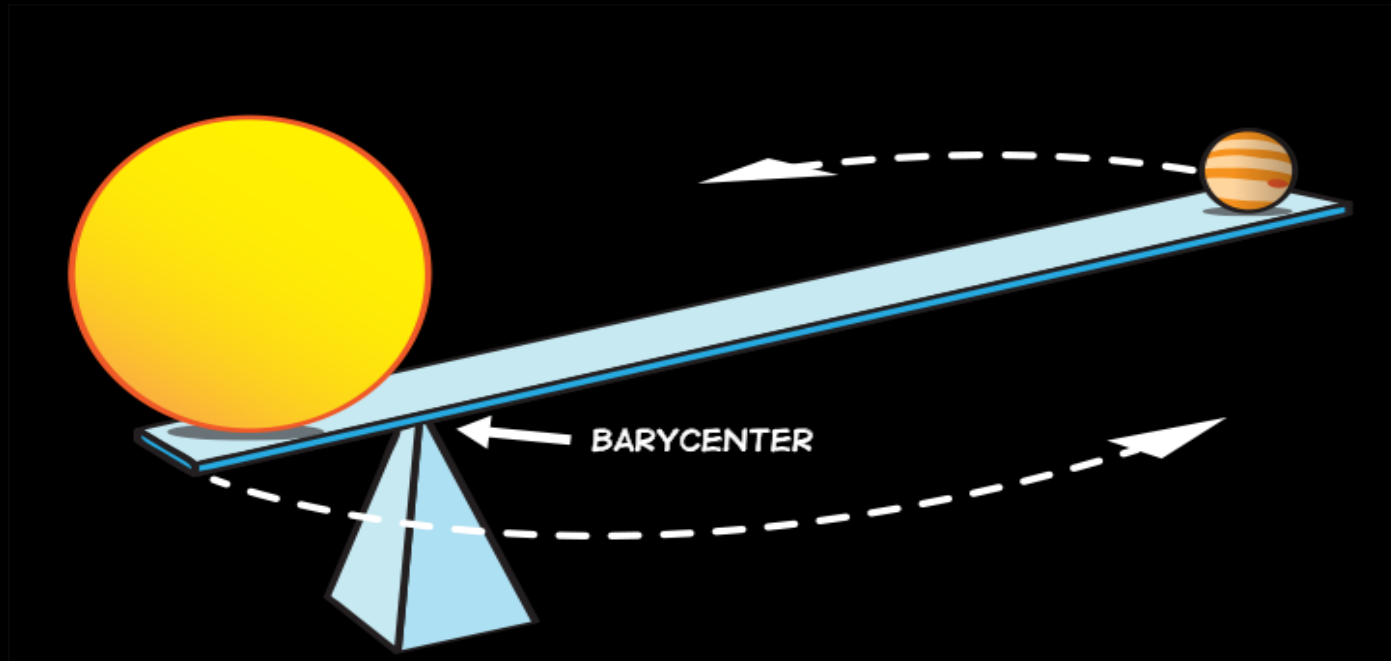


Image Credit: NASA

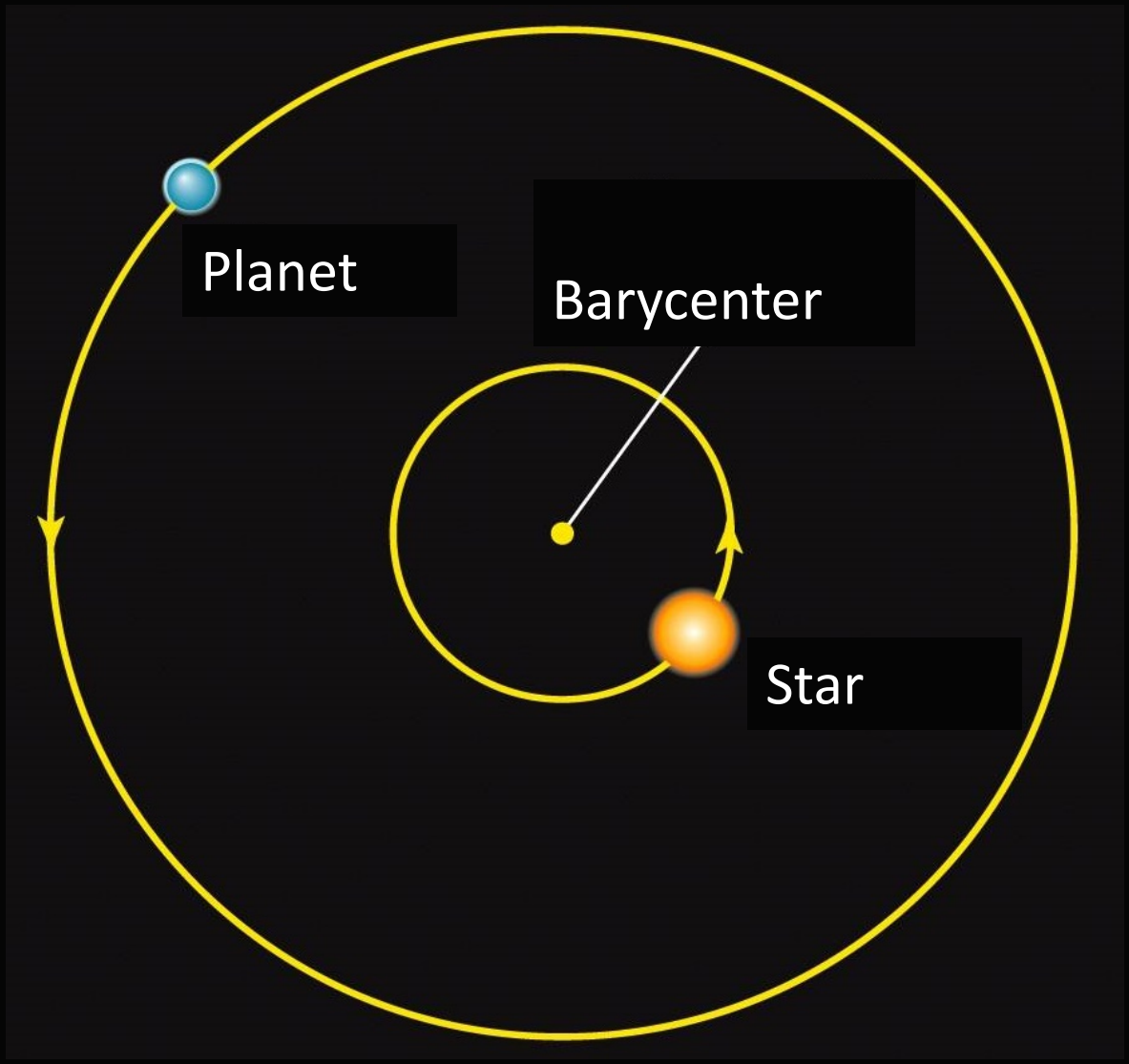


Image Credit: Rich Townsend

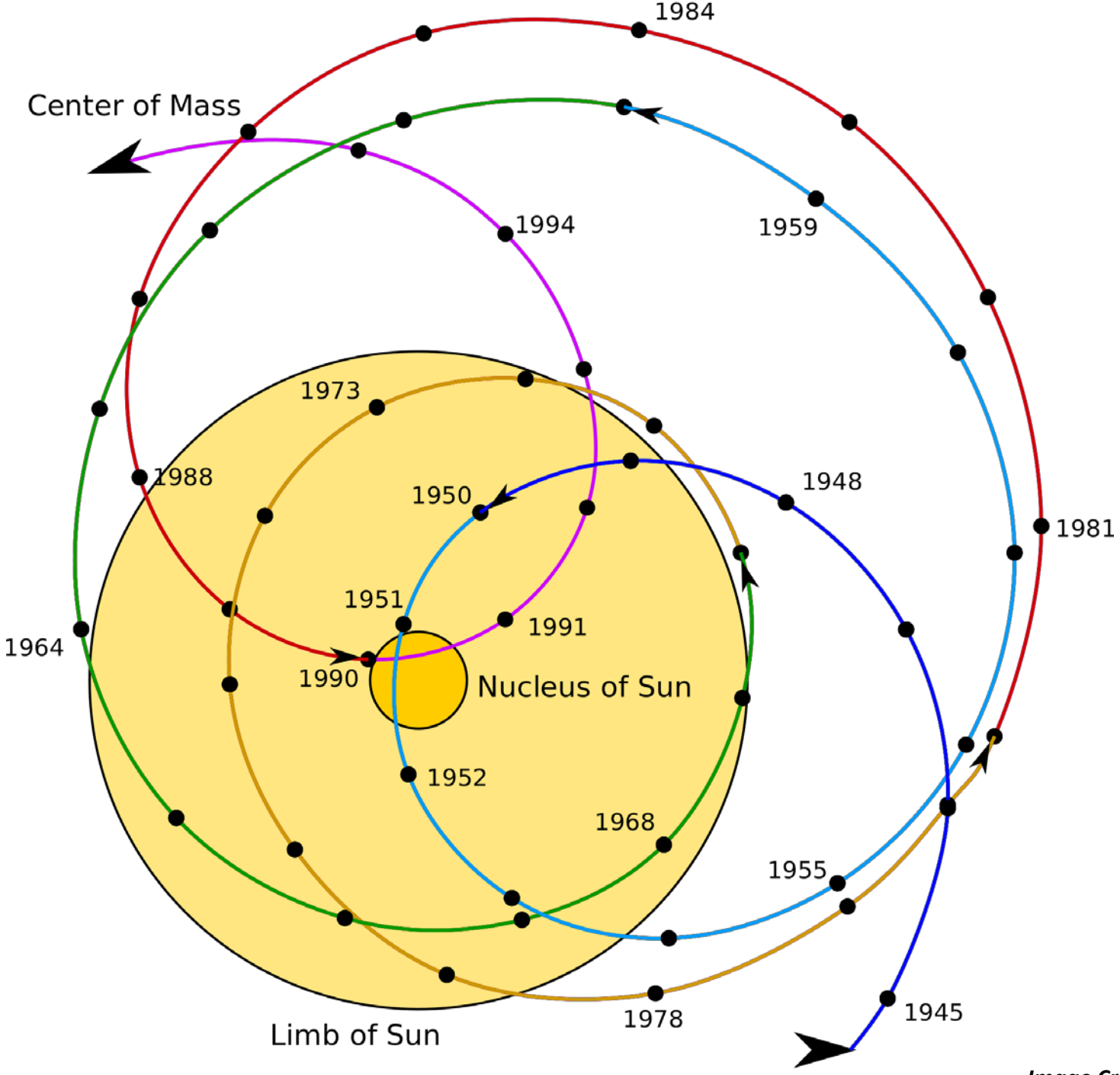
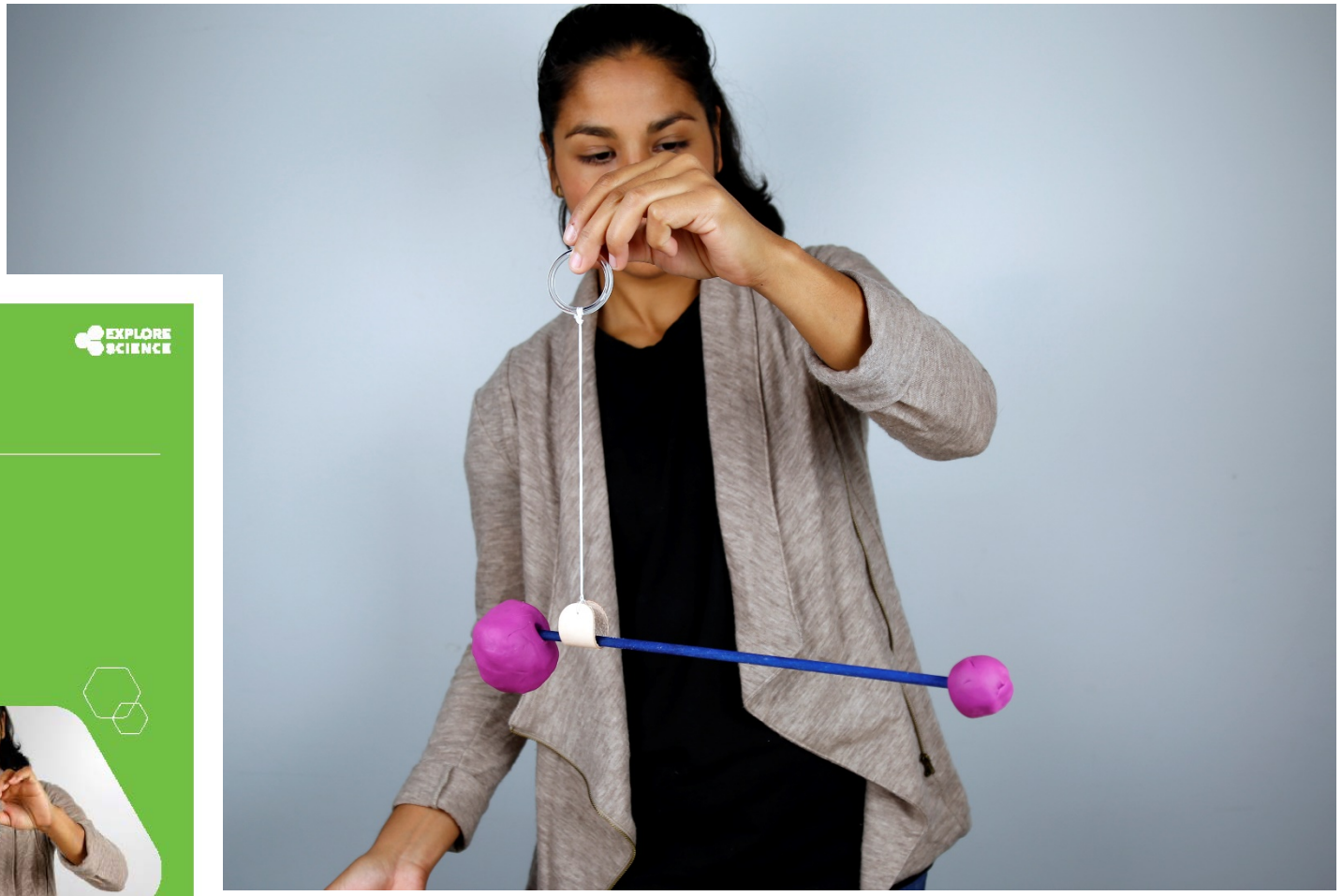
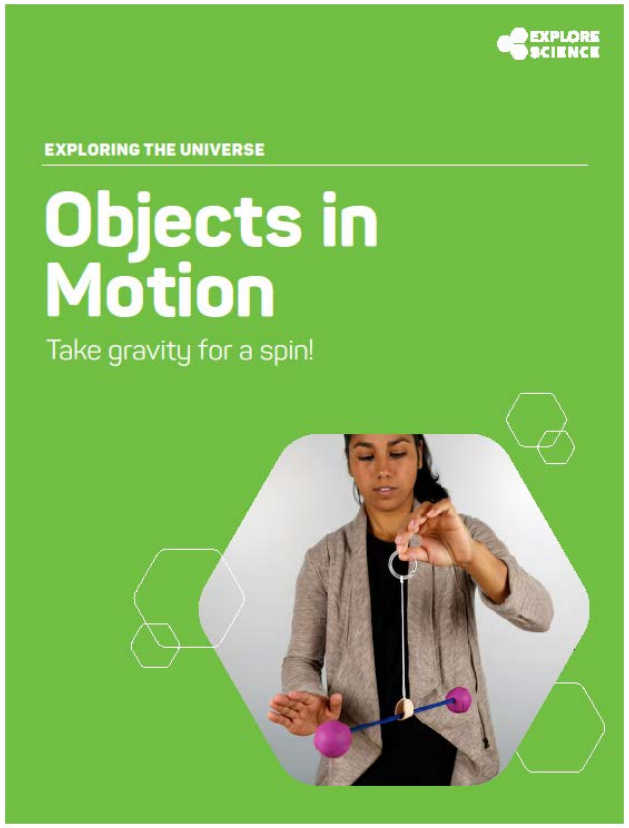


Image Credit: Wikipedia

Objects in Motion





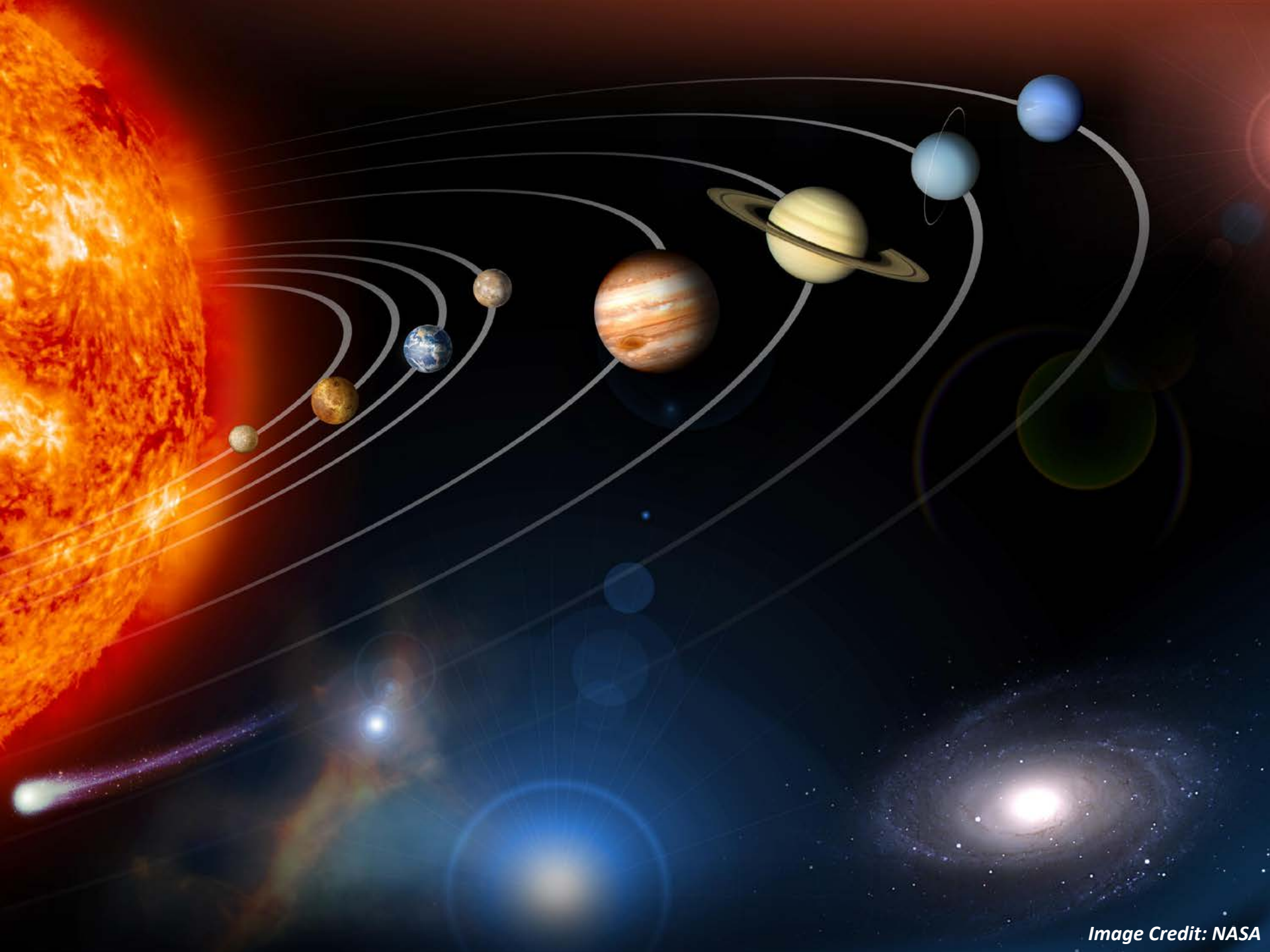


Image Credit: NASA

Q&A

The Science Behind the Explore & Space Toolkit: Looking Beyond the Solar System

What additional questions do you have?

Image Credit: NASA, ESA, and the Hubble Heritage Team (AURA/STScI)

SUN EARTH UNIVERSE
SOL TIERRA UNIVERSO

An engaging and interactive museum exhibition about Earth and space science for family audiences.

Overview and How to Apply: http://www.nisenet.org/sunearthuniverse

Applications due May 1, 2018

New webinar series from Universe of Learning and ASTC!

Wednesday, March 21: *"Looking Out Is Looking Back in Time (How did we get here?)"*

Register: http://www.astc.org/profdev/universe-learning-webinars/

Our Next Workshops

NGSS and the Explore Science: Earth & Space Toolkit - Connecting Your Toolkit to Field Trips and K-12 Programs

Lindsay Bartolone
Linda Shore

Tuesday, March 20, 2018:
2pm-3pm Eastern /
11am-12pm Pacific

Learn About New Project Opportunity and How to Apply for the 2018 Explore Science: Let's Do Chemistry Kit

David Sittenfeld
Rae Ostman
Ali Jackson

Tuesday, April 10, 2018:
2pm-3pm Eastern /
11am-12pm Pacific

NEW: Explore Science: Let's Do Chemistry Kit

Kit Overview document and how to apply:
http://www.nisenet.org/chemistry-apply
Applications due June 1, 2018

In collaboration with the American Chemical Society, the NISE Network has assembled a set of engaging, **hands-on experiences designed to stimulate** interest, sense of relevance, and feelings of self-efficacy about chemistry among public audiences.

EXPLORE SCIENCE
Let's Do Chemistry

- A total of 250 free physical kits will be awarded to successful applicants for use in hosting a public event between October and December 2018.
- A great opportunity to use the Explore Science: Let's Do Chemistry kit is during National Chemistry Week taking place October 21-27. The Kit Overview document provides more info about how to connect and collaborate with local American Chemical Society sections and chapters and chemistry professionals.