Other Solar Systems, Other Earths

As far back as ancient Greece, humans have wondered whether other solar systems might exist in the universe. Today, we know of thousands of other worlds beyond our own cosmic neighborhood.

Featured Activities

DIY Planet Search
Eyes on Exoplanets
TRAPPIST-1 System Scale Model

Resource Library

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Find this guide online: https://www.universe-of-learning.org/gsawn
Science Background Resources

- Exoplanet FAQs
  https://exoplanets.nasa.gov/faq/

- Exoplanets 101
  https://exoplanets.nasa.gov/the-search-for-life/exoplanets-101/

Activities

- DIY Planet Search
  https://www.cfa.harvard.edu/smgphp/otherworlds/OE/

- Exoplanet Travel Bureau Virtual Reality Experience
  https://exoplanets.nasa.gov/alien-worlds/exoplanet-travel-bureau/

- Eyes on Exoplanets
  https://exoplanets.nasa.gov/eyes-on-exoplanets/
  - Eyes on Exoplanets Tutorial 1: The Basics
    https://exoplanets.nasa.gov/resources/1051/eyes-on-exoplanets-tutorial-1-the-basics/
  - Eyes on Exoplanets Tutorial 2: Advanced Tutorial
    https://exoplanets.nasa.gov/resources/1052/eyes-on-exoplanets-tutorial-2-advanced-tutorial/
  - Eyes on Exoplanets Tutorial 3: Tips and Tricks
    https://exoplanets.nasa.gov/resources/1053/eyes-on-exoplanets-tutorial-3-tips-and-tricks/
    *Note: Eyes on Exoplanets Tutorials based on desktop version.*

- Habitable Hunt: A 'Pi in the Sky' Math Challenge

- Interactive: 5 Ways to Find a Planet
  https://exoplanets.nasa.gov/5-ways-to-find-a-planet/index.html

- Interactive: Extreme Planet Makeover *(Flash)*
  https://exoplanets.nasa.gov/interactable/1/index.html

- Laboratory for the Study of Exoplanets
  https://www.cfa.harvard.edu/smgphp/otherworlds/ExoLab/index.html

- Make your own TRAPPIST-1 Music
  http://www.spitzer.caltech.edu/explore/blog/378-Make-your-own-TRAPPIST-1-Mu...
• Project Panoptes
  https://projectpanoptes.org/

• TRAPPIST-1 System Scale Model
Multimedia

TRAPPIST-1 Media Toolkit
https://exoplanets.nasa.gov/trappist1/

ViewSpace
https://viewspace.org/

Videos for young learners:
Can a Planet Have Two Suns?
https://www.youtube.com/watch?v=d331iQxe5bw&list=PL14FAB8E322C47946&index=4&t=0s

Universe Unplugged: The Habitable Zone Video Collection
https://www.youtube.com/playlist?list=PLmktQXw5yxszPsmGbYH2rwDHhbj7pcOPR

Videos for teens/adults:
Homes Away From Home? Revisiting the Seven Planets of TRAPPIST-1
https://www.youtube.com/watch?v=c2UdJDksdEQ&list=PL0975C89E9E457412&index=50&t=0s

How Do We Learn About a Planet's Atmosphere?
https://webbtelescope.org/contents/media/videos/1158-Video?itemsPerPage=100

Not So Strange New Worlds
https://www.youtube.com/watch?v=Tn9GW7lco30&list=PL0975C89E9E457412&index=51&t=0s

Oh Planet, What Art Thou?
https://www.youtube.com/watch?v=u_gVTOrYp9l

Q&Alien - What's in an exoplanet name?
https://exoplanets.nasa.gov/resources/1060/qalien-whats-in-an-exoplanet-name/

Q&Alien - What's a "habitable zone"?
https://exoplanets.nasa.gov/resources/1062/qalien-whats-a-habitable-zone/

The Search for another Earth
https://exoplanets.nasa.gov/resources/1080/the-search-for-another-earth/

TRAPPIST Transits: Music from Exoplanets
https://www.youtube.com/watch?v=FoiwTxWkMdo&list=PLuNpCrank-lEbYQhpw57p-akB6uzx29d&index=10&t=0s

Animations:
Comparative Life Zones of Stars (with text)

Debris Disk in a Planetary System
http://hubblesite.org/video/468/news

Forming a Planetary Gap

Planet Hunting Techniques: Astrometry
https://www.youtube.com/watch?v=kL4lZID-jaO

Planet Hunting Techniques: Direct Imaging
https://www.youtube.com/watch?v=xLdOr3zEpEs

Planet Hunting Techniques: Radial Velocity
https://www.youtube.com/watch?v=bYJ1f-iQt0Y

Planet Hunting Techniques: Transit Method
https://www.youtube.com/watch?v=vRrf-qeUcJL

TRAPPIST-1 Planetary Orbits and Transits

(Multimedia continues on next page.)
Graphics:

Artist's Concept of Exoplanet Orbiting Fomalhaut
https://webbtelescope.org/contents/media/images/4193-Image?itemsPerPage=100

Comparison between Earth and Kepler-452b and their host stars

Each Planet Is Unique, Every 100 Billion+ of Them
https://exoplanets.nasa.gov/resources/283/each-planet-is-unique-every-100-billion-of-them/

Exploring Exoplanets
https://webbtelescope.org/contents/media/images/4208-Image?itemsPerPage=100

Light Curve of a Planet Transiting Its Star

The Lives of Stars and the Search for Habitable Worlds
https://exoplanets.nasa.gov/resources/2162/the-lives-of-stars/

TRAPPIST-1 System Compared to Mercury Orbit
Downloadable Posters & Handouts

Exoplanet Travel Bureau posters
https://exoplanets.nasa.gov/alien-worlds/exoplanet-travel-bureau/

Presentations & Talks

Building New Worlds in Protoplanetary Disks
https://www.youtube.com/watch?v=t5X9oNADb4&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=51&t=0s

Dangerous Worlds
https://www.youtube.com/watch?v=ni0MJ5hr4c&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=17&t=0s

How to Find an Inhabited Exoplanet
https://www.youtube.com/watch?v=8f5wV4KRZXU&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=21&t=259s

Initial Exoplanet Discoveries from TESS
https://www.youtube.com/watch?v=Tn9GW7lco30&list=PL0975C89E9E457412&index=51&t=0s

Probing Worlds beyond Our Solar System
https://www.youtube.com/watch?v=SYkTu48Hj_w&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=34&t=0s

Planetary Tales from the Stellar Crypt: Exoplanets Surviving the Death of their Host Star
https://www.youtube.com/watch?v=vUlMYaaiWF8&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=37&t=0s

Science Briefings: Exoplanets

Seeing Planets around Other Suns: First Light with the Gemini Planet Imager
https://www.youtube.com/watch?v=mLjpR5KglBA&list=PL3rYu9CBDbyj15vcQfj5q55AssXIB_4R&index=50&t=0s

The Golden Age of Exoplanet Exploration
https://www.youtube.com/watch?v=WkWsJWOWTBE
Reading Materials

**Online Articles**

- 20 Years of Exoplanets: The Search for Worlds Beyond Our Own

- Exoplanets 20/20: Looking back to the future

- Life and Death of a Planetary System

- Tales of... The hunt for life on other worlds
  [http://amazingspace.org/resource_page/216/extrasolar_planets/type#resource_tab](http://amazingspace.org/resource_page/216/extrasolar_planets/type#resource_tab)

**WorldCat Reading Lists**

- Adults: [https://www.worldcat.org/profiles/hgreat/lists/3882677](https://www.worldcat.org/profiles/hgreat/lists/3882677)

- Teens: [https://www.worldcat.org/profiles/hgreat/lists/3882119](https://www.worldcat.org/profiles/hgreat/lists/3882119)

- Young Readers: [https://www.worldcat.org/profiles/hgreat/lists/3882627](https://www.worldcat.org/profiles/hgreat/lists/3882627)

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Other STEM Resources

*Find ‘more to explore’ at the following partner sites:*

- NASA Wavelength
  [https://science.nasa.gov/learners/wavelength](https://science.nasa.gov/learners/wavelength)

- STAR_net: STEM Activity Clearinghouse

- National Informal STEM Education Network: Earth & Space toolkit
  [http://www.nisenet.org/earthspacekit](http://www.nisenet.org/earthspacekit)

- ABCs of Exoplanets

- Bringing the Universe to America’s Classrooms: Grades 9 – 12 Space Collection on Exoplanets
  [https://pbslearningmedia.org/collection/universe-9-12-space/](https://pbslearningmedia.org/collection/universe-9-12-space/)

- Exoplanet Coloring Book
Planet Hunters TESS

SVS Exoplanet Gallery