

Explore the Universe



A highly illustrated, 10-volume examination of celestial wonders beyond the solar system, covering the most important objects in the universe and how scientists study them. Explore the Universe is a companion set to The Solar System and Space Exploration Library. Together, the two sets cover astronomy curriculums from early elementary to high school.



This 10-volume set includes the following titles:

Stars—The Inside Story

Explore different types of these amazing balls of light and learn why they shine.

Stars—Birth and Death

Explore how stars are born in great clouds of gas and dust, and why they sometimes die in violent explosions.

Alien Planets

Explore strange planets beyond the solar system, from massive rocky worlds to gas giants, and learn about the search for alien life.

Galaxies

Explore the islands of stars that fill the universe, stretching from our nearest galactic neighbors to ancient giants at the edges of space and time.

The Milky Way

Explore our galaxy from the monstrous black hole at its center to its swirling, starry arms and peer into its violent future.

Observatories on Earth

Explore the history of stargazing from Earth and learn how telescopes transformed familiar lights in the night sky into unimagined wonders.

Observatories in Space

Explore the exciting history of orbiting telescopes and learn how their breathtaking views of deep space have revolutionized astronomy.

Quasars and Black Holes

Explore some of the most mysterious objects in space—powerful black holes that extinguish light and intense quasars that outshine an entire galaxy.

The Universe—A Cosmic Tour

Explore the origins of space and time, mysterious forms of matter and energy, and the ultimate fate of the universe.

The Universe—Mysteries and Marvels

Explore time travel, extra dimensions, hidden universes, and other cosmic curiosities.

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FOCUS ON

WHAT EXTRASOLAR PLANETS MIGHT LOOK LIKE

No one has seen an extrasolar planet up close. So astronomers and artists use data from telescopes and other instruments to estimate what they look like. For example, they analyze light reflected by the planet for clues to chemicals that make up its atmosphere or surface.



The extrasolar planet HD 70642b, which is about twice as massive as Jupiter, dominates the sky above a hypothetical moon in an artist's illustration. The planet's orbit, which is about 1/5 the distance from its star as Jupiter is from the sun, suggests that smaller, possibly Earth-like planets might also be a part of this planetary system.



HD 209458b, shown orbiting its central star in an artist's illustration, is one of many hot Jupiters discovered in the Milky Way Galaxy. Such planets are at least as massive as Jupiter but orbit much closer to their central stars. HD 209458b circles its star at a distance less than 1/5 of the distance between Mercury and the sun. The temperature on the surface of the planet is about 1,850 °F (1,000 °C), more than twice as hot as Mercury.



HOW BIG IS THE MILKY WAY?

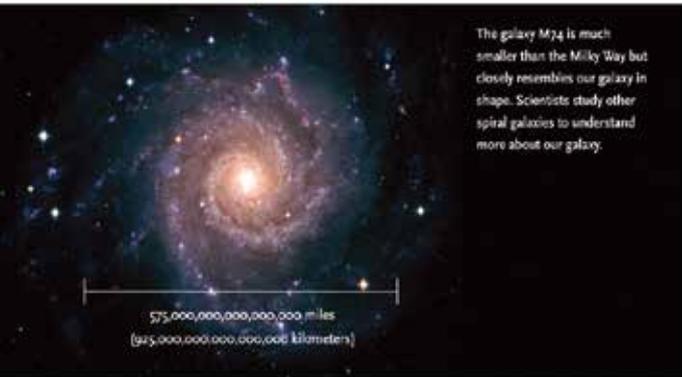
"YARDSTICK" OF LIGHT

Light travels through space at 186,282 miles (299,792 kilometers) per second. At this speed, light can cross a distance of about 5.88 trillion miles (9.46 trillion kilometers) in one year. Therefore, astronomers and physicists call the distance that light can travel in one year a **light-year**.

LIGHT-YEAR MEASUREMENTS

Astronomers estimate that the Milky Way is about 100,000 light-years across. They estimate that the central bulge is about 10,000 light-years thick, and the central bar is about 27,000 light-years long. But the thinner disk of the Milky Way is only about 1,000 light-years thick.

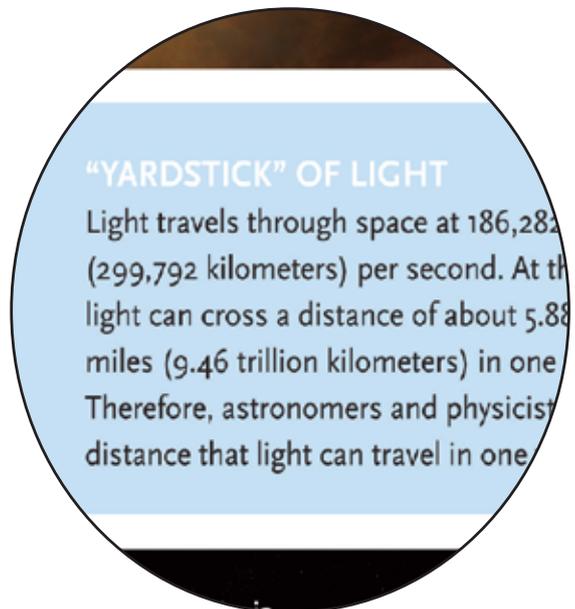
The Milky Way is about 100,000 light-years across. The central bulge is about 10,000 light-years thick.



The galaxy M74 is much smaller than the Milky Way but closely resembles our galaxy in shape. Scientists study other spiral galaxies to understand more about our galaxy.

575,000,000,000,000 miles
(925,000,000,000,000 kilometers)

ACTUAL SIZE



"YARDSTICK" OF LIGHT

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