

Name _____

Stargazing Wonders: Measuring the Universe with Light

Short Answer Key

1. The parallax technique involves observing a nearby star's apparent shift in position against the background of more distant stars as the Earth orbits the Sun. By measuring the parallax angle and knowing the Earth's orbital radius, astronomers can calculate the star's distance.
2. The Doppler effect is the phenomenon where the frequency or wavelength of light changes when the source of light is moving relative to an observer. Astronomers use this effect to determine the speed of stars and galaxies by measuring the redshift (moving away) or blueshift (moving toward) of their light.
3. A light year is the distance that light travels in one year, which is approximately 5.88 trillion miles (9.46 trillion kilometers). It is a useful unit of measurement in astronomy because it allows us to express vast distances in space in a more manageable way.
4. The Hubble Space Telescope is a space-based observatory that provides high-resolution images and data about celestial objects. It has significantly contributed to our understanding of the universe by capturing detailed images of distant galaxies and helping to measure the universe's age, size, and composition.
5. The concept of the universe's expansion is based on the observation that galaxies are moving away from each other in all directions. This implies that the universe began as a singularity in the Big Bang and has been expanding ever since, challenging our understanding of its origin and fate.

