

Name _____

The Power of the Hubble Space Telescope

Short Answer Key

1. Hubble's ability to capture images in the ultraviolet part of the electromagnetic spectrum allows astronomers to study celestial objects and phenomena that emit significant ultraviolet radiation. This is crucial for understanding processes such as star formation, the behavior of hot, young stars, and the study of interstellar and intergalactic matter.
2. The "Hubble Deep Field" image is a photograph taken by Hubble in 1995. It captured thousands of galaxies in a small, seemingly empty patch of sky. This image profoundly impacted our understanding of the universe by revealing the vast number of galaxies beyond our Milky Way, demonstrating the universe's vastness and inspiring further exploration.
3. Hubble has contributed to the study of dark matter by observing how the gravitational lensing effect caused by dark matter affects the light from distant galaxies. By studying this distortion, astronomers can map the distribution of dark matter in galaxy clusters, shedding light on this elusive and mysterious substance.
4. Hubble's observations of exoplanets involve studying their atmospheres. It can analyze the light passing through an exoplanet's atmosphere as it transits in front of its host star. This research is significant because it provides insights into the composition and properties of exoplanet atmospheres, offering clues about their potential habitability and the presence of life-supporting conditions.
5. Hubble's location above Earth's atmosphere eliminates the blurring and distortion caused by atmospheric turbulence, allowing it to capture exceptionally sharp and detailed images of celestial objects. This clarity is vital for scientific research and has enabled astronomers to study distant galaxies, nebulae, and planets with unprecedented precision.

