

Name _____

Unveiling the Mystery: Dark Matter and Its Cosmic Significance

Short Answer Key

1. Galactic rotation curves show that stars at the outer edges of galaxies move at higher speeds than expected based on visible matter alone, suggesting the presence of unseen dark matter's gravitational influence.
2. Gravitational lensing is the bending and magnification of light from distant objects due to the gravitational pull of dark matter. It helps scientists detect dark matter by revealing its mass through the lensing effects.
3. Dark matter is essential in maintaining galactic stability by providing the gravitational force necessary to prevent galaxies from dispersing or disintegrating due to their high-speed rotation.
4. The presence of dark matter influences the universe's fate by affecting the rate of its expansion. Depending on the amount of dark matter, the universe may continue expanding forever, slow down its expansion, or eventually contract in a "Big Crunch."
5. Ongoing research efforts include experiments like the Large Hadron Collider and observatories like the Dark Energy Survey, which aim to detect and study dark matter particles and their effects on the cosmos.

