

Relativity Quiz PDF

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How does general relativity explain the phenomenon of gravitational lensING?

What are gravitational waves, and why was their detection significant for physics?

What role does the speed of light play in the theory of special relativity?

Discuss the significance of the Michelson-Morley experiment in the development of modern physics.



Who formulated the theory of special relativity?

- Isaac Newton
- Albert Einstein
- Niels Bohr
- Galileo Galilei

Which prediction of general relativity involves ripples in spacetime?

- Photoelectric Effect
- Gravitational Waves
- Quantum Entanglement
- Uncertainty Principle

What must GPS technology account for to maintain accuracy?

- Quantum Mechanics
- Special and General Relativity
- Classical Mechanics
- Electromagnetism

What is the speed of light in a vacuum?

- 3,000 km/s
- 30,000 km/s
- 300,000 km/s
- 3,000,000 km/s

What is the term for the path followed by objects in curved spacetime?

- Trajectory
- Orbit
- Geodesic

Vector

Explain the concept of time dilation and provide an example of where it might be observed.

Describe how general relativity has changed our understanding of gravity compared to Newtonian physics.

What phenomena are predicted by the Schwarzschild solution? (Select all that apply)

- Black Holes
- Neutron Stars
- White Dwarfs
- Gravitational Lensing

Which are components of general relativity? (Select all that apply)

- Spacetime Curvature
- Gravitational Waves
- Quantum Fluctuations
- Geodesics

What are effects of special relativity on moving objects? (Select all that apply)

- Time Dilation
- Length Contraction

- Increased Mass
- Constant Velocity

Which are core postulates of special relativity? (Select all that apply)

- The speed of light is constant for all observers.
- Gravity is a force between masses.
- The laws of physics are the same for all observers in uniform motion.
- Time is absolute.

Which equation represents mass-energy equivalence?

- $F=ma$
- $E=mc^2$
- $a^2+b^2=c^2$
- $pV=nRT$

Which are implications of general relativity? (Select all that apply)

- Black Holes
- Time Travel
- Gravitational Time Dilation
- Expanding Universe

Which experiment supported the constancy of the speed of light?

- Eddington's Solar Eclipse Experiment
- Michelson-Morley Experiment
- Rutherford's Gold Foil Experiment
- Young's Double-Slit Experiment

What phenomenon describes the slowing of time in a strong gravitational field?

- Time Dilation
- Length Contraction
- Mass-Energy Equivalence
- Gravitational Time Dilation

Which experiments confirmed general relativity? (Select all that apply)

- Eddington's Solar Eclipse Experiment
- LIGO's Detection of Gravitational Waves
- Michelson-Morley Experiment
- Double-Slit Experiment