TEAM GALAXIA

NASA Space Apps Challenge 2025

BLACK HOLES: PAST, PRESENT & FUTURE

Introduction

Black holes are regions in space where gravity is so strong that nothing—not even light—can escape. They are formed when massive stars collapse under their own gravity.

History

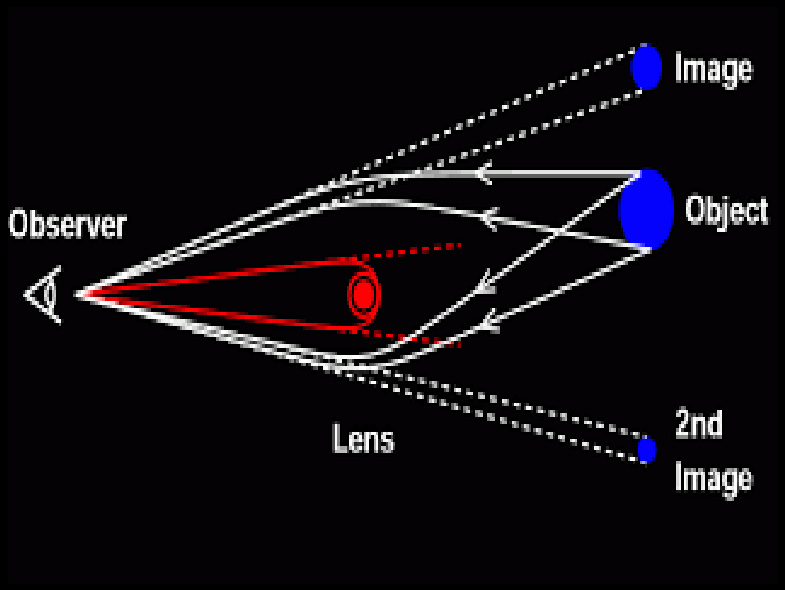
Albert Einstein’s theory of general relativity predicted black holes, but it was Karl Schwarzschild who found the first exact solution. For decades, they remained theoretical.

Observation Era

The first image of a black hole, M87*, captured by the Event Horizon Telescope, marked a milestone. Observations using gravitational waves also confirmed their existence.

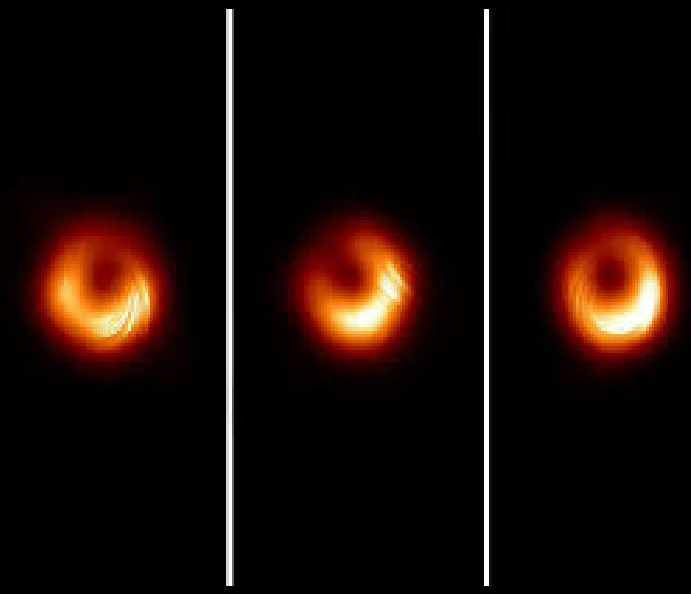
Modern Research

NASA’s Chandra X-ray Observatory and LIGO detectors continue to provide insights into the dynamics and collisions of black holes across the universe.



Black Holes & Space-Time

Black holes warp space-time, bending light around them through gravitational lensing. They serve as laboratories for testing physics at extreme scales.



Future Exploration

Upcoming missions like LISA and the James Webb Space Telescope will deepen our understanding of black hole formation and quantum effects near the event horizon.

Significance

Studying black holes helps scientists understand galaxy formation, the life cycle of stars, and fundamental physics governing the universe.

NASA’s Role

NASA leads in black hole research through observatories like Chandra, Hubble, and upcoming missions focused on cosmic phenomena.

Conclusion

Black holes remain among the most mysterious objects in the cosmos—bridging the gap between science fiction and reality.

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“Exploring the unknown through science and imagination.”