

## TELESCOPE PAPER

### Abstract

This review delves into the historical development and prospective advancements in telescope technology for astronomical observation. Starting with foundational optical principles that define telescope operation, it categorizes telescopes by electromagnetic wave usage and operational methodologies, illustrating their varied applications both in space and on Earth. Tracing a path from the early innovations of Hans Lippershey and Galileo Galilei, the review covers the evolution of optical, radio, gamma, x-ray, infrared, and ultraviolet telescopes over the last century.

The article then shifts focus to upcoming advancements, including the expansion of the Event Horizon Telescope, new exoplanetary surveys, and ambitious explorations into dark matter and dark energy. Concluding with a forward-looking perspective, it emphasizes the essential role telescopes play in unraveling cosmic mysteries, paving the way for groundbreaking discoveries. As humanity continues to explore the universe, telescopes remain critical tools illuminating our journey toward unprecedented scientific understanding.