

Hubble Space Telescope (HST)

The Hubble Space Telescope, or HST, is a space telescope that was launched into the low Earth orbit in 1990. It is an operation telescope and has been successful in capturing humanity's imagination and enhanced the knowledge of cosmos.

Given below is a table with the basic information about the Hubble Space Telescope:

Hubble Space Telescope (HST)	
Operated by	<ul style="list-style-type: none">• National Aeronautics and Space Administration (NASA)• European Space Agency (ESA)• Space Telescope Science Institute (STScI)
Mission Type	Astronomy
Duration of Mission	30 years passed; still ongoing
Launch Date	April 24, 1990
Launch Rocket	Space Shuttle Discovery
Launch Site	John F. Kennedy Space Centre, Florida [Launch Complex 39]
Diameter of the telescope lens	2.4 m

About the Hubble Space Telescope

- The Hubble Space Telescope is named after the astronomer Edwin Hubble, whose contribution in the field of astronomy and cosmology are remarkable
- It is a large space telescope and was launched in 1990 and is still operational. It is expected to decay by 2030-2040
- Hubble features a 2.4-meter mirror, and its four main instruments include ultraviolet, visible, and near-infrared regions of the electromagnetic spectrum
- It is the only telescope which has been designed in a manner that it can be serviced by astronauts in space. Till date 5 Space Shuttle missions have been conducted to repair and upgrade the parts of the telescope
- The telescope has been built by NASA, along with contributions from the European Space Agency (ESA)
- It is one of the largest space telescopes which can perform versatile missions. However, with the ongoing construction of the [Thirty Meter Telescope](#), HST will no longer with the largest light-vision telescope in the world

Significance of a Space Telescope

A lot of cosmic activities happen in space and to learn about them and the future of human existence, scientists and researchers felt the requirement to have a space telescope.

Discussed below are a few points of significance regarding the need of a Space Telescope:

- For the purpose of Cosmic Revelations
- It can show the evolution of galaxies
- To discover the undiscovered planets and stars
- Space Telescope will help in studying the Science of tomorrow

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List Of Space Centres & Indian Space Agencies	Science, Technology and Innovation Policy (STIP)
Indian National Space Promotion and Authorisation Centre (IN-SPACe)	Indian Space Research Organisation (ISRO)

Features of Hubble Space Telescope

Based on its construction and the elementary parts which have constituted its functions, Hubble telescope has made several observations which were unimagined for the researchers.

Discussed below are few of the major features of Hubble Space Telescope:

- At one time, five scientific instruments can be accommodated in Hubble, along with it, the Fine Guidance Sensors can be installed in the telescope
- Hubble is 43.5 feet long, and 14 feet wide, and weighs about 27,000 pounds
- The instruments which have been installed in Hubble include:
 - **Camera** - Advanced Camera for Surveys (ACS) and the Wide Field Camera 3 (WFC3) are the two primary cameras which have been installed to click images of the comos
 - **Spectrographs** - The science of breaking light down to its components is called spectrography, and this device performs a similar function
 - **Interferometers** - A total of three interferometers are aboard Hubble which are called Fine Guidance Sensors and are useful in measuring the relative positions and brightnesses of stars
 - **Past Instruments** - Since the telescope has been serviced 5 times until 2020. The instruments which were a part of Hubble, but have now been replaced include: High Speed Photometer, Faint Object Camera & Spectrograph, Goddard High Resolution Spectrograph, and Wide Field and Planetary Camera 2
 - **Current Instruments** - The instruments which are still a part of the telescope (as in 2020), includes

- Advanced Camera for Surveys (ACS)
- Cosmic Origins Spectrograph (COS)
- Space Telescope Imaging Spectrograph (STIS)
- Wide Field Camera 3 (WFC3)
- Fine Guidance Sensor (FGS)
- Near Infrared Camera and Multi-Object Spectrometer (NICMOS)

Observations under Hubble Space Telescope Mission

Since 1990, Hubble has made over 1.4 million observations, 17,000+ research papers have been written over these observations, and has managed to track the interstellar and celestial bodies present in space.

Given below are a few major observations made on the basis of the Hubble Space Telescope (HST):

- It has helped in discovering the moons around Pluto
- Hubble's domain extends from the ultraviolet through the visible and into the near-infrared
- Dusty disks and stellar nurseries have been discovered by Hubble, although the Milky Way. These may one day be studied in the atmosphere and planetary features
- Evidences regarding the existence of black holes have been emerged based on the observations through Hubble
- The birth of stars through turbulent clouds of gas and dust have also been observed

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