

Galaxies are the major building blocks of the universe.

A galaxy is giant family of many millions of stars, and it is held together by its own gravitational field.

Most of the material universe is organized into galaxies of stars together with gas and dust.

There are three main types of galaxy: spiral, elliptical, and irregular.

The Milky Way is a spiral galaxy, a flattish disc of stars with two spiral arms emerging from its central nucleus.

About one-quarter of all galaxies have this shape.

Spiral galaxies are well supplied with the interstellar gas in which new stars form: as the rotating spiral pattern sweeps around the galaxy it compresses gas and dust, triggering the formation of bright young stars and in its arms.

The elliptical galaxies have a symmetrical elliptical or spheroidal shape with no obvious structure.

Most of their member stars are very old and since ellipticals are devoid of interstellar gas, no new stars are forming in them.

The biggest and brightest galaxies in the universe are ellipticals with masses of about 10^{13} times that of the Sun, these giants may frequently be sources of strong radio emission, in which case they are called radio galaxies.

About two-thirds of all galaxies are elliptical.

Irregular galaxies comprise about one-tenth of all galaxies and they come in many subclasses.

Measurement in space is quite different from measurement on Earth.

Some terrestrial distances can be expressed as intervals of time, the time to fly from one continent to another or the time it takes to drive to work, for example.

By comparison with these familiar yardsticks, the distances to the galaxies are incomprehensibly large, but they too are made more manageable by using a time calibration, in this case the distance that light travels in one year.

On such a scale the nearest giant spiral galaxy, the Andromeda galaxy, is two million light years away.

The most distant luminous objects seen by telescopes are probably ten thousand million light years away.

Their light was already halfway here before the Earth even formed.

The light from the nearby Virgo galaxy set out when reptiles still dominated the animal world.