

Messier 49 - 58 - 59 - 60 - 61 - 84 - 86 - 87 - 89 - 90 and 104. Many are part of the Virgo Cluster galaxies

Messier 49 (also known as M 49 or NGC 4472) is an elliptical galaxy located about 56 million light-years away in the equatorial constellation of Virgo. This galaxy was discovered by French astronomer **Charles Messier** on February 16, 1777.

As an elliptical galaxy, Messier 49 has the physical form of a radio galaxy, but it only has the radio emission of a normal galaxy. The nucleus of this galaxy is emitting X-rays, suggesting the likely presence of a supermassive black hole with an estimated mass 565 million times the mass of the Sun. X-ray emissions shows a structure to the north of Messier 49 that resembles a bow shock. To the southwest of the core, the luminous outline of the galaxy can be traced out to a distance of 260 kpc. The only supernova event observed within this galaxy is SN 1969Q, discovered in June 1969. This galaxy has a large collection of globular clusters, estimated at about 5,900. However, this count is far exceeded by the 13,450 globular clusters orbiting the supergiant elliptical galaxy Messier 87 (see below). On average, the globular clusters of M 49 are about 10 billion years old. Between 2000 and 2009, strong evidence for a stellar mass black hole was discovered in an M 49 cluster. A second candidate was announced in 2011.

Messier 49 was the first member of the Virgo Cluster of galaxies to be discovered. It is the most luminous member of that cluster and more luminous than any galaxy closer to the Earth. This galaxy forms part of the smaller Virgo B subcluster located 4.5° away from the dynamic centre of the Virgo Cluster, centred on Messier 87.

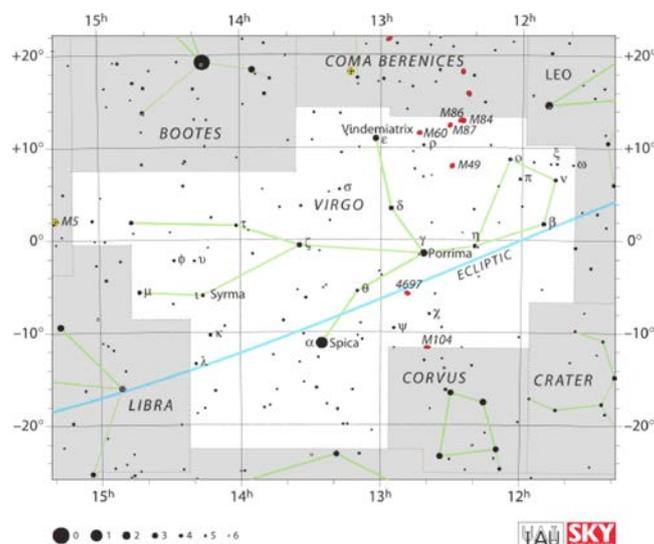
Virgo contains ten other Messier objects: Messier 58 (M58, NGC 4579), Messier 59 (M59, NGC 4621), Messier 60 (M60, NGC 4649), Messier 61 (M61, NGC 4303), Messier 84 (M84, NGC 4374), Messier 86 (M86, NGC 4406), Messier 87 (M87, NGC 4486), Messier 89 (M89, NGC 4552), Messier 90 (M90, NGC 4569) and Messier 104 (M104, NGC 4594, Sombrero Galaxy).

Virgo is one of the constellations of the zodiac. Its name is Latin for virgin. Lying between Leo to the west and Libra to the east, it is the second-largest constellation in the sky (after Hydra) and the largest constellation in the zodiac. It can be easily found through its brightest star, Spica.

MYTHOLOGY

In the Babylonian (c. 10th century BC), part of this constellation was known as "The Furrow", representing the goddess Shala and her ear of grain. One star in this constellation, Spica, retains this tradition as it is Latin for "ear of grain", one of the major products of the Mesopotamian furrow. For this reason the constellation became associated with fertility.

Early Greek astronomy associated the Babylonian constellation with their goddess of wheat and agriculture, Demeter. The Romans associated it with their goddess Ceres. Another figure who is associated with the constellation Virgo was the spring goddess Persephone, the daughter of Zeus and Demeter who had married Hades and resided in the Underworld during summer. Virgo is sometimes associated with the Blessed Virgin Mary.



Due to the effects of precession, the First Point of Libra, (also known as the autumn equinox point) lies within the boundaries of Virgo very close to β Virginis. This is one of the two points in the sky where the celestial equator crosses the ecliptic (the other being the First Point of Aries, now in the constellation of Pisces.) This point will pass into the neighbouring constellation of Leo around the year 2440.

There are 35 verified exoplanets orbiting 29 stars in Virgo, including PSR B1257+12 (three planets), 70 Virginis (one planet), Chi Virginis (one planet), 61 Virginis (three planets), NY Virginis (two planets), and 59 Virginis (one planet).

Because of the presence of the galaxy cluster (consequently called the Virgo Cluster) within its borders, this constellation is especially rich in galaxies. Some examples are Messier 49 (elliptical), Messier 58 (spiral), Messier 59 (elliptical), Messier 60 (elliptical), Messier 61 (spiral), Messier 84 (lenticular), Messier 86 (lenticular), Messier 87 (elliptical and a famous radio source), Messier 89 (elliptical) and Messier 90 (spiral).

M87 is the largest galaxy in the Virgo cluster, and is at a distance of 60 Mly from Earth. It is a major radio source, partially due to its jet of electrons being flung out of the galaxy by its central supermassive black hole. The French astronomer Charles Messier discovered M87 in 1781, and catalogued it as a nebulous feature. As one of the most massive galaxies in the local Universe, it is notable for its large population of globular clusters, about 12,000 compared to the 150–200 orbiting the Milky Way and its jet of energetic plasma that originates at the core and extends at least 4,900 light-years. It is one of the brightest radio sources in the sky, and a popular target for both amateur and professional astronomers.

In 1922, the American astronomer Edwin Hubble categorized M87 as one of the brighter globular nebulae, as it lacked any spiral structure, but like spiral nebulae, appeared to belong to the family of non-galactic nebulae. In 1926 Hubble produced a new categorization, distinguishing extragalactic from galactic nebulae, the former being independent star systems. M87 was classified as a type of elliptical extragalactic nebula with no apparent elongation (class E0).

In 1931, Hubble described M87 as a member of the Virgo Cluster, and gave a provisional estimate of 1.8 million parsecs (5.9 million light-years) from Earth. It was then the only known elliptical nebula for which individual stars could be resolved, although it was pointed out that globular clusters would be indistinguishable from individual stars at such distances. In his 1936 *The Realm of the Nebulae*, Hubble examines the terminology of the day; some astronomers labelled extragalactic nebulae as external galaxies on the basis that they were stellar systems at far distances from our own galaxy.

M84 is another elliptical radio galaxy in Virgo; it is at a distance of 60 Mly as well. Astronomers have surmised that the speed of the gas clouds orbiting the core (approximately 400 km/s) indicates the presence of an object with a mass 300 million times that of the Sun, which is most likely a black hole.

The Sombrero Galaxy, M104, is an edge-on spiral galaxy located 28 million light-years from Earth. It has a bulge at its centre made up of older stars that is larger than normal. It is surrounded by large, bright globular clusters and has a prominent dust lane made up of polycyclic aromatic hydrocarbons. Virgo is also home to the quasar 3C 273 which was the first quasar ever to be identified. With a magnitude of ~ 12.9 it is also the optically brightest quasar in the sky.

