

MESSIER 15 GLOBULAR CLUSTER

Messier 15 or M15 (also designated NGC 7078) is a globular cluster in the constellation Pegasus. It was discovered by **Jean-Dominique Maraldi** in 1746 and included in **Charles Messier's** catalogue of comet-like objects in 1764. At an estimated 12.0 billion years old, it is one of the oldest known globular clusters.

CHARACTERISTICS

M15 is about 33,600 light-years from Earth, and 175 light years in diameter. It has an absolute magnitude of -9.2, which translates to a total luminosity of 360,000 times that of the Sun. **Messier 15 is one of the most densely packed globulars known in the Milky Way galaxy. Its core has undergone a contraction known as 'core collapse' and it has a central density cusp with an enormous number of stars surrounding what may be a central black hole.**

Home to over 100,000 stars, the cluster is notable for containing 112 variable stars and 8 pulsars, including one double neutron star system, M15 C.

M15 also contains Pease 1, the first planetary nebula discovered within a globular cluster in 1928.

Just three others have been found in globular clusters since then.

AMATEUR ASTRONOMY

At magnitude 6.2, M15 approaches naked eye visibility under good conditions and can be observed with binoculars or a small telescope, appearing as a fuzzy star. Telescopes with a larger aperture (at least 150 mm diameter) will start to reveal individual stars, the brightest of which are of magnitude +12.6. The cluster appears 18 arc minutes in size.

X-RAY SOURCES

Earth-orbiting satellites Uhuru and Chandra X-ray Observatory have detected two bright X-ray sources in this cluster: Messier 15 X-1 (4U 2129+12) and Messier 15 X-2. The former appears to be the first astronomical X-ray source detected in Pegasus.

MYTHOLOGY

Pegasus is a constellation in the northern sky, named after the winged horse Pegasus in Greek mythology. It was one of the 48 constellations listed by the 2nd-century astronomer **Ptolemy**, and is still one of the 88 constellations recognised today.

It is one of the few constellation that appear the right way up in our Southern Hemisphere

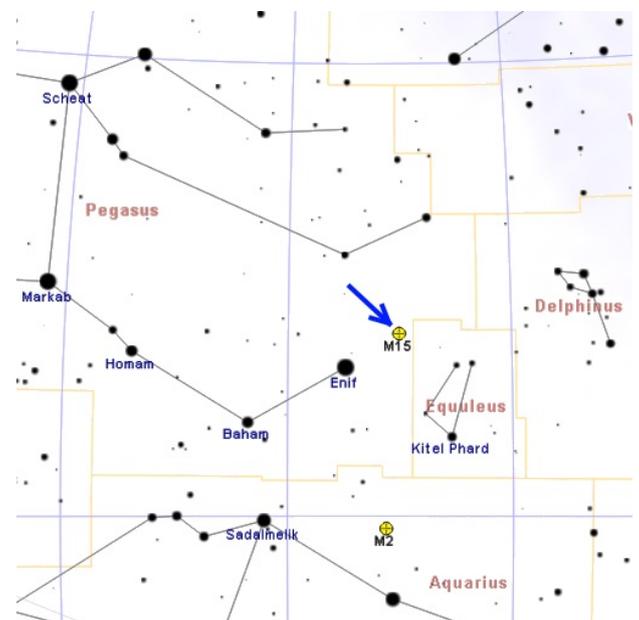
With an apparent magnitude varying between 2.37 and 2.45, the brightest star in Pegasus is the orange supergiant *Epsilon Pegasi*, also known as *Enif*, which marks the horse's muzzle. *Alpha (Markab)*, *Beta (Scheat)*, *Gamma (Algenib)*, and *Delta (Alpheratz, {also part of Andromeda})* form the large asterism known as the Square of Pegasus.

Twelve star systems have been found to have exoplanets. 51 Pegasi was the first Sun-like star discovered to have an exoplanet companion.

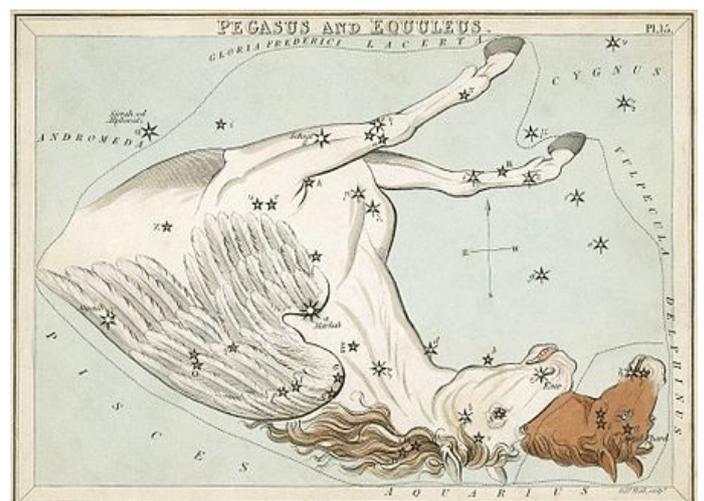
AK, with Wikipedia Notes



M15 photographed by HST. The planetary nebula Pease 1 can be seen as a small blue object to the upper left of the core



M15 near the muzzle of Pegasus, the flying horse



Pegasus with the foal Equuleus next to it, as depicted in Urania's Mirror, published in London c.1825. The horses appear upside-down in relation to the constellations around them.