MESSIER 36 - 37 - 38 OPEN CLUSTERS IN AURIGA

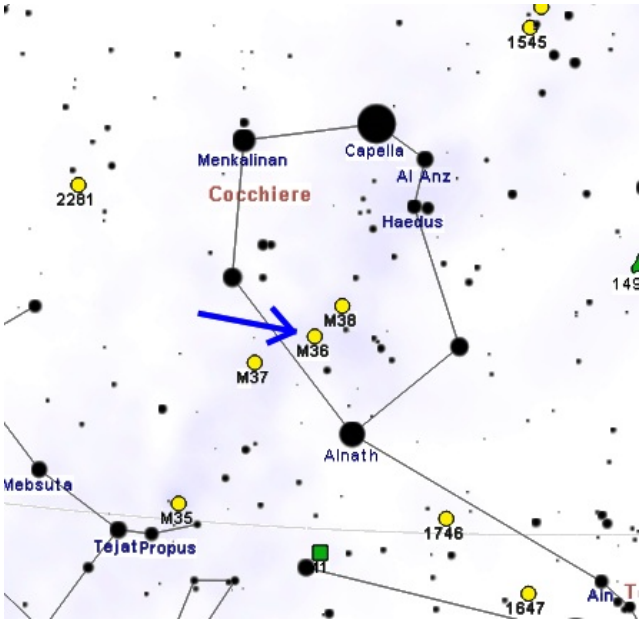
Messier 36 (also known as M36, or NGC 1960) is an open cluster in the Auriga constellation. It was discovered by **Giovanni Batista Hodierna** before 1654. M36 is at a distance of about 1300 pc. (4,100 light years) away from Earth and is about 14 light years across. There are at least sixty members in the cluster. The cluster is very similar to the Pleiades cluster (M45), and if it were the same distance from Earth it would be of similar magnitude

Messier 36 Open Cluster in Constellation Auriga

OBSERVATION DATA (J2000.0 EPOCH)
Constellation Auriga
Right ascension 05h 36m 12s
Declination +34° 08' 4
Distance 4.1 kly (1.3 kpc)
Apparent magnitude (V) 6.3
Apparent dimensions (V) 12'
Radius 7 ly
Estimated age 25 Million years

MESSIER 37

Messier 37 (also known as M37 or NGC 2099) is the richest open cluster in the constellation Auriga. It is the brightest of three open clusters in Auriga and was discovered by the Italian astronomer Giovanni Battista Hodierna before 1654. M37 was missed by French astronomer **Guillaume Le Gentil** when he rediscovered M36 and M38 in 1749. French astronomer **Charles Messier** independently rediscovered M37 in September 1764 but all three clusters were recorded by Hodierna. It is classified as Trumpler type I,1,r.



Auriga Constellation, showing Messier 36 - 37 and 38

OBSERVATION DATA (J2000.0 EPOCH)
Constellation Auriga
Right ascension 5h 52m 18s
Declination +32° 33' 02"
Distance 4.511 kly (1.383 kpc)
Apparent magnitude (V) 6.2
Apparent dimensions (V) 24'
Mass 1,500 $M_\odot$ (mass of the Sun)
Radius 10-13 ly
Estimated age 346.7 to 550 Ma (Mega Years)
Other designations NGC 2099

Messier 37 Open Cluster in Constellation Auriga

M37 is located in the antipodal direction, opposite from the Galactic Center as seen from Earth. Estimates of its age range from 347 million to 550 million years. It has 1,500 times the mass of the Sun and contains over 500 identified stars, with roughly 150 stars brighter than magnitude 12.5.
M37 has at least a dozen red giants and its hottest surviving main sequence star is of stellar classification B9 V. The abundance of elements other than hydrogen and helium, what astronomers term metallicity, is similar to, if not slightly higher than, the abundance in the Sun. At its estimated distance of around 4,500 light-years from Earth, the cluster's angular diameter of 24 arcminutes corresponds to a physical extent of about 20–25 light years. The tidal radius of the cluster, where external gravitational perturbations begin to have a significant influence on the orbits of its member stars, is about 46–59 ly. This cluster is following an orbit through the

Milky Way with a period of 219.3 Ma and an eccentricity of 0.22. This will bring it as close as 19.6 kly (kilo light years) to, and as distant as 30.7 kly from, the Galactic Centre. It reaches a peak distance above the galactic plane of 0.29 kly and will cross the plane with a period of 31.7 Ma.

MESSIER 38

Messier 38 (also known as M38 or NGC 1912) is an open cluster in the constellation Auriga. It was discovered by Giovanni Batista Hodierna before 1654 and independently found by **Le Gentil** in 1749. Open cluster M36 and M37 are often grouped together with M38. Distance is about 3,480 ly away from Earth. **The cluster's brightest stars form a pattern resembling the Greek letter Pi or, according to Webb, an "oblique cross."**

At its distance of 1066 pc., its angular diameter of about 20 arc minutes corresponds to about 4.0 parsecs (13 light years), similar to that of its more distant neighbour M37. It is of intermediate age at about 290 million years. From the population of about 100 stars, this open cluster features a prominent yellow giant with the apparent magnitude +7.9 and spectral type G0 as its brightest member. This corresponds to an absolute magnitude of -1.5, or a luminosity of 900 Suns.

OBSERVATION DATA (J2000.0 EPOCH)
Constellation Auriga
Right ascension 5h 28m 42s
Declination +35° 51' 18"
Distance (1.066 kpc (3,480 ly)
Apparent magnitude (V) 7.4
Apparent dimensions (V) 21'
Radius 4pc. (13 ly.)
Estimated age 290 Million years
Other designations NGC 1912


Messier 38 Open Cluster in Constellation Auriga

Walter Scott Houston described its appearance as: "Photographs usually show a departure from circularity, a feature quite evident to visual observers. Older reports almost always mention a cross shape, which seems more pronounced with small instruments. A view with a 24-inch reflector on a fine Arizona night showed the cluster as irregular, and the host of stars made fruitless any effort to find a geometrical figure."

THE AURIGA CONSTELLATION

Auriga is one of the 88 modern constellations; it was already among the 48 constellations listed by the 2nd-century astronomer **Ptolemy**. Located north of the celestial equator, its name is the Latin word for “the charioteer”, and the constellation was probably created by the ancient Greeks to commemorate the importance of the chariot in their society. Auriga is most prominent during winter evenings in the northern Hemisphere, along with the five other constellations that have stars in the Winter Hexagon asterism. Because of its northern declination, Auriga is only visible in its entirety as far as 34° south; for observers farther south it lies partially or fully below the horizon.

The Greek Charioteer, carrying a goat kid under his left arm and a whip in the other hand

A large constellation, with an area of 657 square degrees, it is half the size of the largest constellation, Hydra.

Its brightest star, Capella, is an unusual multiple star system among the brightest stars in the night sky. Because of its position near the winter Milky Way, Auriga has many bright open clusters in its borders, including M36, M37, and M38, popular targets for amateur astronomers. In addition, it has one prominent nebula, the Flaming Star Nebula, associated with the variable star *AE Aurigae*. AK, with Wikipedia Notes