

Globular Clusters

How did the famous cluster 'Omega Centauri' get its name? The ancients thought it was a star!

Term first used by William Herschel in 1786. At this time there are ~150 globular clusters that have part of our galaxy.

First Globular Cluster discovered was by a German, Abraham Ihle, who found M-22 while observing Saturn in 1665. At that time, they were called nebulae. By 1746 the count had risen to 6.

The true nature of this class of cluster had to wait for the spectroscope's application to stellar spectrum and the resulting classification of the stars (by Secchi). Further studies hinged on the discovery of RR Lyra stars in the clusters (1900 by Bailey) and the introduction of the Hertzsprung-Russell diagram in 1905. Other key studies for leading to the understanding of globular clusters was the solar systems distance from the center of the galaxy done by Shapley in 1917. (Demo drawing)

Classification Systems

The most frequently used system used by amateurs was created by Harlow Shapley and is based on the visual view of the cluster's core. It ranges from I to XII, with I being the most condensed core to XII being the loosest.

The other classifications are based on spectroscopic (Show and define) and variable star information. (Absorption and emission lines, width, red shift, angle)

W. W. Morgan used the integrated spectrum of the cluster and numbered them I-VIII. I having very weak metallic lines and VIII having the strongest metallic lines (Note what is meant by metals!). This classification system shows the probable variation in the cluster formation during the earliest part of our galaxy's evolution.

Deutsch-Kinman System:

This system uses the abundance of metals for its classification. It has 3 steps, A: Medium metal abundance, B: Low metal abundance, and C: Very low metal abundance. (Show range on drawing)

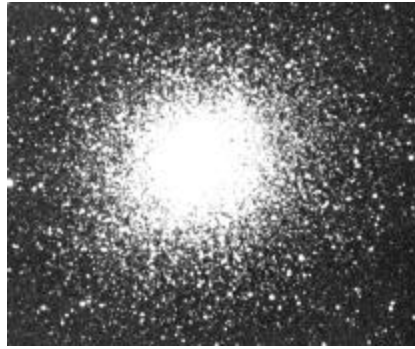
Oosterhoff system:

This system uses two types of RR Lyrae stars to group the clusters. The first group contains the RRc variable stars with periods of < .4 days and a low amplitude. (DEFINE) These are bluer than the second group, defined by the RRab variable stars which have periods >.4 days and amplitudes of up to 1.7 M.

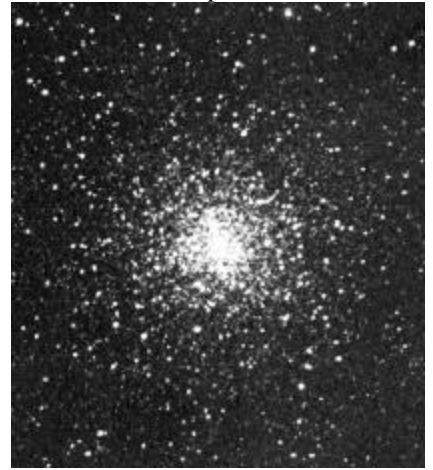
Class 1 M-75 Sagittarius



Class 5 M-13 Hercules



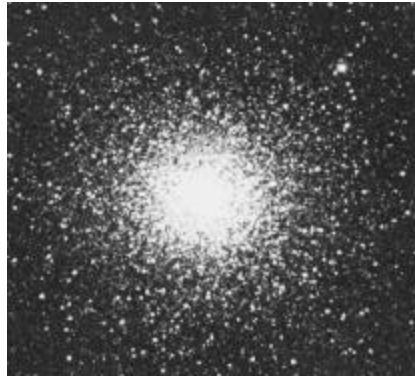
Class 9 M-4 Scorpius



Class 2 M-80 Scorpius



Class 6 M-3 Canes Venatici



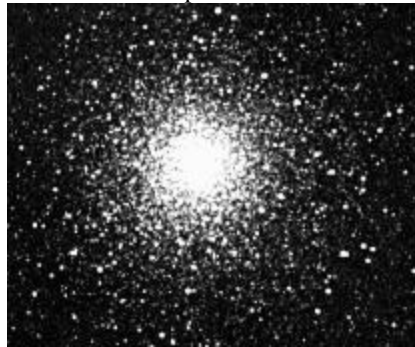
Class 10 M-57 Lyra



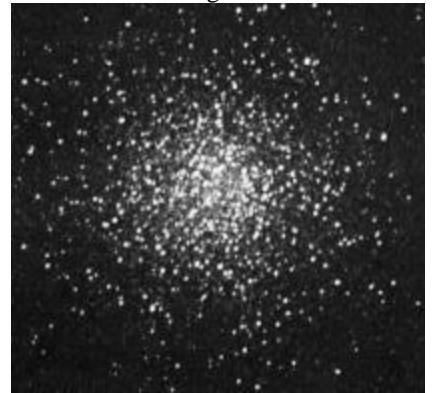
Class 3 M-54 Sagittarius



Class 7 M-10 Ophiuchus



Class 11 M-55 Sagittarius



Class 4 M-92 Hercules



Class 8 M-14 Ophiuchus



Class 12 NGC 5466 Bootes

