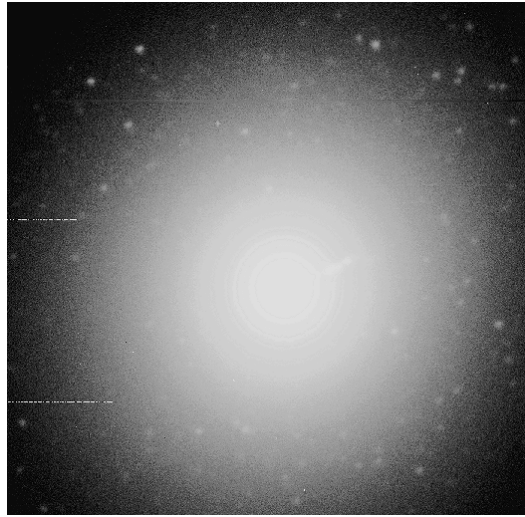


Clusters in M87 vs Clusters in the Antennae



Background:

Globular clusters are ubiquitous throughout the universe, with most galaxies having a set. There are around 155 clusters known in the Milky Way, but Andromeda has nearly 500 and M87 has more than 14,000.

M87/NGC 4486 is a giant elliptical galaxy in the center of Virgo cluster. Its globular cluster system was first noticed by William Baum in 1955. Since then, thousands have been discovered and studied. It turns out that of all the globular clusters in the Virgo cluster combined, a third are associated with M87. This is far from a typical system.

The Antennae galaxies are unusual not for their number of globular clusters, but because of the clusters' association with "super star clusters." Globular clusters are usually thought of old groups of stars, but the Antennae appear to be forming them.

These two galaxies' sets of globular clusters can be compared using color-color diagrams. The method and associated complications is described in the exercise "Age Dating Clusters in the Antennae Galaxies."

Purpose:

Use color-color diagrams to compare/contrast the globular clusters in M87 and the Antennae galaxies.

Things you will need to get:

DAOphot catalogs for HST project ID 05962, visit 4 and HST project ID 06775, visit 4(Hubble Legacy Archive)

SSP cluster evolution model (Padova's CMD database has sets. Make sure to pick the right filters.)

Extinction for each band (NED has UBVRI extinction, don't worry about the different magnitude system)

Distance modulus of the Antennae (see Whitmore et al. 2010) and M87 (see Sandage & Tammann, 1996)

Hints:

Don't worry about using the concentration index to select clusters in M87, but make sure none of your clusters are really remnants from the jet!