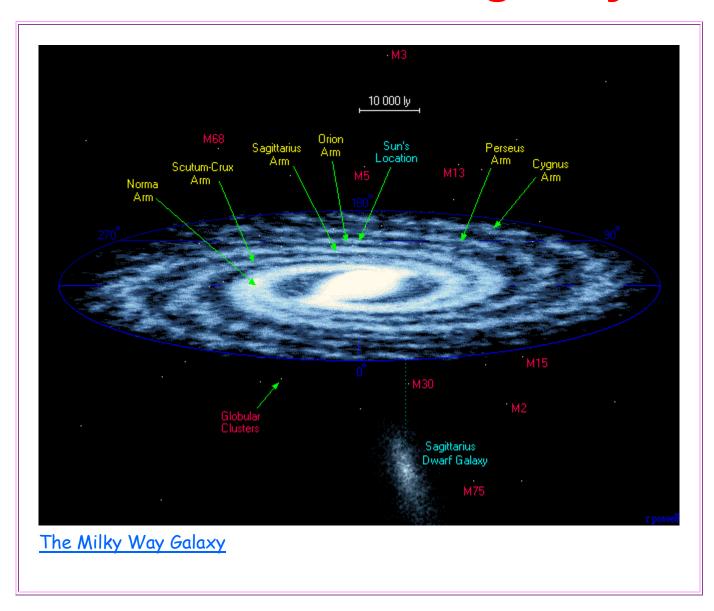
# **New Ice Age Ahead**

# Globular Clusters In the halo of the galaxy



clusters of stars (globes), above and below the galactic plane

Globular star clusters are "spherical micro-galaxies" of stars that are found in the 'halo' of a galaxy. They are electrically bound spheres of stars. Some are densely populated, and some are not. They cannot be anything else than electrically bound structures, because if by some miracle gravity would reach as far as to hold them in their grasp, whereby they were held together, the entire structure would have been gravity-collapsed. But this isn't happening.



NASA - Globular Clusters

"Astronomers used NASA's Hubble Space Telescope to identify over 11,000 globular clusters in the Virgo cluster of galaxies. Most are older than 5 billion years. The sharp vision of Hubble's Advanced Camera for

Surveys resolved the star clusters in 100 galaxies of various sizes, shapes, and brightnesses, even in faint, dwarf galaxies. Comprised of over 2,000 galaxies, the Virgo cluster is the nearest large galaxy cluster to Earth, located about 54 million light-years away.

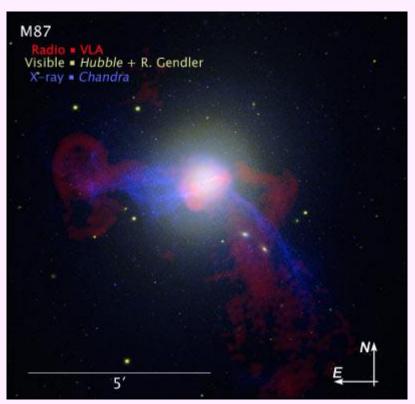
See: Virgo Super Cluster

Astronomers have long known that the giant elliptical galaxy at the cluster's center, M87, hosts a larger than predicted population of globular star clusters. The origin of so many globulars has been a long-standing mystery. The team found a bounty of globular clusters in most dwarf galaxies within 3 million light-years of the cluster's center, where the giant elliptical galaxy M87 resides.

"We found few or no globular clusters in galaxies within 130,000 light-years from M87 (see below), suggesting the giant galaxy stripped the smaller ones of their star clusters," explained Eric Peng of Peking University in Beijing, China, and lead author of the Hubble study. "These smaller galaxies are contributing to the buildup of M87."

The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA). It is managed by NASA's Goddard Space Flight Center (GSFC) in Greenbelt, Md. The Space Telescope Science Institute (STScI) conducts Hubble science operations. The institute is operated for NASA by the Association of Universities for Research in Astronomy, Inc., Washington, D.C. See: NASA - Globular Clusters

The suggestion that M87 has cannibalized the surrounding globular clusters is somewhat unlikely. It is more likely the giant galaxy commandeered most of the electrical energy resources, so that insufficient electric energy density was available in the surrounding galaxies to breed many globular clusters.



Hubble Heritage

The 'lack' of globular clusters beyond 130,000 light-years from M87, suggests that they are evidence of extremely energetic electric environments, surrounding a galaxy. Globular clusters appear to be secondary star formations, reflecting the circulating power of a galaxy. They are not found outside the halo of a galaxy, but are an integral part of the structure of a galaxy. When the halo of a galaxy is immensely powerful, we will likely see many globular clusters within them, wherever the Birkeland currents are converging sufficiently to cause star formation, such as in the dense halo shown below of Galaxy M82.

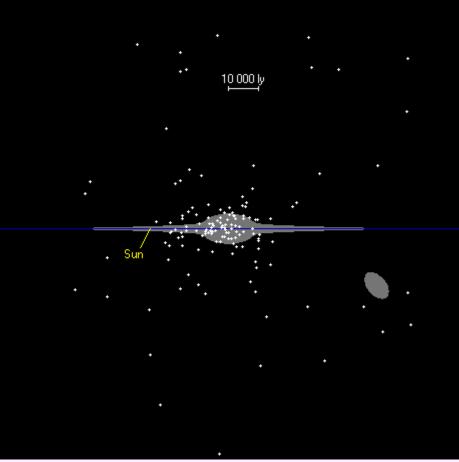


NASA - Composite spectrum image of Galaxy M82

The 'halo' of a galaxy is rarely visible, and even the visible 'halo' of some large galaxies comprises only a small portion of the plasma/electric halo that surrounds a galaxy like the heliosphere surrounds the solar system.

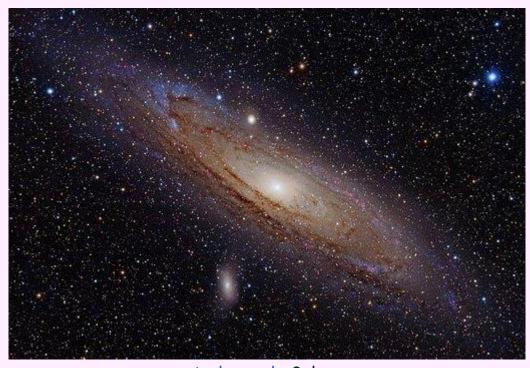


Within the invisible 'halo' (in normal light) of the Milky Way Galaxy, 158 star clusters, or globular clusters, are known to exist.



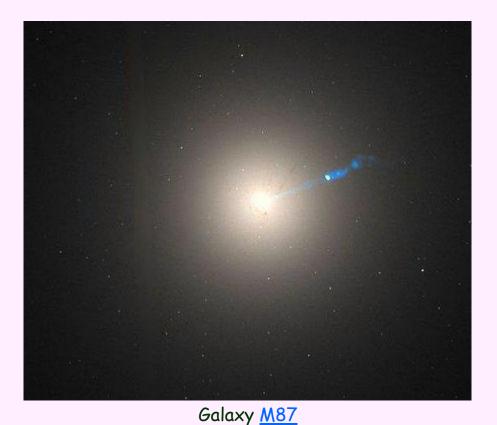
typical distribution of globular clusters

Larger galaxies have proportionately larger number of globular clusters. The  $\underline{\text{Andromeda}}$  Galaxy is believed to to have as many as 500.



Andromeda Galaxy

Still larger galaxies, particularly those at the centers of galaxy clusters, such as G alaxy M87, may have as many as 13,000 globular clusters.



So, what are globular clusters that makes them dependent on being a part of a galaxy?

The answer is a simple one if one considers that star formation takes place in high-density plasma-electric environments where protons and electrons are bound into atoms, and so forth, whereby stars are born. This typically happens in high density Z-pinch environments.

The Z-pinch results from the Lorentz force. A current-carrying conductor in a magnetic field is subjected to an electromagnetic force. When two parallel wires are carrying current in the same direction, the wires become drawn toward each other. Electric plasma can be thought of as many current-carrying wires laid out in space in parallel, all carrying electric current in the same direction so that the current streams are pulled toward each other by the Lorentz force. The result is that the plasma contracts in proportion of the current-flow accumulating, whereby the current density becomes vastly increased to the point that atoms are formed. This happens typically at the center of galaxies according to the Alfven model. From the galactic center the excess energy is redistributed through the halo and back into the spiral arms, forming a closed electric circuit.



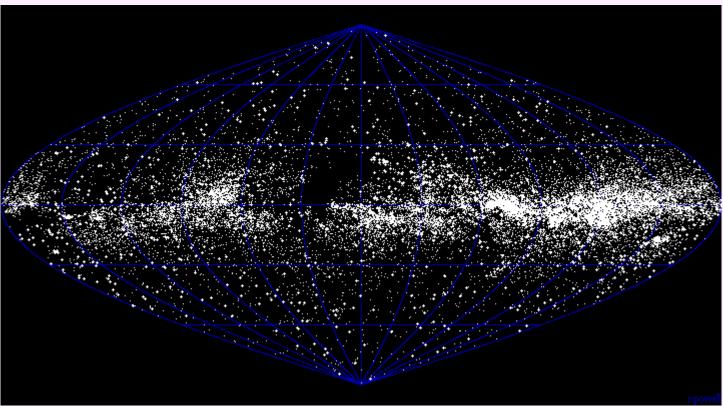
In the halo the currents become split apart into filamentary networks of plasma channels. It would be very much surprising if some nodes in these networks wouldn't converge along the Z-pinch principle to create small star forming regions in different places in the halo structure. And this is exactly what we see in the form of localized clusters of stars within the galactic envelop. Thus globular clusters are born.



HST image of a globular cluster - ngc 2808

In galactic terms the globular clusters are small - in the order of a few hundred thousand stars, depending on the intensity of the Z-pinch currents. It should also be noted that these star clusters are actively powered. Just as no magnetism exists anywhere in the universe without electric currents flowing that create the magnetic fields, so it needs to be also understood that not a single star lights up in the universe that isn't actively powered by electric currents flowing into them.

The very existence of these globular clusters of stars forming at various nodes within the galactic halo networks, tells us that every galaxy is surrounded by a vast sea of plasma-electric currents, which in the case of the Milky Way Galaxy power a light-show of up to 400 billion suns (most of which remain hidden from us - only a few tens of thousands can actually be seen).



a map of 25,000 of the brightest stars visible from Earth (out of 400 billion)

The point is, that the immense electric effects that we observe throughout the galaxy, that the globular clusters are just another point of evidence for, points altogether to an amazingly powerful electric energy environment surrounding our sun, and with it our planet. Once we begin to develop the technology to tap into the galactic electric energy a whole new era of a power-rich future awaits mankind.

Continue: The Globular Clusters - Part 2

Continue: The Globular Clusters - Part 3

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