

Hubble views an old and mysterious cluster

November 14 2013



This cluster of stars is known as Messier 15, and is located some 35 000 light-years away in the constellation of Pegasus (The Winged Horse). It is one of the oldest globular clusters known, with an age of around 12 billion years. Both very hot blue stars and cooler golden stars can be seen swarming together in the

image, becoming more concentrated towards the cluster's bright centre. Messier 15 is one of the densest globular clusters known, with most of its mass concentrated at its core. As well as stars, Messier 15 was the first cluster known to host a planetary nebula, and it has been found to have a rare type of black hole at its centre. This new image is made up of observations from Hubble's Wide Field Camera 3 and Advanced Camera for Surveys in the ultraviolet, infrared, and optical parts of the spectrum. Credit: NASA, ESA

The NASA/ESA Hubble Space Telescope has captured the best ever image of the globular cluster Messier 15, a gathering of very old stars that orbits the centre of the Milky Way. This glittering cluster contains over 100 000 stars, and could also hide a rare type of black hole at its centre.

This multi-coloured firework display is a cluster of stars known as Messier 15, located some 35 000 light-years away in the constellation of Pegasus (The Winged Horse). It is one of the oldest globular clusters known, with an age of around 12 billion years.

Very hot blue stars and cooler golden stars are seen swarming together in this image, becoming more concentrated towards the cluster's bright centre. Messier 15 is one of the densest [globular clusters](#) known, with most of its mass concentrated at its core.

However, this sparkling bauble has hidden secrets. Astronomers studying the cluster with Hubble in [2002](#) found there to be something dark and mysterious lurking at its heart. It could either be a collection of dark neutron stars, or an intermediate-mass black hole. Of the two possibilities it is more likely that Messier 15 harbours a black hole at its centre, as does the massive globular cluster [Mayall II](#).

Intermediate-mass black holes are thought to form either from the

merging of several smaller, stellar-mass black holes, or as a result of a collision between massive [stars](#) in dense clusters. A third possibility is that they were formed during the Big Bang. In terms of mass they lie between the more commonly found stellar-mass and supermassive types of black hole, and could tell us about how [black holes](#) grow and evolve within clusters like Messier 15, and within galaxies.

As well as this black hole, Messier 15 is known to house a planetary nebula, Pease 1—and it was the first globular known to contain one of these objects. This nebula is visible as the bright blue object just to the left of the [cluster](#)'s centre.

This new image is made up of observations from Hubble's [Wide Field Camera 3](#) and [Advanced Camera for Surveys](#) in the ultraviolet, infrared and optical parts of the spectrum.

Provided by ESA/Hubble Information Centre

Citation: Hubble views an old and mysterious cluster (2013, November 14) retrieved 10 April 2024 from <https://phys.org/news/2013-11-hubble-views-mysterious-cluster.html>

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