# Hubble data used to look 10,000 years into the future (w/ Video)

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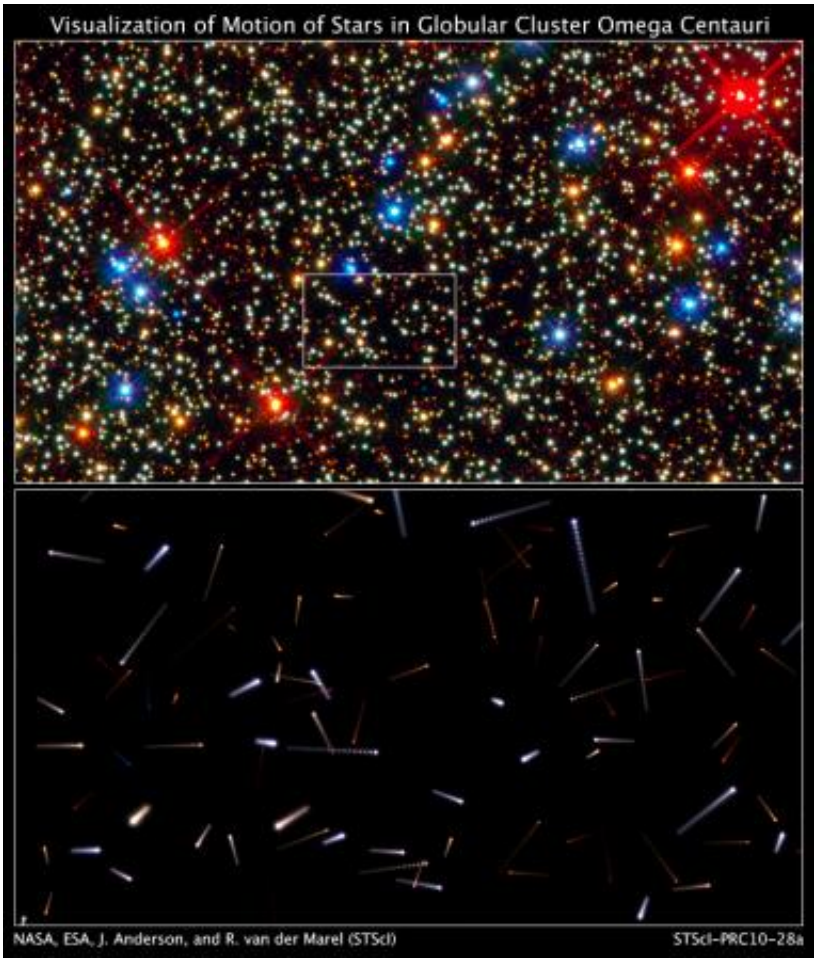


The multicolor snapshot, at top, taken with Wide Field Camera 3 aboard NASA's Hubble Space Telescope, captures the central region of the giant globular cluster Omega Centauri. All the stars in the image are moving in random directions, like a swarm of bees. Astronomers used Hubble's exquisite resolving power to measure positions for stars in 2002 and 2006. From these measurements, they can predict the stars' future movement. The bottom

illustration charts the future positions of the stars highlighted by the white box in the top image. Each streak represents the motion of the star over the next 600 years. The motion between dots corresponds to 30 years. Credit: NASA, ESA, and G. Bacon (STScI)

(PhysOrg.com) -- The globular star cluster Omega Centauri has caught the attention of sky watchers ever since the ancient astronomer Ptolemy first catalogued it 2,000 years ago. Ptolemy, however, thought Omega Centauri was a single star. He didn't know that the "star" was actually a beehive swarm of nearly 10 million stars, all orbiting a common center of gravity.

The stars are so tightly crammed together that astronomers had to wait for the powerful vision of NASA's Hubble Space Telescope to peer deep into the core of the "beehive" and resolve individual stars. Hubble's vision is so sharp it can even measure the motion of many of these stars, and over a relatively short span of time.

A precise measurement of star motions in giant clusters can yield insights into how stellar groupings formed in the early universe, and whether an "intermediate mass" black hole, one roughly 10,000 times as massive as our Sun, might be lurking among the stars.

Analyzing archived images taken over a four-year period by Hubble's Advanced Camera for Surveys, astronomers have made the most accurate measurements yet of the motions of more than 100,000 cluster inhabitants, the largest survey to date to study the movement of stars in any cluster.

"It takes high-speed, sophisticated computer programs to measure the tiny shifts in the positions of the stars that occur in only four years'

time," says astronomer Jay Anderson of the Space Telescope Science Institute in Baltimore, Md., who conducted the study with fellow Institute astronomer Roeland van der Marel. "Ultimately, though, it is Hubble's razor-sharp vision that is the key to our ability to measure stellar motions in this cluster."

Adds van der Marel: "With Hubble, you can wait three or four years and detect the motions of the stars more accurately than if you had waited 50 years on a ground-based telescope."

The astronomers used the Hubble images, which were taken in 2002 and 2006, to make a movie simulation of the frenzied motion of the cluster's stars. The movie shows the stars' projected migration over the next 10,000 years.

Identified as a globular star cluster in 1867, Omega Centauri is one of roughly 150 such clusters in our Milky Way Galaxy. The behemoth stellar grouping is the biggest and brightest globular cluster in the Milky Way, and one of the few that can be seen by the unaided eye. Located in the constellation Centaurus, Omega Centauri is viewable in the southern skies.

Provided by ESA/Hubble Information Centre