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## PHOTO RELEASE

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### Photo release: Hubble data used to look 10 000 years into the future

26-Oct 2010 **Astronomers are used to looking millions of years into the past. Now scientists have used the NASA/ESA Hubble Space Telescope to look thousands of years into the future. Looking at the heart of Omega Centauri, a globular cluster in the Milky Way, they have calculated how the stars there will move over the next 10 000 years.**

The globular star cluster Omega Centauri has caught the attention of sky watchers ever since the early astronomer Ptolemy first catalogued it 2000 years ago. Ptolemy thought Omega Centauri was a single star and probably wouldn't have imagined that his "star" was actually a beehive swarm of nearly 10 million stars, all orbiting a common centre of gravity.

The stars are so tightly crammed together in the cluster that astronomers had to wait for the Hubble Space Telescope before they could look deep into the core of the "beehive" and resolve the individual stars. Hubble's vision is so sharp that 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 such 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.

Analysing 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 sophisticated computer programs to measure the tiny shifts in the positions of the stars that occur over a period of just four years," says astronomer Jay Anderson of the Space Telescope Science Institute in Baltimore, USA, 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."

Van der Marel adds: "With Hubble, you can wait three or four years and detect the motions of the stars more accurately than if you were using a ground-based telescope and were waiting 50 years."

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. The video can be viewed at [www.spacetelescope.org/news/heic1017/](http://www.spacetelescope.org/news/heic1017/).

Identified as a globular star cluster in 1867, Omega Centauri is one of roughly 150 such clusters in the Milky Way. 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 of Centaurus, Omega Centauri can be seen in the southern skies.

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**Notes for editors**

The Hubble Space Telescope is a project of international cooperation between ESA and NASA.

Image credit: NASA, ESA

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