

c/o ST-ECF
ESO, Karl-Schwarzschild-Str.2
D-85748 Garching bei München,
Germany
Telephone: +49 (0)89 3200 6306
Cellular : +49 (0)173 38 72 621
Telefax: +49 (0)89 3200 6480
hubble@eso.org

www.spacetelescope.org

<p>Video Podcast Episode 4: Hubble Finds Multiple Stellar 'Baby Booms' in a Globular Cluster</p> <p>FOR IMMEDIATE RELEASE 14:00 (CEST)/8:00 AM EDT 2 May 2007</p>		
<p>00:00 [Visual starts]</p> <p>00:02 [Narrator] New Hubble observations of the massive globular cluster NGC 2808 provide evidence that it has three generations of stars instead of one as current theories predict.</p> <p>00:17</p> <p>00:34 [Woman] This is the Hubblecast!</p> <p>News and Images from the NASA/ESA Hubble Space Telescope.</p> <p>Travelling through time and space with our host Doctor J a.k.a. Dr. Joe Liske.</p> <p>00:46 [Dr. J] Welcome to the Hubblecast!</p> <p>Globular clusters are the homesteaders of our Milky Way Galaxy, because they were born during our Galaxy's formation. They are compact swarms of typically hundreds of thousands of stars that have been held together by gravity. Astronomers have long thought that globular clusters experienced a single "baby boom" of star formation at the beginning of their lives and then settled into a rather quiet existence.</p>		<p>Best ani of NGC 2808</p> <p>Image explosion</p> <p>Hubblecast Logo + web site</p> <p>Presented by ESA and NASA</p> <p>TITLE Slide: Episode 4: Hubble Finds Multiple Stellar 'Baby Booms' in a Globular Cluster</p> <p>Virtual studio. Dr J on camera</p> <p>Nametag</p>

<p>New observations by the NASA/ESA Hubble Space Telescope is showing that this idea may be too simple. The Hubble analysis of the massive globular cluster NGC 2808 is providing evidence that instead of having one baby boom of star formation, star birth went “boom, boom, boom”, creating three generations of stars earlier in the cluster’s life.</p> <p>01:43 [Giampaolo Piotto] “We were really struck by the results. I mean when we saw for the first time the CMD (Colour Magnitude Diagram, see http://en.wikipedia.org/wiki/Color-magnitude_diagram) we said WOW. Because we had not expected something like that”.</p> <p>“The picture that we had in mind was that globular clusters were simple stellar systems. Simple because stars that were formed altogether at the same time, from the same material, with the same composition, and stars which are all the same distance. I think this is going to change our view of globular clusters. And in this sense it is a cornerstone result”.</p> <p>02:26 [Narrator] The astronomers used Hubble’s Advanced Camera for Surveys to measure the brightness - seen along this axis - and the colour of the cluster stars – seen here, with blue to the left and red to the right. The measurements showed three distinct populations, with each successive generation appearing slightly bluer. This colour difference suggests that successive generations contain a slightly different mix of some chemical elements.</p> <p>02:55 [Luigi Bedin] “We don’t really know how it really happened, but it may be that the cluster from the first generation expelled a lot of material that only later fell down forming a second generation of stars with completely different chemical properties. The explanation may be consistent with the fact that NGC 2808 is one of the most massive clusters in the Galaxy, able to retain all this gas.”</p> <p>03:21 [Dr J] Astronomers commonly believed that globular clusters produced only a single stellar generation, because the energy from that first batch of stars cleared out the remaining gas needed for more stars. But a hefty cluster like NGC 2808, which is two to three times more massive than a typical globular cluster, may have enough gravity to hold on to that gas.</p> <p>Although the astronomers have searched only two globular clusters for multiple stellar generations, they say this may be a typical occurrence in other massive clusters as well.</p> <p>No one would make the radical step of suggesting that</p>	<p>ZOOM on NGC 2808</p> <p>Giampaolo Piotto of the University of Padua in Italy</p> <p>Leader of the science team</p> <p>Colour-magnitude diagram</p> <p>Luigi Bedin of ESO in Germany</p> <p>Virtual studio. Dr J on camera</p> <p>Pans on NGC 2808</p> <p>NGC 2808 in 3D</p> <p>Virtual studio. Dr J on camera</p>
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previous work on other clusters is no longer valid. But this discovery does show that the study of stellar populations in globular clusters may be heading in a new direction.

The team plans to use ESO's Very Large Telescope in Chile to study the chemical composition of NGC 2808. This may offer further evidence that the stars were formed at different times and may yield clues to how they formed. The team will also use Hubble to hunt for multiple generations in about 10 more hefty globular clusters.

This is Dr. J signing off for the Hubblecast.

Once again, you've guessed it, nature has surprised us beyond our wildest imagination ...

04:46

[Outro]

Hubblecast is produced by ESA/Hubble at the European Southern Observatory in Germany. The Hubble mission is a project of international cooperation between NASA and the European Space Agency.

05:03 END

ESO's VLT in Chile

Virtual studio. Dr J on camera