

Published online 6 April 2005 | Nature | doi:10.1038/news050404-5

News

Universe spawned stars at a young age

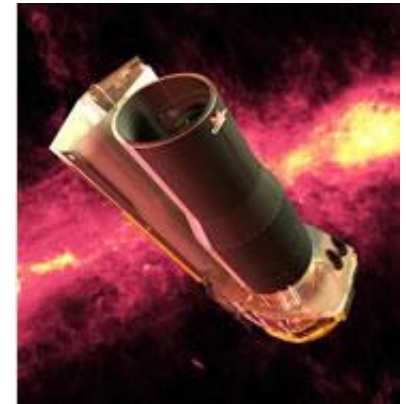
Spitzer telescope reveals surprisingly robust early galaxies.

Andreas von Bubnoff

The Universe's first stars were born a mere 700 million years after the Big Bang, far earlier than researchers previously thought. The discovery comes from images of stars in galaxies that are so far away their light has taken some 13 billion years to reach us.

What's more, the images show that these early galaxies were surprisingly heavy, with as much as a quarter of the mass of galaxies that developed later, such as our Milky Way. "It is a little bit unexpected," says Andrew Bunker of the University of Exeter, UK, who led the research.

Bunker's team used NASA's Spitzer Space Telescope to collect infrared radiation from two of the most distant galaxies known, both found in the constellation Fornax in the southern skies.



The Spitzer telescope is the first to be able to spot truly ancient stars.

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Given the Universe's estimated age of 14 billion years, the team deduced that the galaxies look the way they did just a billion years after the Universe came into being. "This is the first time that old stars have been seen in such a distant object," says Bunker, who presents the findings this week at the National Astronomy Meeting of the Royal Astronomical Society in Birmingham,

UK.

The stars in the images are already well developed, the researchers add. They estimate that the stars are about 300 million years old in the images, meaning that they were born when the Universe was just 700 million years old.

Spectrum spotting

The orbiting Spitzer Space Telescope, launched in 2003, is the first telescope sensitive enough to allow an analysis of the infrared radiation from these stars.

Bunker's team estimated the galaxies' masses by comparing their spectra with models of spectra from galaxies with a known number of stars. Popular models of galaxy formation assume that the early Universe contained only very small galaxies, so "I think this will cause

theorists to think very hard," Bunker says.

But Ken Nagamine, a theorist at the University of California, San Diego, says he is not surprised by the estimates, which match his models. Still, he says, such large galaxies could be the exception rather than the rule. "We predict that there are numerous lower-mass galaxies at the same epoch," Nagamine says.

That is possible, Bunker agrees. Because large galaxies might be the only objects visible at great distances, there could be many smaller galaxies going undetected.

That question may be settled by NASA's James Webb Space Telescope, which is much more sensitive and scheduled for launch in 2011.

Nature ISSN 1744-7933 EISSN 1476-4687

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