

"Long before it's in the papers"

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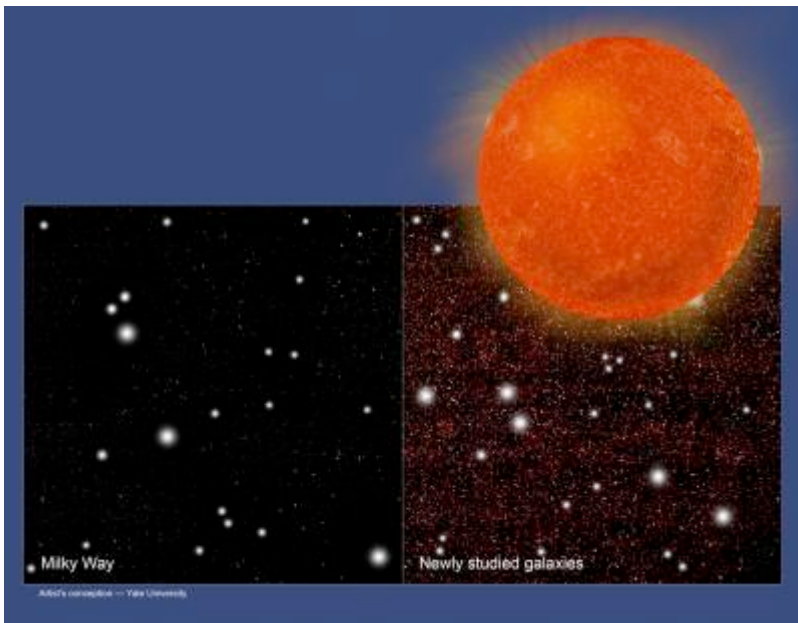
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## Finding “triples” number of stars in universe

Dec. 2, 2010  
Courtesy of Yale University  
and World Science staff

**Little stars called red dwarfs are much more common than previously thought—so much so that any estimate of the total number of stars existing must be tripled, some astronomers have announced.**

**The findings could boost the chances of life existing in the relatively nearby universe, as red dwarfs are considered good candidates for hosting planets with potentially complex life.**



Filtering out the light from brighter stars, astronomers detected the faint signature of small, dim red dwarf stars in nearby elliptical galaxies (right), and found these are much more numerous than in our own Milky Way (left). This finding suggests that the total number of stars in the universe could be up to three times higher than previously thought. (Courtesy of Yale U.)

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**Because red dwarfs are rather dim, astronomers hadn't been able to detect them in most galaxies other than our own before now, the researchers explained. As such, it wasn't known how much of the total stellar population of the universe consists of red dwarfs.**

**Now astronomers have used powerful instruments on the Keck Observatory in Hawaii to detect the faint signature of red dwarfs in eight massive, relatively nearby galaxies called elliptical galaxies. These lie about 50 million to 300 million light years away; a light year is the distance light travels in a year.**

**The investigators found that the red dwarfs, which weigh only 10 to 20 percent as much as the Sun, were far more bountiful than expected. “No one knew how many of these stars there were,” said Pieter van Dokkum, a Yale University astronomer who led the research, which was published Dec. 1 in the advance online issue of the journal *Nature*. “Different theoretical models predicted a wide range of possibilities.”**

**The team discovered that there are about 20 times more red dwarfs in elliptical galaxies than in the Milky Way, said Charlie Conroy of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., who was also involved in the research. “We usually assume other galaxies look like our own. But this suggests other conditions are possible in other galaxies,” Conroy said. “So this discovery could have a major impact on our understanding of galaxy formation and evolution.”**

**For instance, Conroy said, galaxies might contain less dark matter—a mysterious substance that is**

undetectable except through its gravitational effects—than previously estimated. Instead, the abundant red dwarfs could contribute more mass than realized.

In addition to boosting the total number of stars in the universe, the discovery also increases the number of planets orbiting those stars, which in turn elevates the number of planets that might harbor life, van Dokkum said. In fact, a recently discovered planet that astronomers believe could potentially support life orbits a red dwarf star, called Gliese 581.

“There are possibly trillions of Earths orbiting these stars,” van Dokkum said, adding that the red dwarfs they discovered, which are typically more than 10 billion years old, have been around long enough for complex life to evolve. “It’s one reason why people are interested in this type of star.”