
Could free-floating 'nomad' planets carry seeds of life in the universe?

A 'nomad' planet of the right mass, with the right atmosphere, and some source of heat – perhaps radioactive decay or tectonic activity – could allow for life either on the surface or underground.

By [Pete Spotts](#), Staff writer / February 24, 2012



This 2011 handout photo provided by the European Southern Observatory, shows the Milky Way above the La Silla Observatory in Chile. A new study suggests that our galaxy is teeming with 'nomad' planets, that is, planets without suns.

Zdenek Bardon/ProjectSoft, European Southern Observatory/AP/File

Imagine a planet where the night sky is all you have, any time, anywhere you go – where the phrase “day job” has no meaning.

The [Milky Way](#) may hold a vast number of such sunless planets – perhaps up to 100,000 times more than all the stars in the galaxy, according to a new estimate from researchers in the [United States](#) and [Britain](#).

Since 1995, when hunting for planets outside the solar system grew from a fringe field to mainstream astronomy, researchers have uncovered as many as 760 extrasolar planets orbiting other stars – as the Earth orbits the sun – with more than 2,000 additional candidates awaiting confirmation.

The vast majority of these are planets in the classical sense – meaning they orbit host stars, although often arrayed in unusual patterns compared with Earth's home system.

Since 2000, however, astronomers have discovered planets with no obvious stellar home. A group of Spanish astronomers reported that year discovering planets ranging from five to 15 times [Jupiter's](#) mass free floating in a cluster of young stars in the constellation Orion. Last year, two groups of astronomers jointly announced the discovery of 10 Jupiter-class planets, the vast majority free of the grip of any host star. The results appeared last May in the [journal Nature](#).

With evidence mounting that these planetary nomads are no observational fluke, “we were interested in asking the question: Is this just the tip of the iceberg?” says Louis Strigari, a researcher at the [Kavli Institute for Particle Astrophysics and Cosmology](#) at [Stanford University](#) in [Palo Alto, Calif.](#), who led the team making the calculation.

“We were curious about how many of these types of objects could exist,” Dr. Strigari says. The team based its estimate on what researchers have gleaned about the amount of visible matter in the galaxy as well as the abundance of existing chemical elements heavier than hydrogen and helium – the primordial elements from which the universe evolved following the big bang some 13.8 billion years ago. These heavier elements, forged in thermonuclear furnaces deep in the hearts of stars, provide the building blocks for the gases, ice, and rock that comprise planets.

The team's estimate covers planets with masses ranging from Pluto-like to planets with several times Jupiter's mass.

Stigari cautions that the calculation represents a rough cut at a maximum number of nomads. Too little information is known about these kinds of planets and their formation to allow for more-precise estimates. The estimate has been submitted for publication in the Monthly Notices of the [Royal Astronomical Society](#) in Britain.

The ratio of nomads to stars “is a staggering number, if true,” says Ray Jayawardhana, an astronomer at the [University of Toronto](#) who studies the evolution of planets.

“But we have no evidence at all from observations yet that anything close to that number is really out there,” he says. The most one can say from the detection of free-floating planets in clusters of young stars, which typically are several times Jupiter's mass is that the ratio of wanderers to stars is well below one to one, he adds.

But, he notes, the team's estimate also covers far smaller free-floaters, including mass ranges for which there are yet no observed nomads.

Where do homeless planets come from?