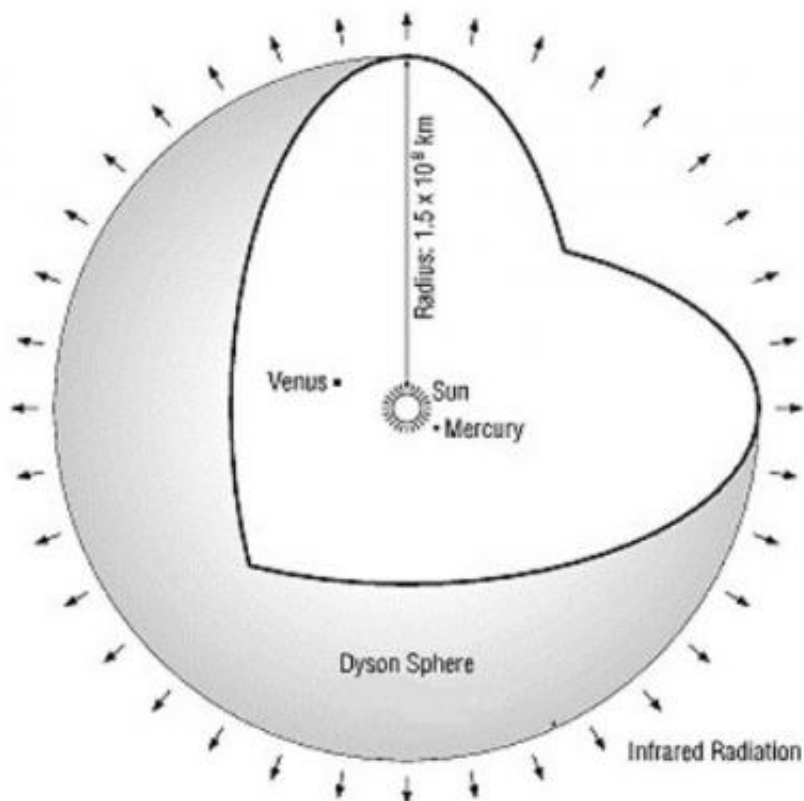


# New idea for Dyson sphere proposed

March 30 2015, by Bob Yirka



A Dyson Sphere with 1 AU radius in Sol system. Credit: arXiv:1503.04376 [physics.pop-ph]

(Phys.org)—A pair of Turkish space scientists with Bogazici University has proposed that researchers looking for the existence of Dyson spheres might be looking at the wrong objects. İbrahim Semiz and Salim Oğur have written a paper and uploaded it to the preprint server *arXiv*, in

which they suggest that if an advanced civilization were to build a Dyson sphere, it would make the most sense to build it around a white dwarf.

The popularization of the idea for a Dyson sphere came about when physicist Freeman Dyson published a paper back in the 60's outlining the idea of an advanced civilization building a sphere around a star to capture its energy for its own use. The idea has been popularized in science fiction and has grabbed the attention of real life researchers who suggest that if a Dyson sphere could be detected, it would present strong evidence for the existence of an advanced extraterrestrial civilization of some sort.

Over time, Dyson and other scientists have found that the massive amount of material needed to build such a sphere would be untenable, thus, a more likely scenario would be a civilization building a ring of energy capturing satellites which could be continually expanded.

But the notion of the sphere persists and so some scientists continue to look for one, believing that if such a sphere were built, the process of capturing the energy from the interior sun would cause an unmistakable infrared signature, allowing us to notice its presence. But thus far, no such signatures have been found. That might be because we are alone in the universe, or, as Semiz and Oğur argue, it might be because we are looking at the wrong types of stars. They suggest that it would seem to make more sense for an advanced civilization to build their sphere around a white dwarf, rather than a star that is in its main sequence, such as our sun—not only would the sphere be smaller (they have even calculated an estimate for a [sphere](#) just one meter thick— $10^{23}$  kilograms of matter) but the gravity at its surface would be similar to their home planet (assuming it were similar to ours).

Unfortunately, if Semiz and Oğur are right, we may not be able to prove it for many years, as the luminosity of a white dwarf is much less than

other stars, making it extremely difficult to determine if the infrared signal is natural, or if it has been altered by aliens.

**More information:** Dyson Spheres around White Dwarfs, arXiv:1503.04376 [physics.pop-ph] [arxiv.org/abs/1503.04376](https://arxiv.org/abs/1503.04376)

## Abstract

A Dyson Sphere is a hypothetical structure that an advanced civilization might build around a star to intercept all of the star's light for its energy needs. One usually thinks of it as a spherical shell about one astronomical unit (AU) in radius, and surrounding a more or less Sun-like star; and might be detectable as an infrared point source.

We point out that Dyson Spheres could also be built around white dwarfs. This type would avoid the need for artificial gravity technology, in contrast to the AU-scale Dyson Spheres. In fact, we show that parameters can be found to build Dyson Spheres suitable —temperature- and gravity-wise— for human habitation. This type would be much harder to detect.

via [TechnologyReview](#)

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