

UVG Universidad Del Valle de Guatemala

Kepler – 442b – Exotierras en la zona habitable

Introducción a la astronomía

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October 8, 2020

Milky Way Galaxy

Kepler Search Space

← 3,000 light years →

Sagittarius Arm



Orion Spur

Perseus Arm

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Sistema Planetario

El planeta **Kepler 442b** se ubica en el sistema planetario Kepler 442.

Datos interesantes:

- Un sistema nombrado en honor a la sonda Kepler.
- $1,206 \pm 9$ ly
- 370 ± 3 pc
- Lyra
- 19h 01m 27.98s,
 $+39^{\circ} 16' 48.30''$

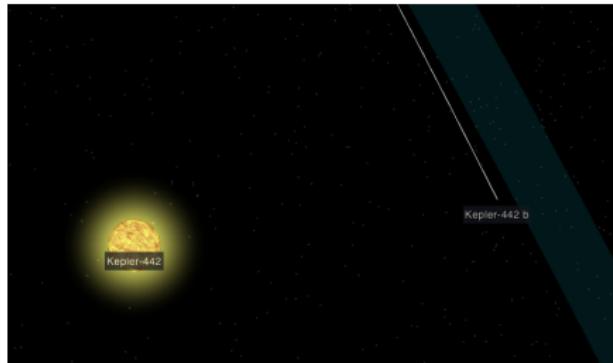


Figura: Kepler 442 — NASA Exploration

Sistema Planetario

19h 01m 27.98s, +39° 16' 48.30"

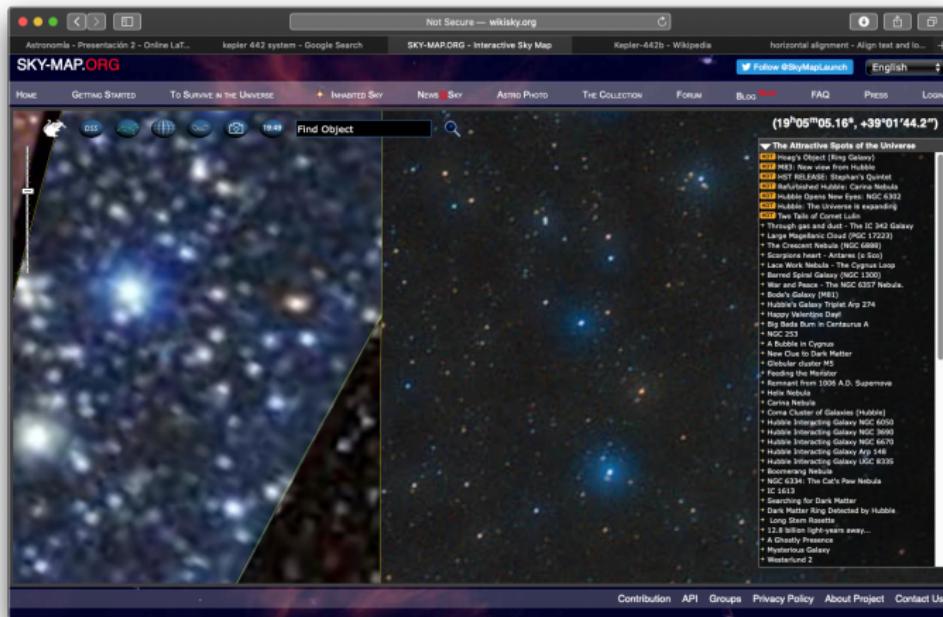


Figura: 19h 01m 27.98s, +39° 16' 48.30"

Sistema Planetario



Figura: Comparación a la órbita de mercurio

Características del planeta

Descripción

Kepler 442b. (2015)

Descubierto por medio del
método de tránsito.

Puntos interesantes:

- NASA/20 científicos
- The Astrophysical Journal
- Enero - Febrero 2020
- 12 planetas
- BLENDER

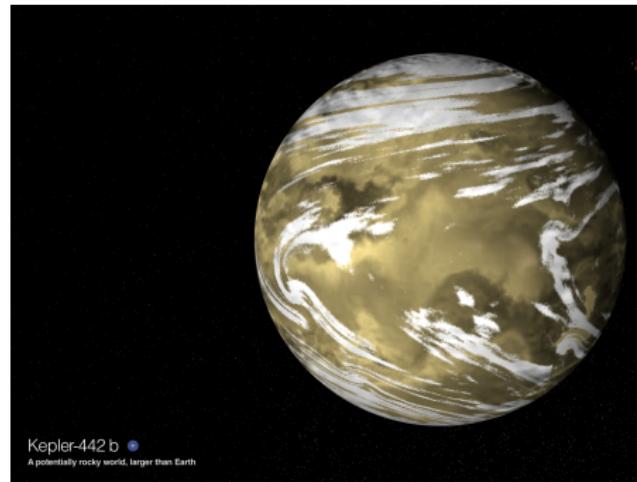


Figura: Kepler 442b — NASA Exploration

Sistema Planetario

ABSTRACT

We present an investigation of twelve candidate transiting planets from *Kepler* with orbital periods ranging from 34 to 207 days, selected from initial indications that they are small and potentially in the habitable zone (HZ) of their parent stars. Few of these objects are known. The expected Doppler signals are too small to confirm them by demonstrating that their masses are in the planetary regime. Here we verify their planetary nature by validating them statistically using the BLENDER technique, which simulates large numbers of false positives and compares the resulting light curves with the *Kepler* photometry. This analysis was supplemented with new follow-up observations (high-resolution optical and near-infrared spectroscopy, adaptive optics imaging, and speckle interferometry), as well as an analysis of the flux centroids. For eleven of them (KOI-0571.05, 1422.04, 1422.05, 2529.02, 3255.01, 3284.01, 4005.01, 4087.01, 4622.01, 4742.01, and 4745.01) we show that the likelihood they are true planets is far greater than that of a false positive, to a confidence level of 99.73% (3σ) or higher. For KOI-4427.01 the confidence level is about 99.2% (2.6σ). With our accurate characterization of the GKM host stars, the derived planetary radii range from 1.1 to $2.7 R_{\oplus}$. All twelve objects are confirmed to be in the HZ, and nine are small enough to be rocky. Excluding three of them that have been previously validated by others, our study doubles the number of known rocky planets in the HZ. KOI-3284.01 (*Kepler*-438 b) and KOI-4742.01 (*Kepler*-442 b) are the planets most similar to the Earth discovered to date when considering their size and incident flux jointly.

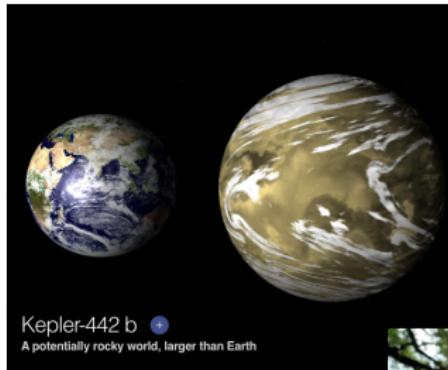
Subject headings: methods: statistical — planetary systems — stars: individual (KOI-0571 = Kepler-186, KOI-1422 = Kepler-296, KOI-2529 = Kepler-436, KOI-3255 = Kepler-437, KOI-3284 = Kepler-438, KOI-4005 = Kepler-439, KOI-4087 = Kepler-440, KOI-4427, KOI-4622 = Kepler-441, KOI-4742 = Kepler-442, KOI-4745 = Kepler-443) — techniques: photometric

Figura: BLENDER

Características del planeta

Descripción

Datos puntuales:



- Súper tierra
- Masa: 2.36T
- Radio: 1.34T
- PO: 112.3 días
- Excentricidad: 0.04
- 0.409 AU

Figura: Comparación a la tierra

Descubrimiento

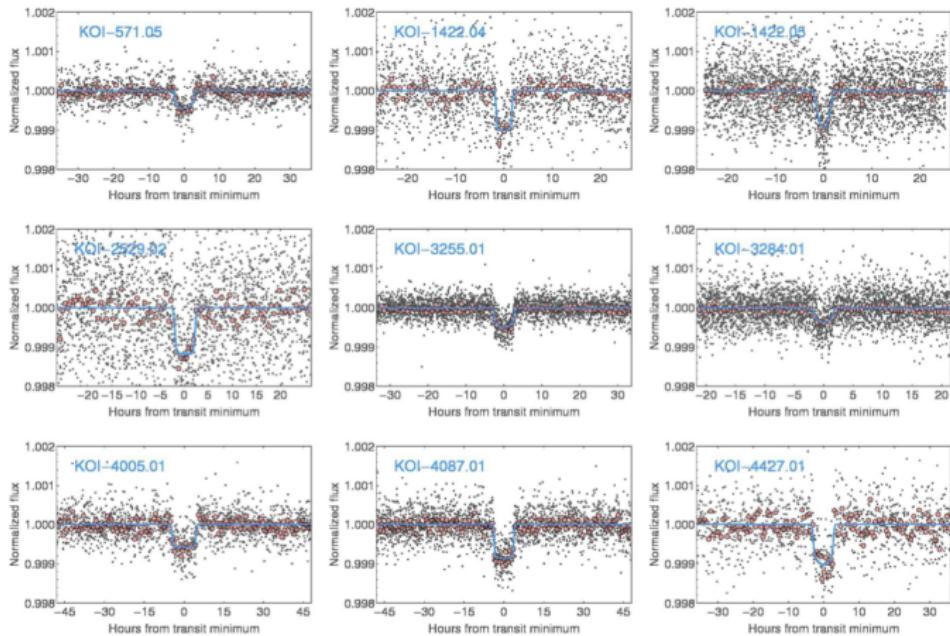


Figura: Sistema

Características de la estrella

Descripción



Figura: Estrella

Datos puntuales:

- Tipo - K
- Masa: 0.5T-0.8T
- Temperatura: 3.900 y 5.200 K
- Dato curioso:
estrellas más buscadas.

Características de la estrella

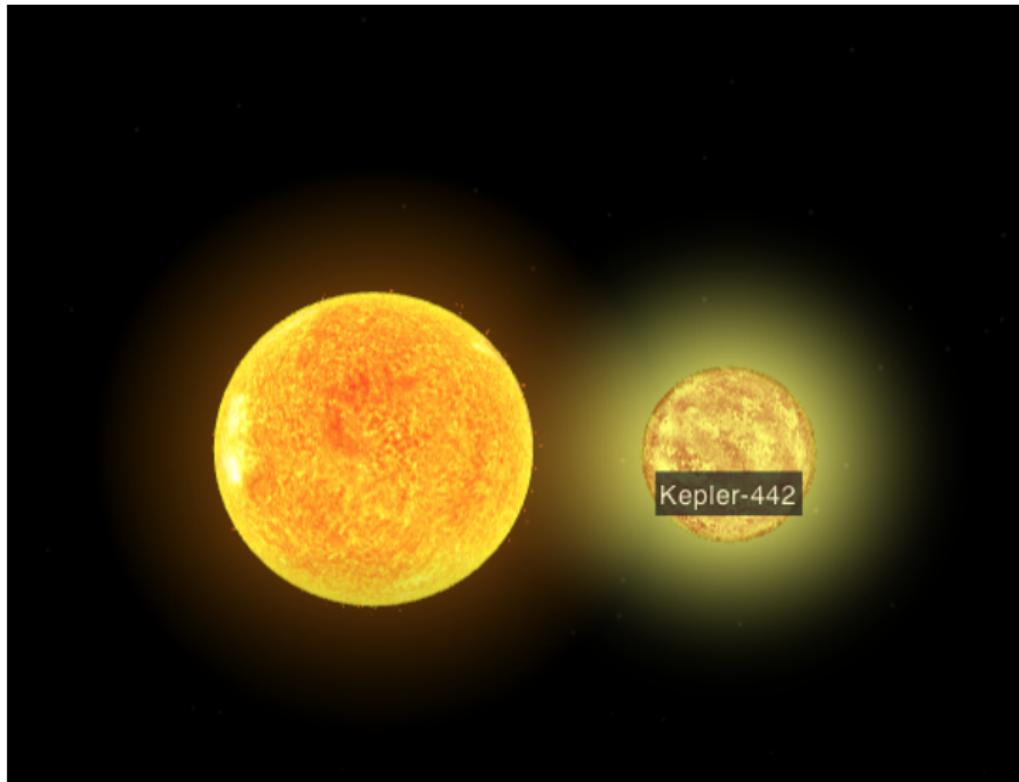


Figura: Comparación al sol

Referecias I

-  Torres, Guillermo, et al.
«Validation of 12 small Kepler transiting planets in the habitable zone.».
2015. Recuperado de:
<https://ui.adsabs.harvard.edu/abs/2015ApJ...800...99T/abstract>
-  Exoplanet Exploration NASA
«Kepler 442b».
2020. Recuperado de:
<https://exoplanets.nasa.gov/exoplanet-catalog/4906/kepler-442-b/>



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