Gone, But Not Forgotten: 372 New Planets Discovered with K2 Data

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June 9th, 2021 AAS Press Panel

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How Unique Is Our Solar System?

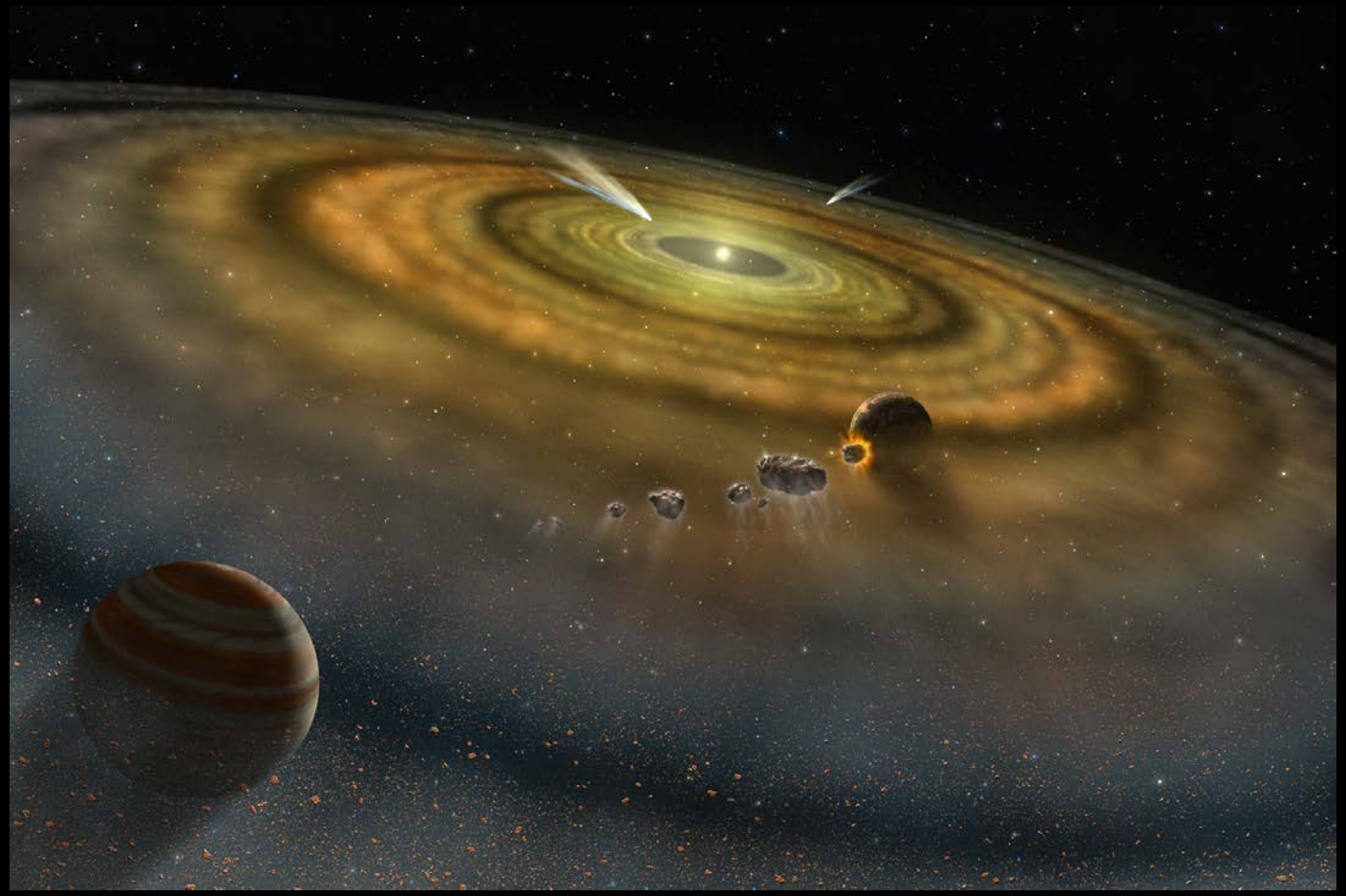
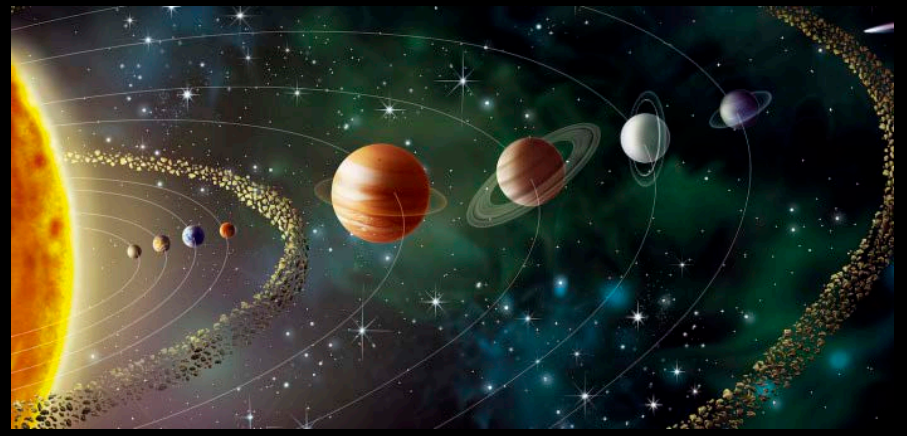


Image Credit: NASA



We need to understand our origin

- How do planets form?

We need to understanding our history

- How do orbits evolve?

The Kepler Mission

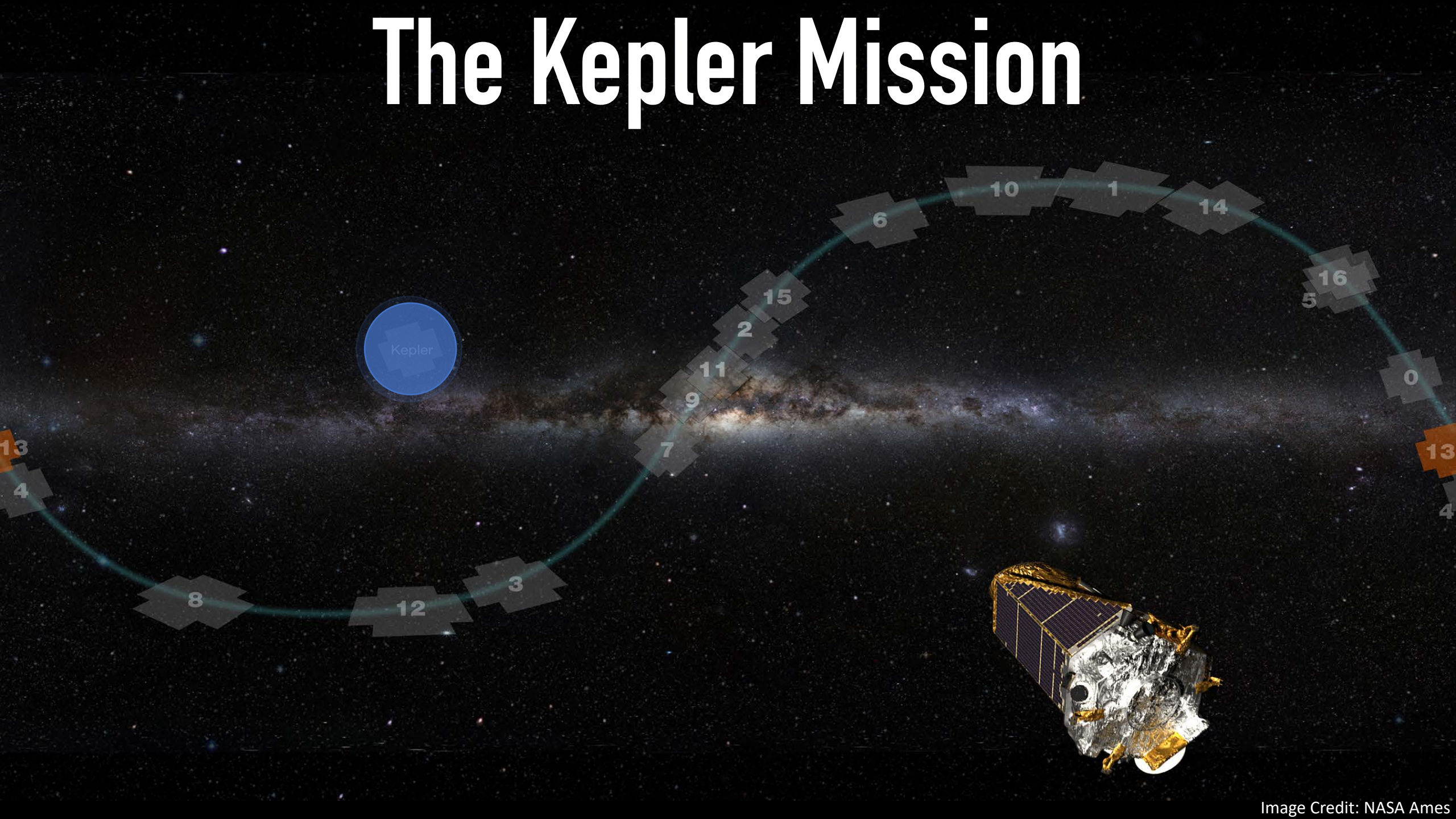


Image Credit: NASA Ames

The Kepler Mission

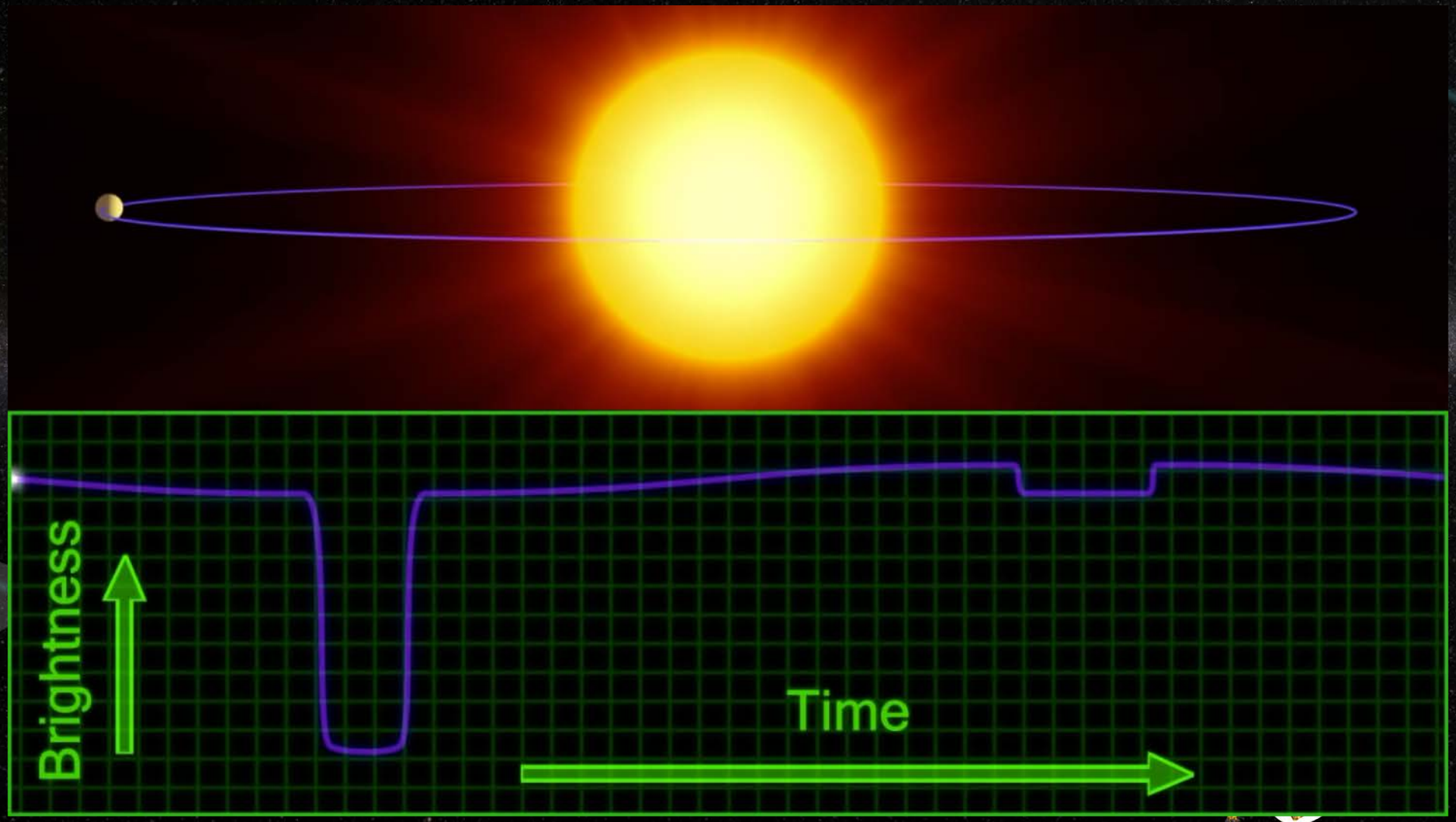
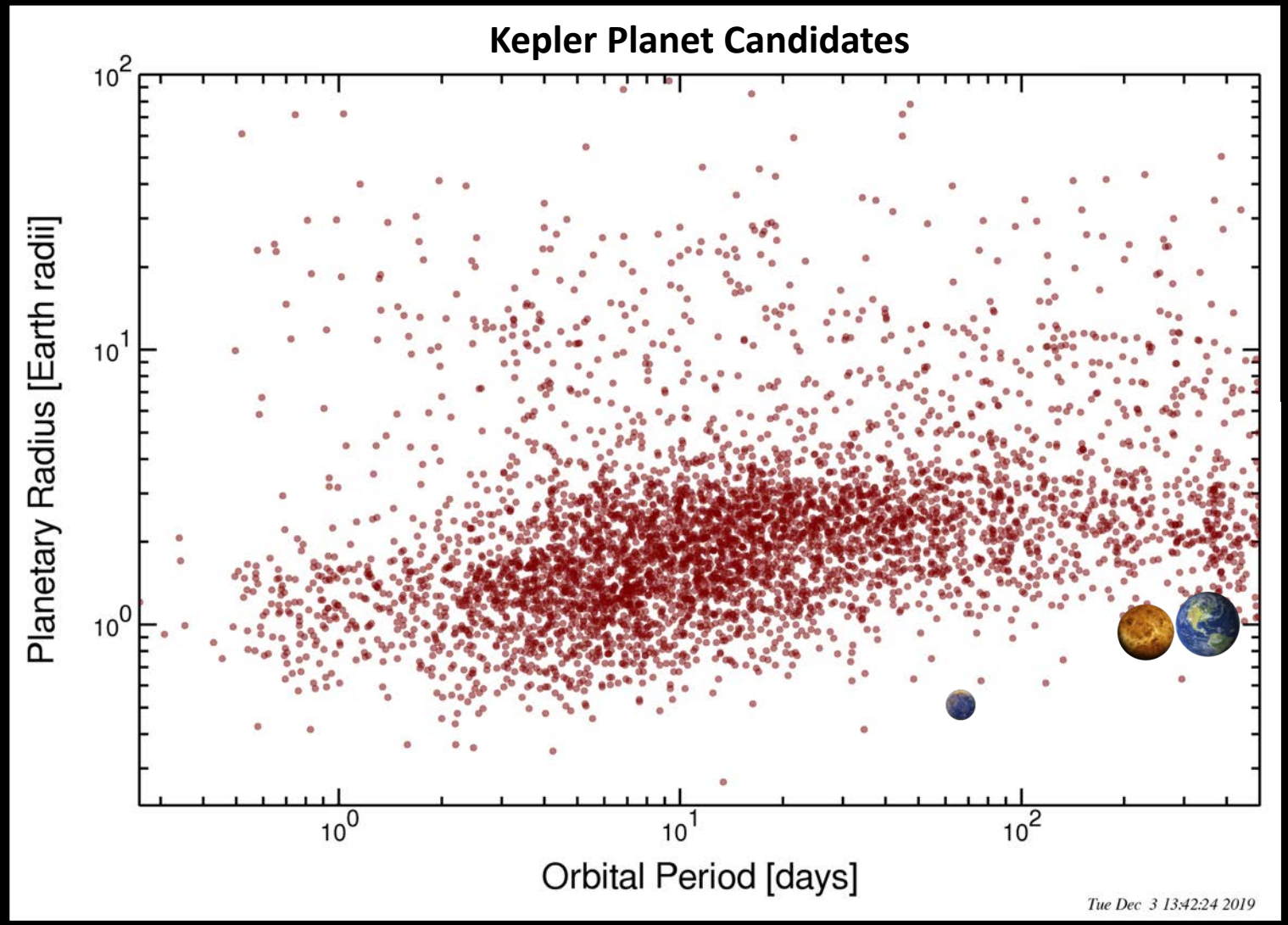
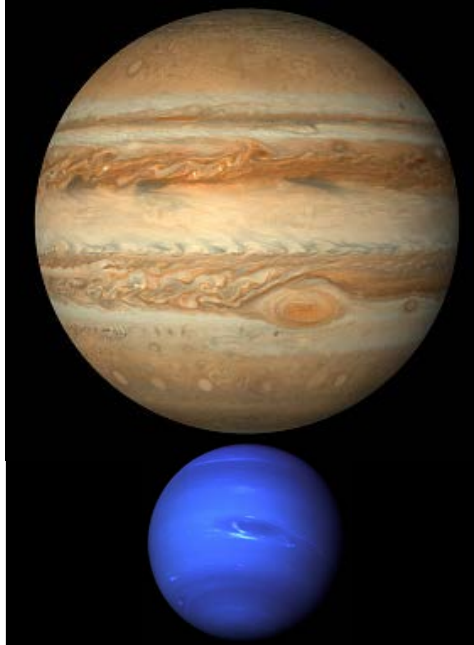


Image Credit: NASA Ames

Kepler Found An Abundance Of Small Short Period Planets





The K2 Mission

Wider Dynamic Range:

- Galactic Latitude
- Stellar Age
- Stellar Mass
- Stellar Metallicity

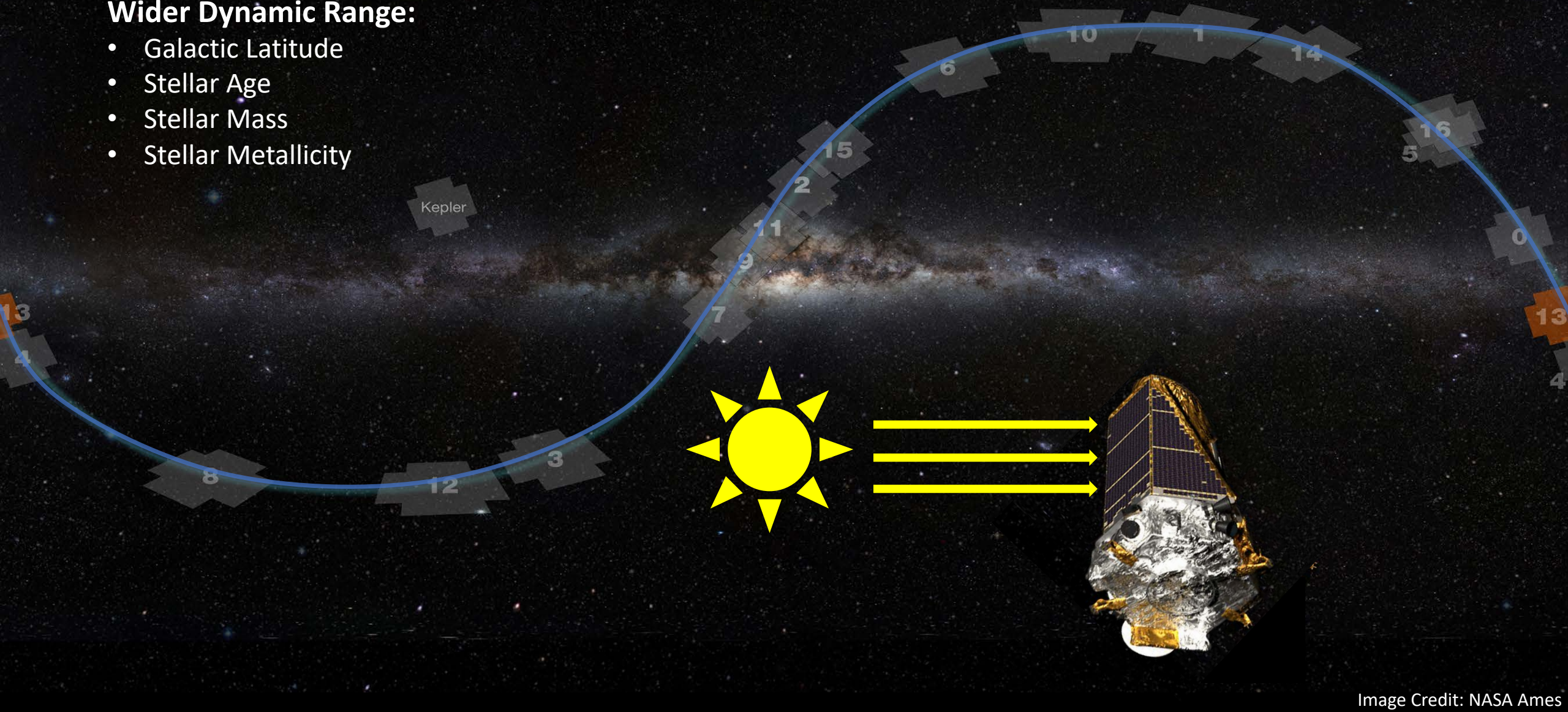
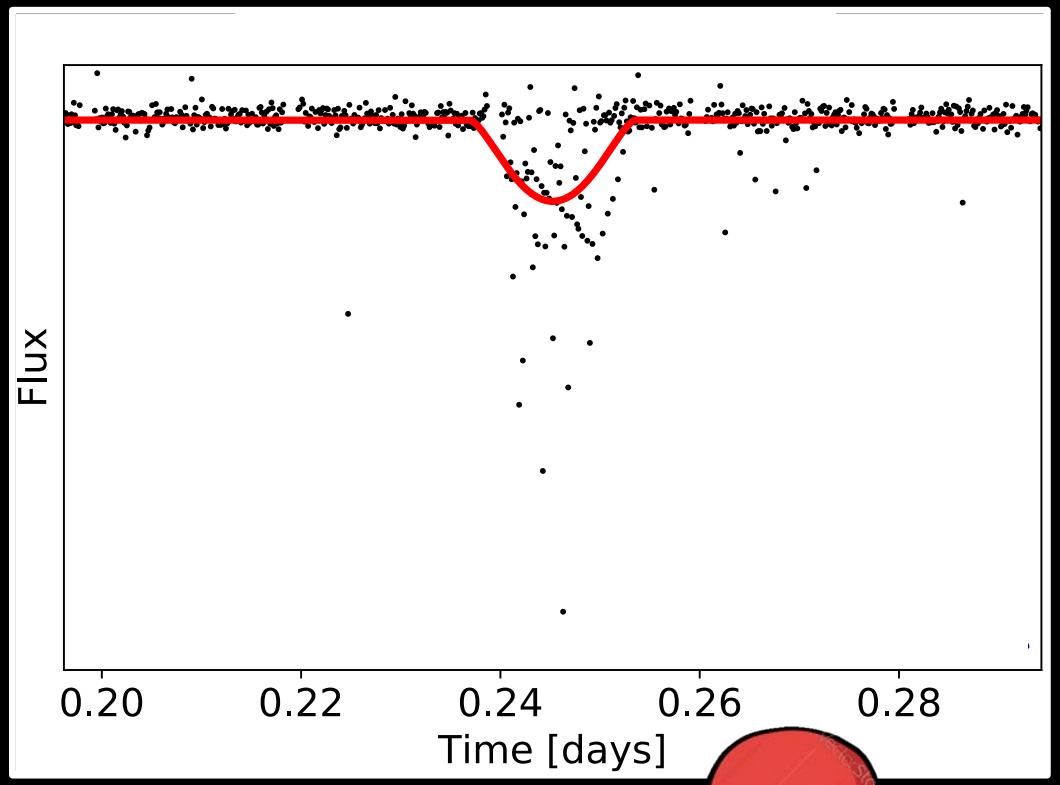
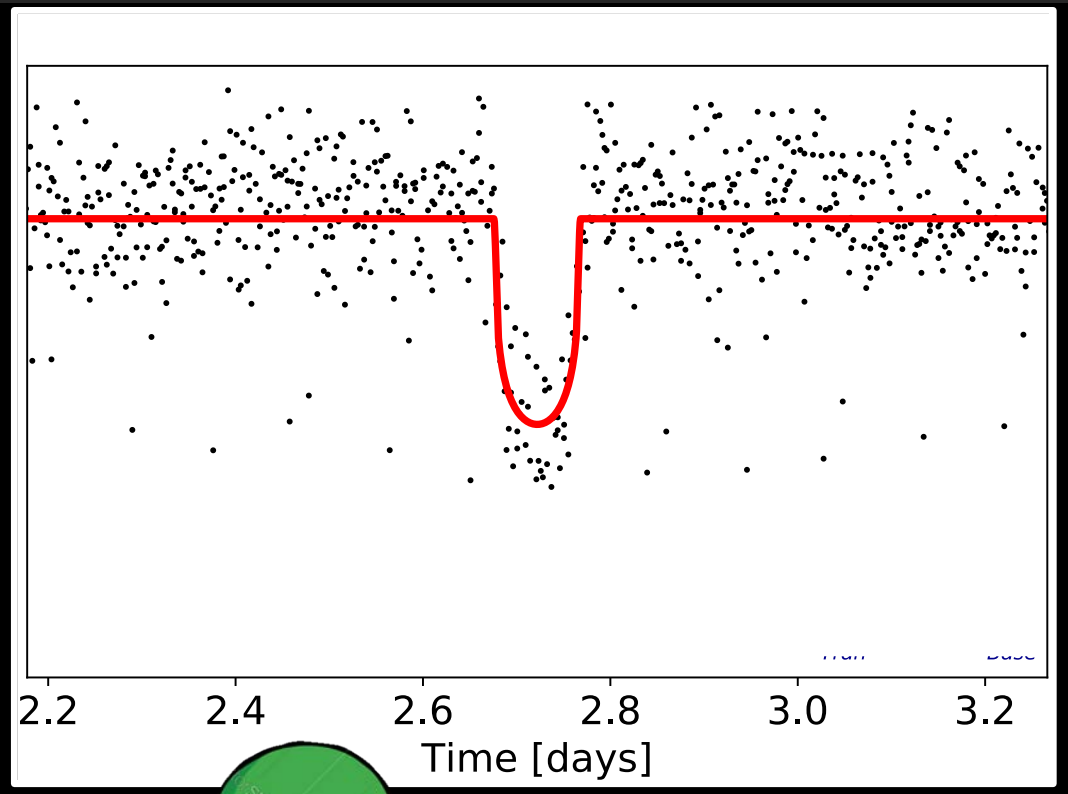


Image Credit: NASA Ames

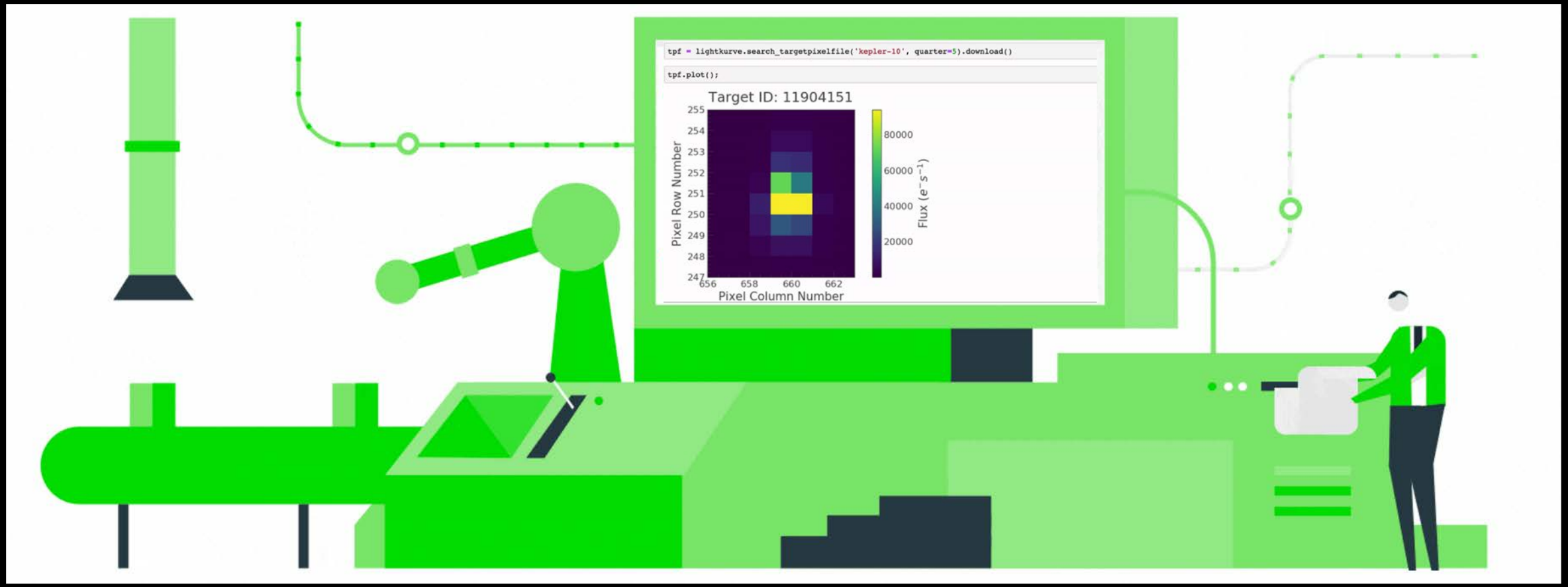
All Known K2 Planets Had Been Identified Through Visual Inspection





We Identified 889
Planet Candidates
In K2

Scaling K2: A Fully Automated Search of K2 Data



EDI-Vetter

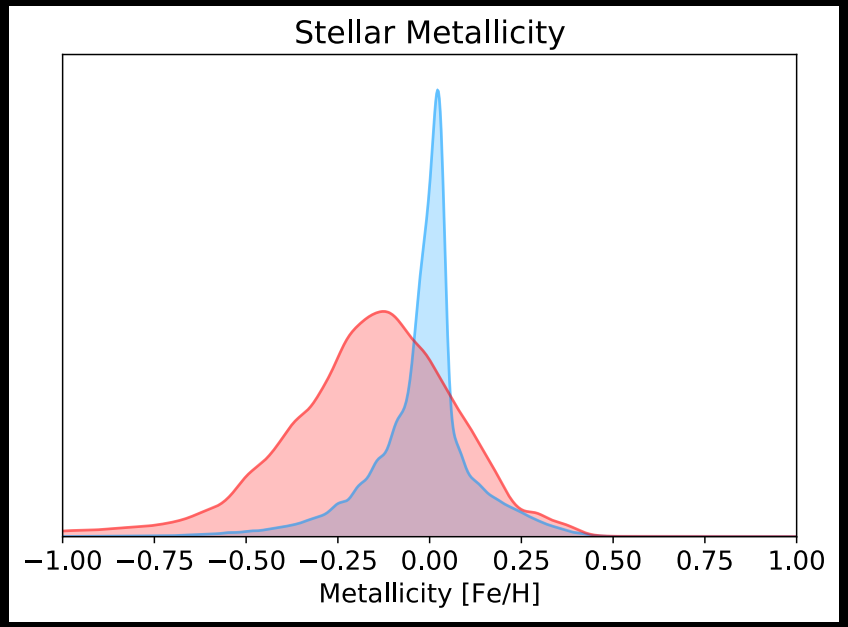
(Zink et al. 2020)

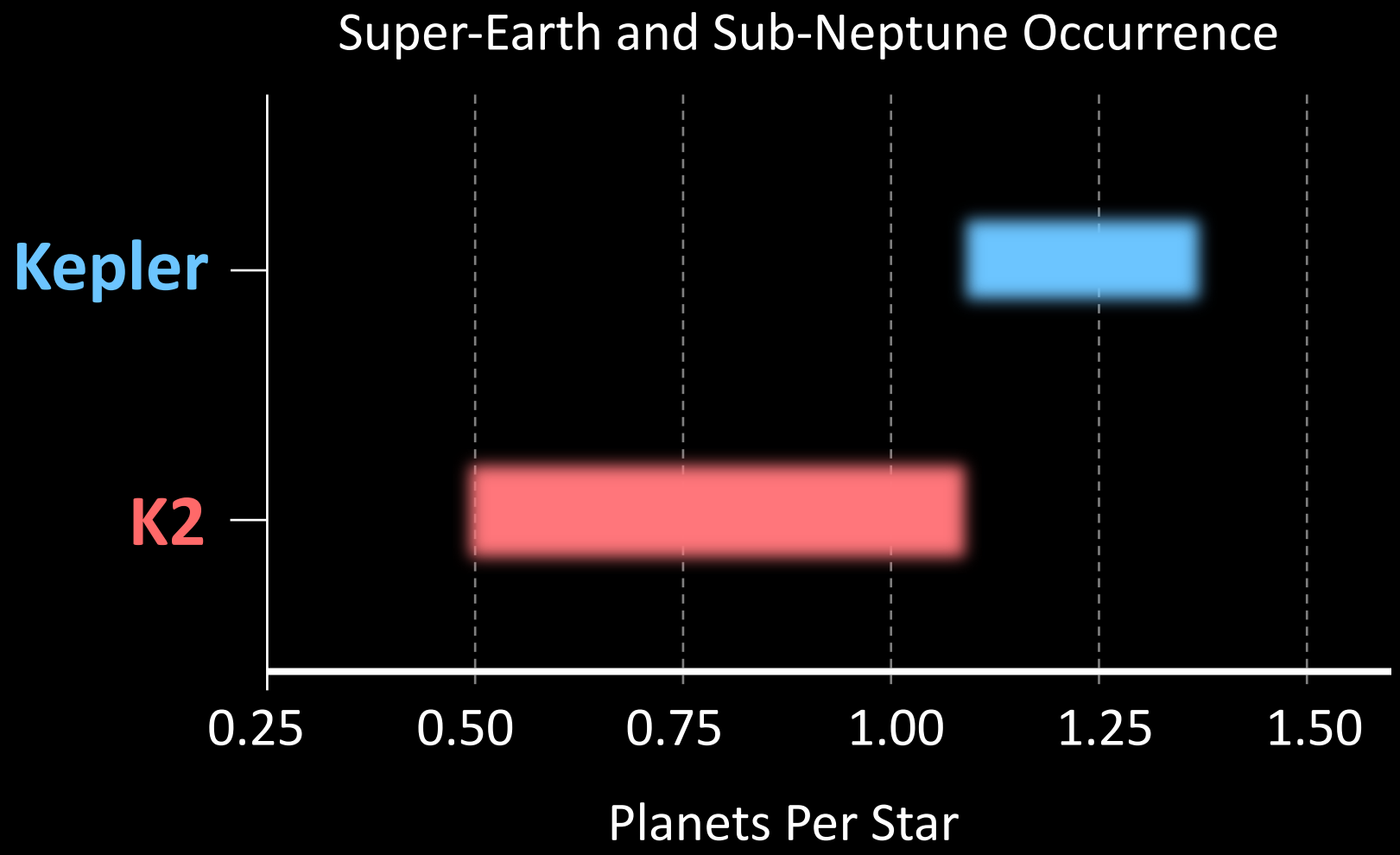
We Found 372 New Planet Candidates

- 372 Newly Detected Planets
- 18 New Multi-Planet Systems

Zink et al. in prep

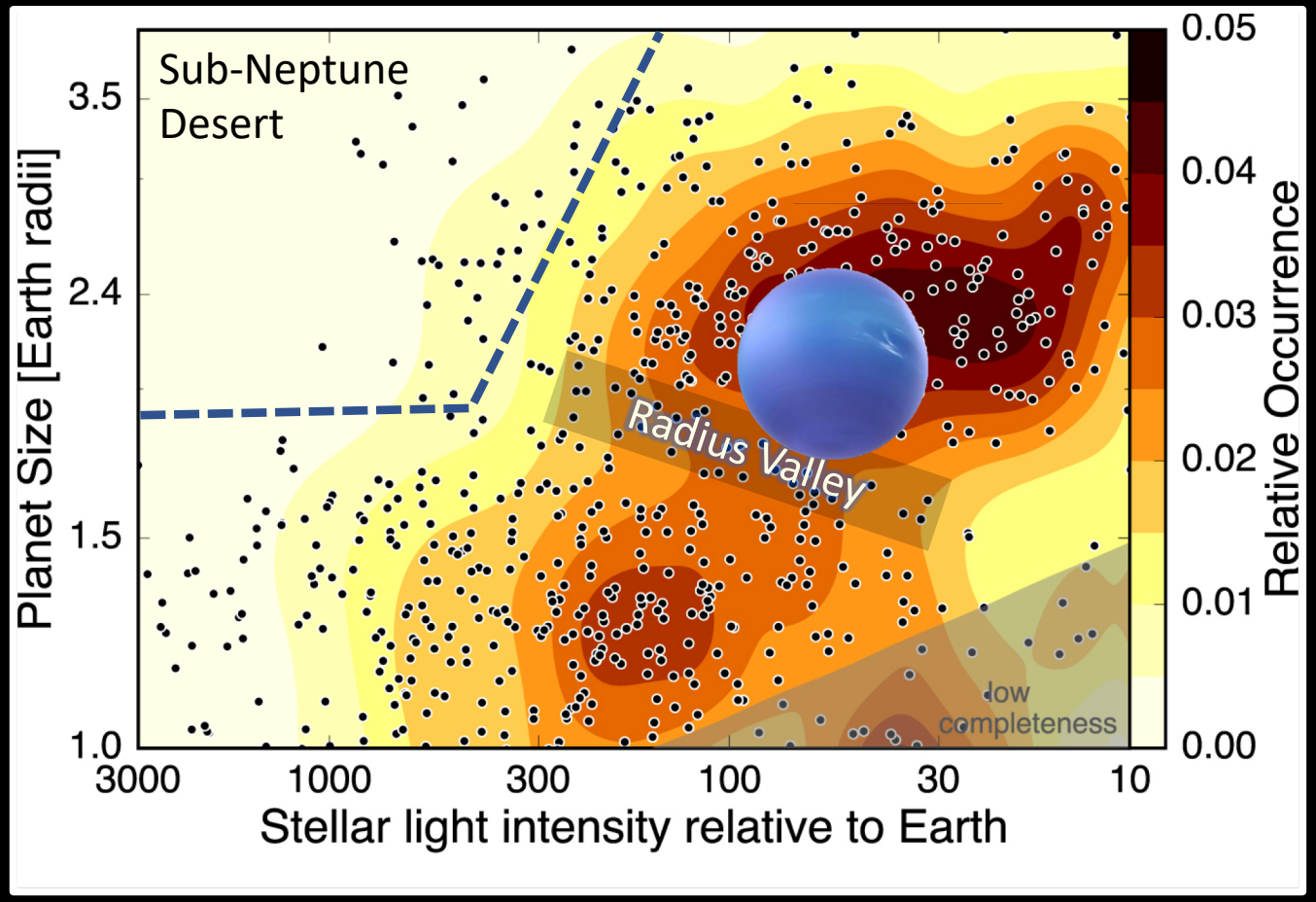
We Found A Minor Difference In Planet Occurrence Across Fields





Zink et al. 2020b

Kepler Found A Deficiency Of Sub-Neptunes



Fulton et al. (2017)

Radius Valley:

Super-Earths and Sub-Neptunes appear separated by a valley in planet occurrence near 1.5-2 Earth radii.

Sub-Neptune Desert:

Short period Sub-Neptunes appear to be very rare.

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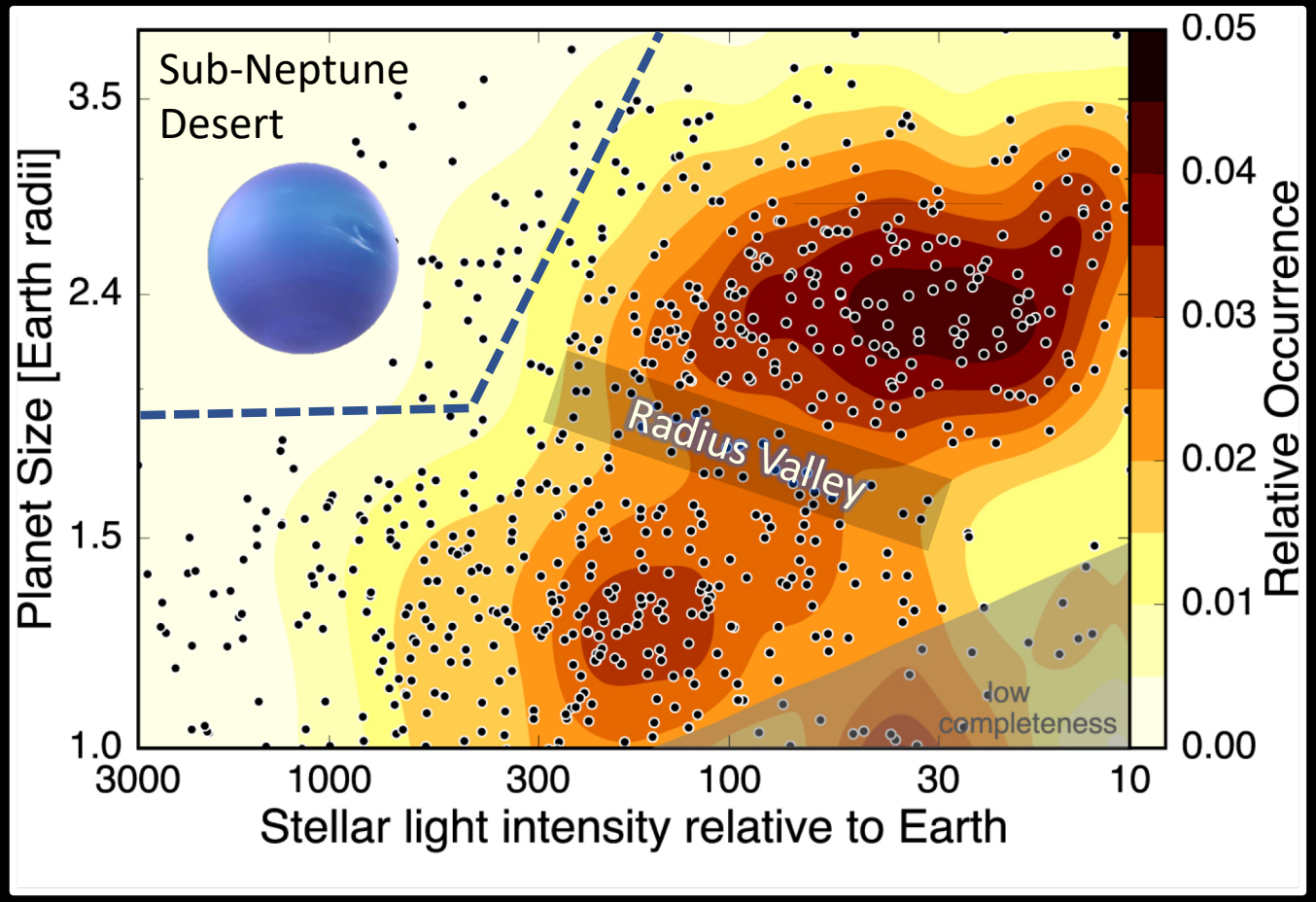

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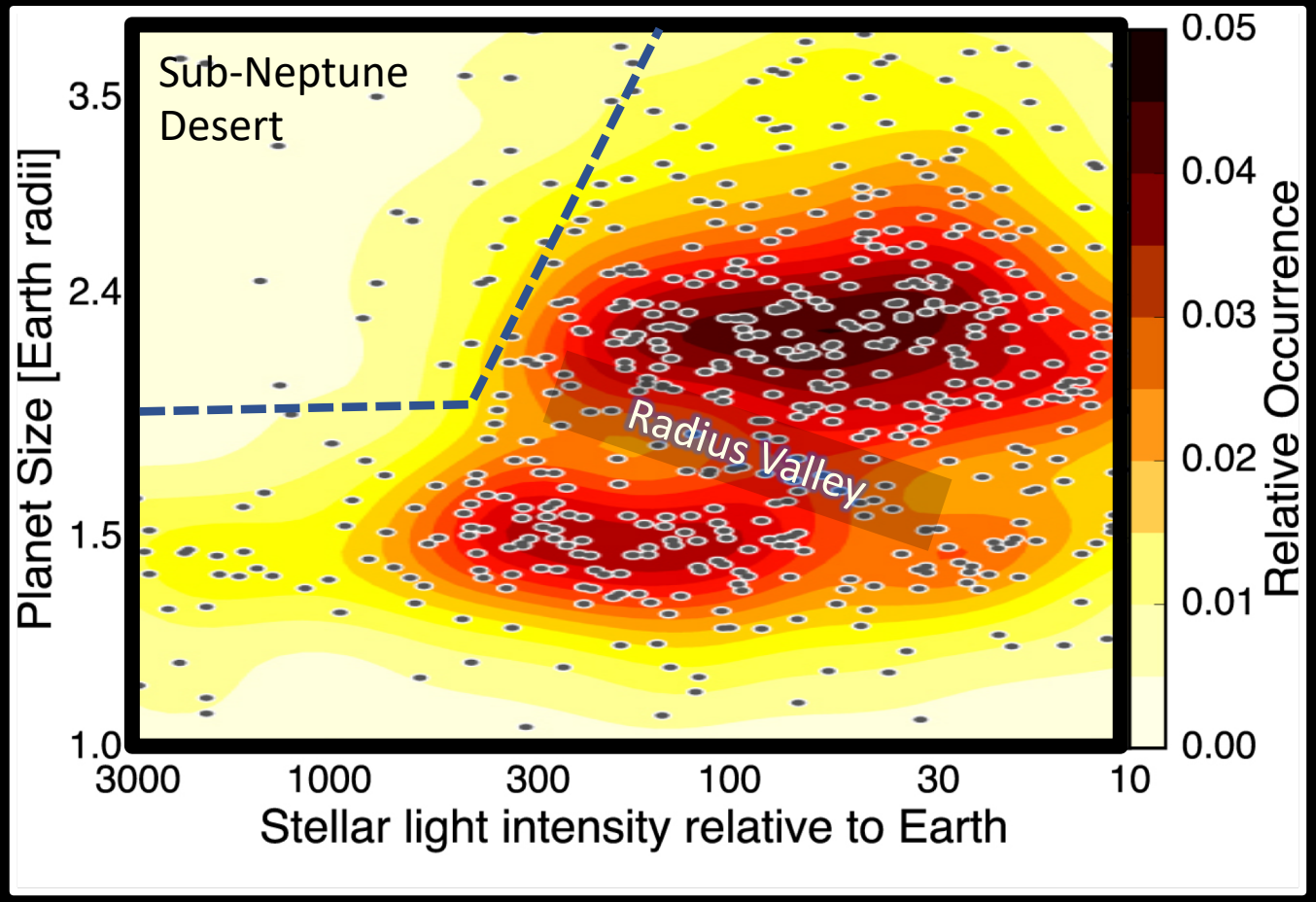
K2 Also Found A Deficiency Of Sub-Neptunes



Hardegree-Ullman et al. (2020)

Radius Valley:

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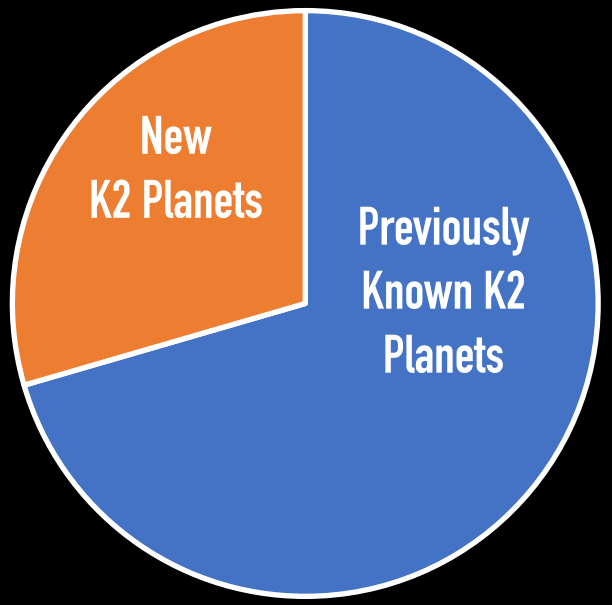
Conclusions

An automated search of K2 photometry lead to the detection of 372 new planet candidates



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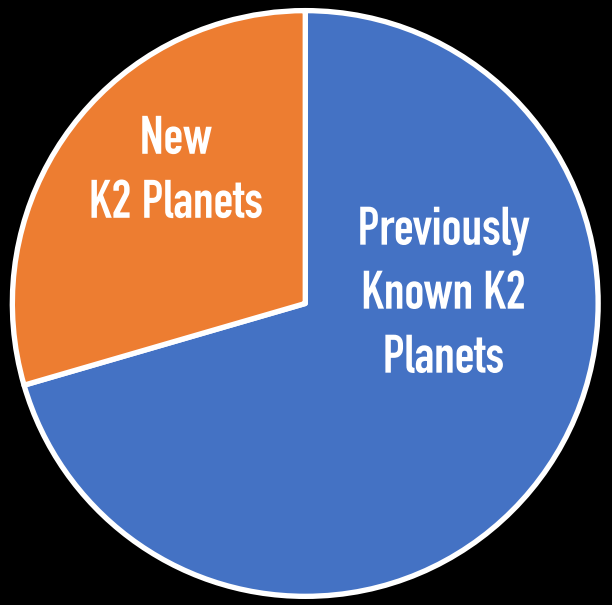
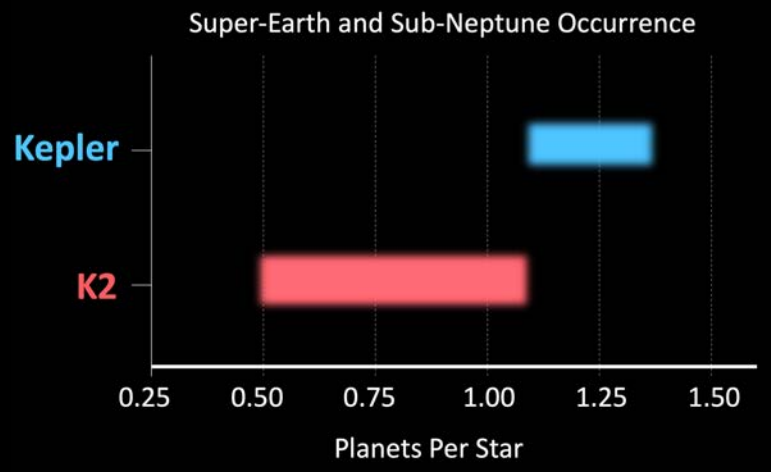


Early occurrence calculations indicate a minor difference in the number of planets per star outside of the Kepler field.



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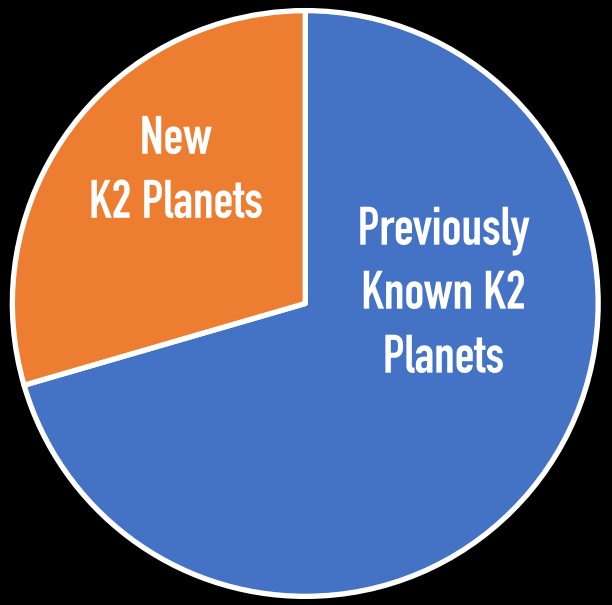

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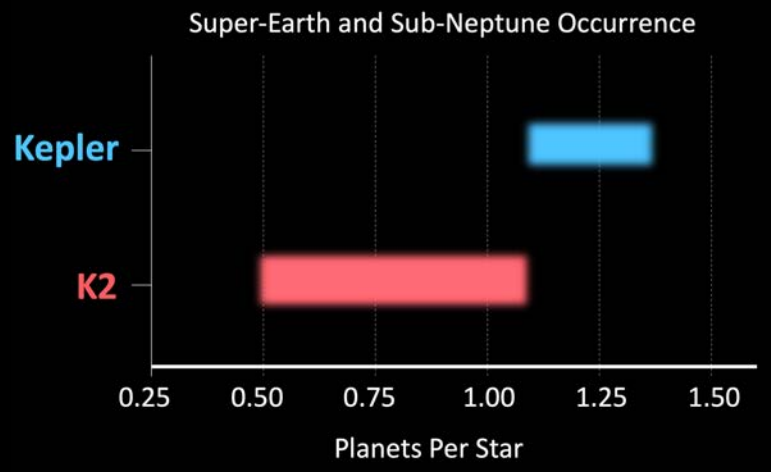
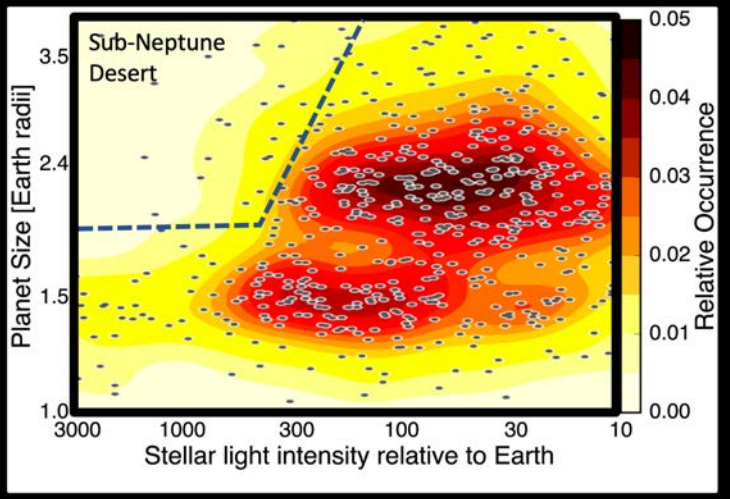


The Radius Valley and Sub-Neptune desert can be seen in the K2 planet population, providing further constraints for planet formation theories.



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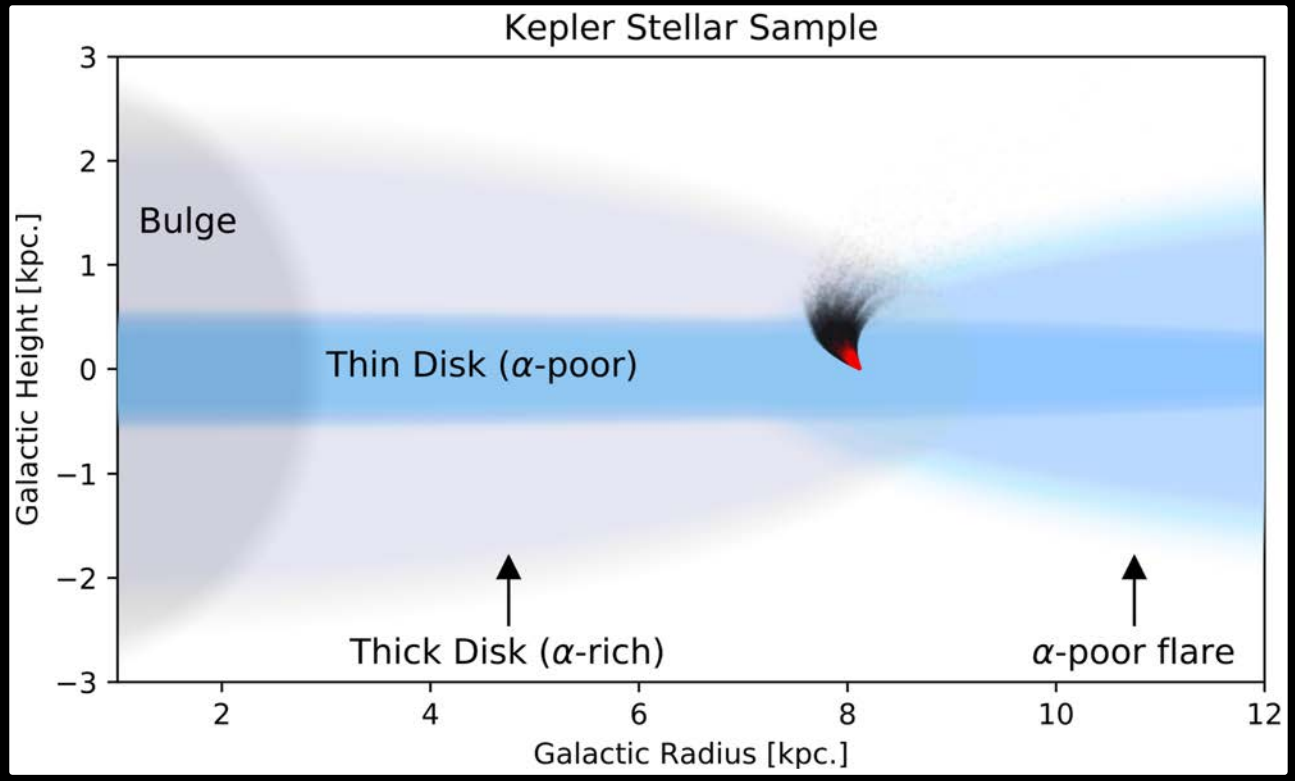
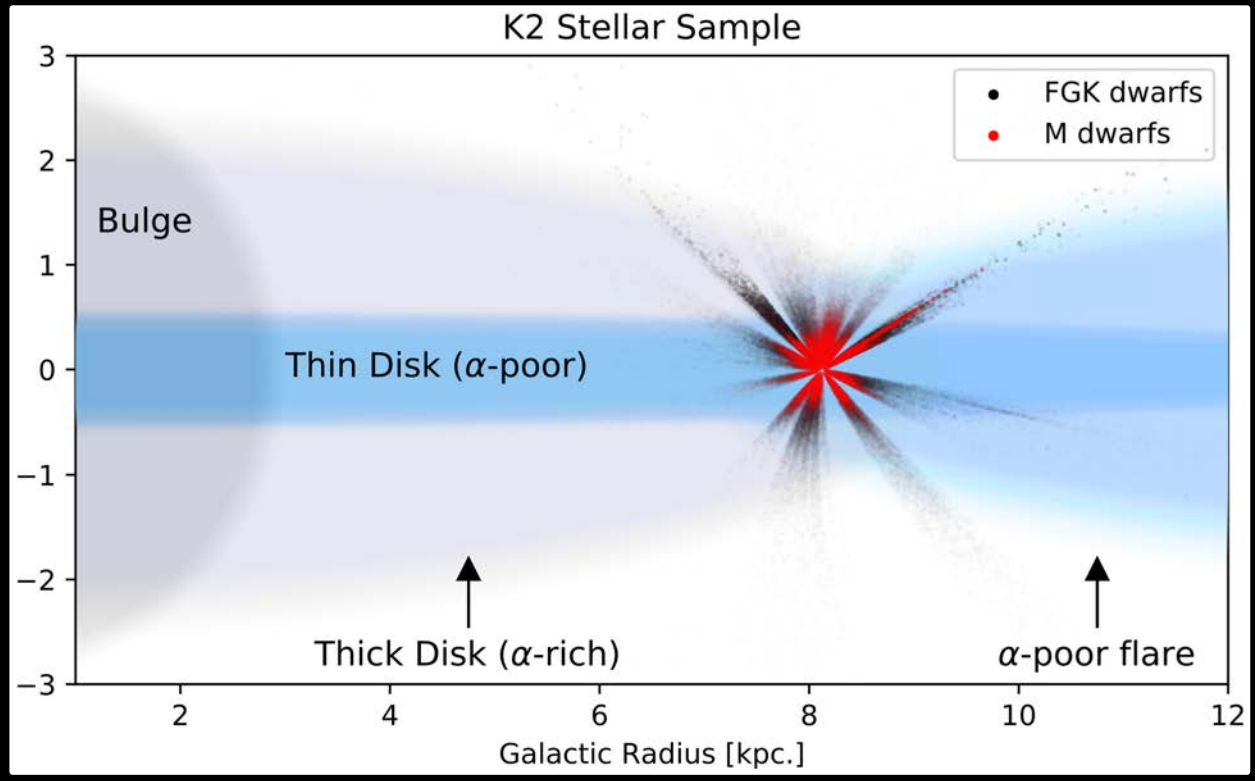
K2 – Probing Different Regions of the Local Galaxy





Zink et al. 2020b

Adibekyan et al. (2012) – Evidence of alpha element abundance surplus in exoplanet-hosting stars

K2 provides an opportunity to further consider the alpha elements effect on planet occurrence

~1000 K2 Planets Have Been Identified Via Visual Inspection