Small scopes for exoplanets

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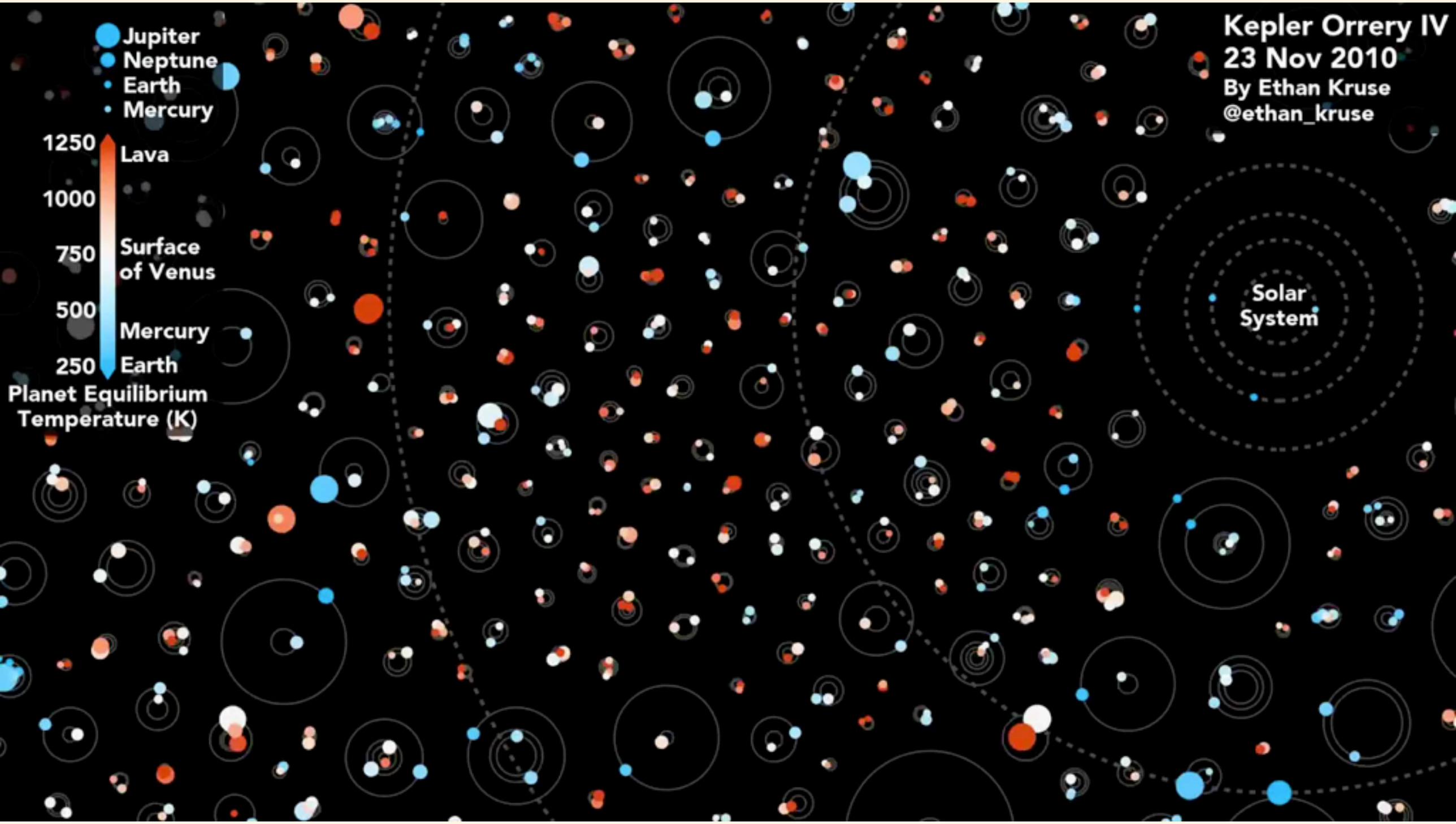
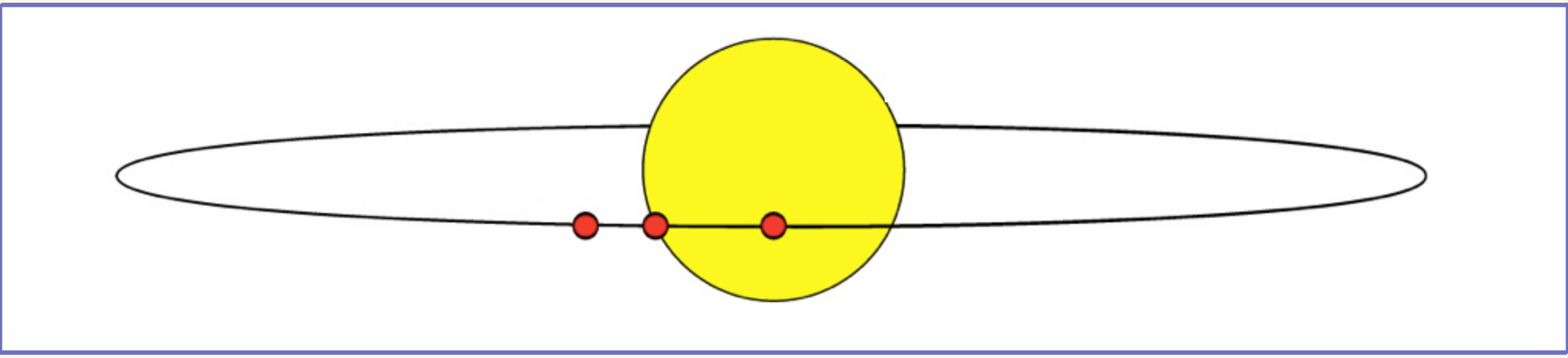
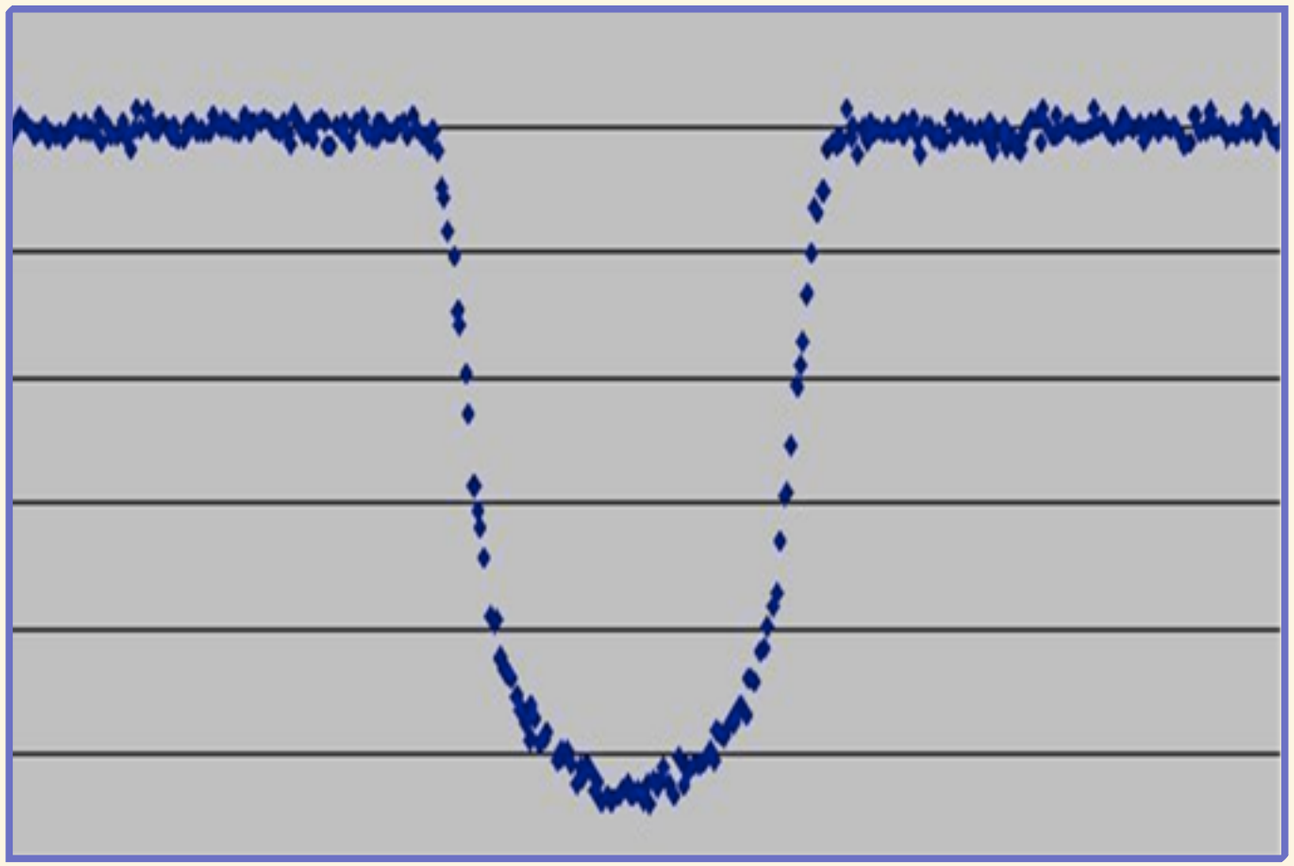
http://andres-jordan.io


Jupiter
Neptune
Earth
Mercury
1250
Lava
1000
750
Surface
of Venus
500
Mercury
250
Earth
Planet Equilibrium
Temperature (K)
Kepler Orrery IV
23 Nov 2010
By Ethan Kruse
@ethan_kruse
Solar
System

the most efficient discovery method:

transits

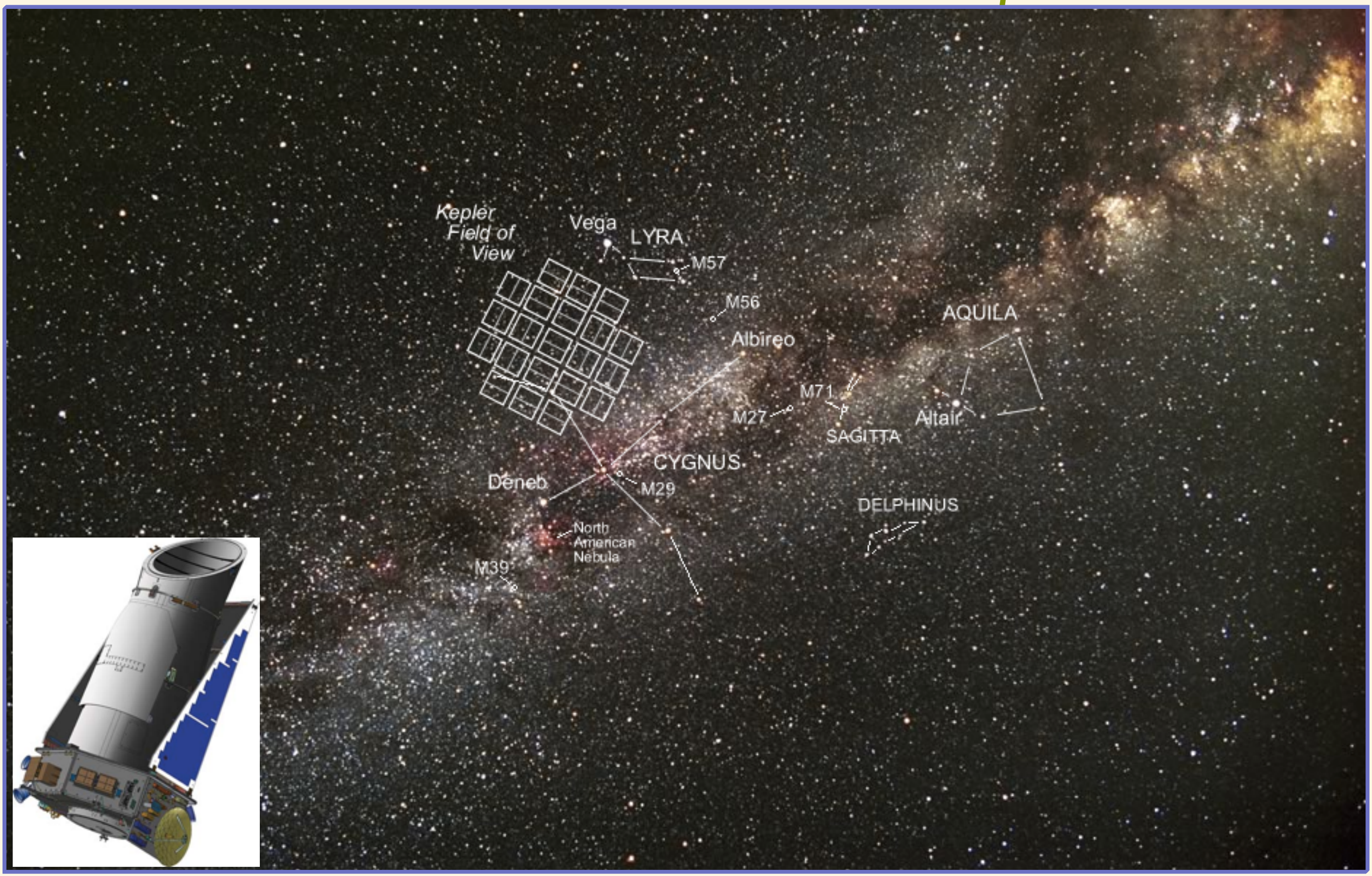


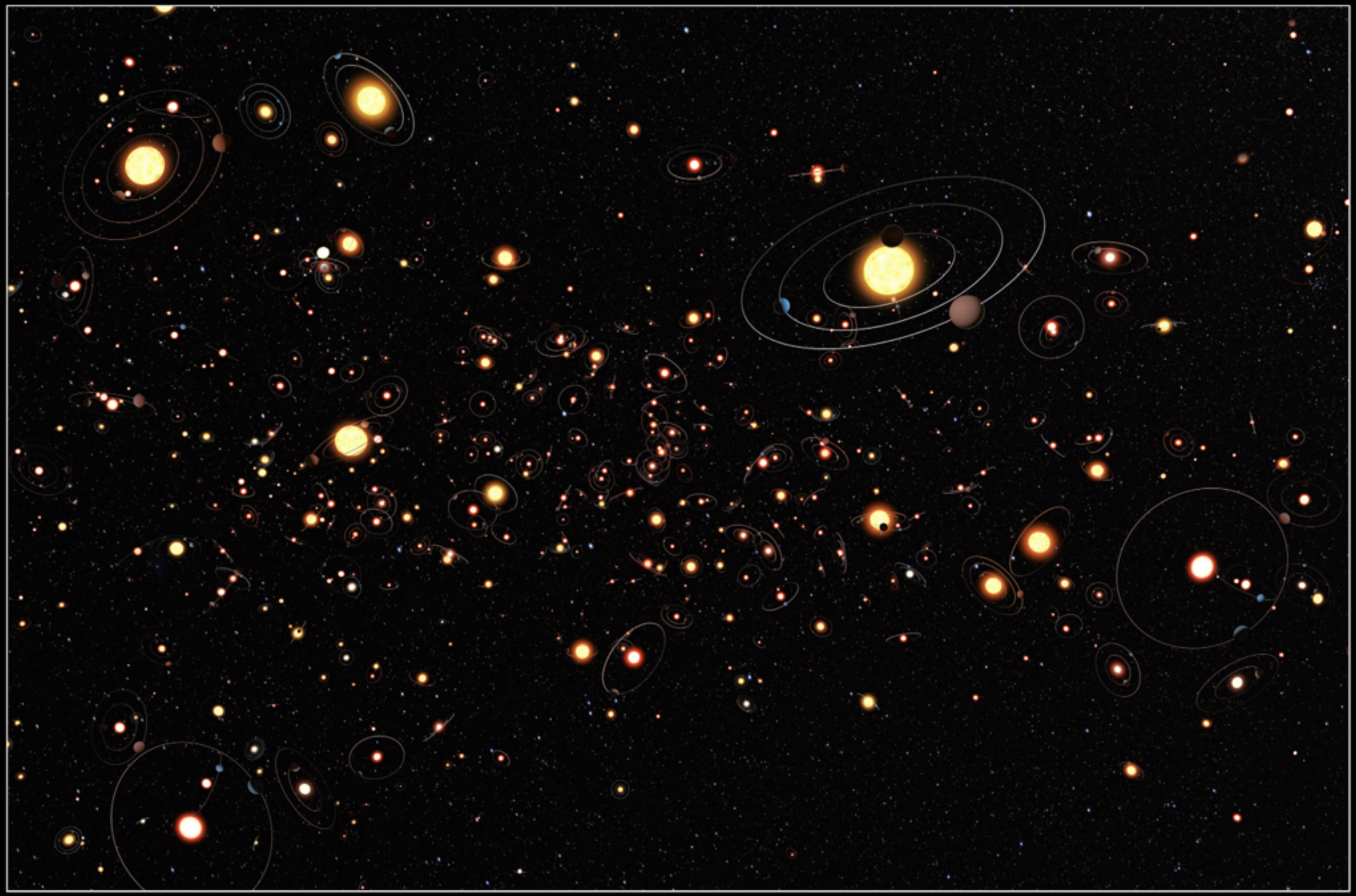


monitoring the sky with small telescopes

Las Campanas Observatory, May 2009

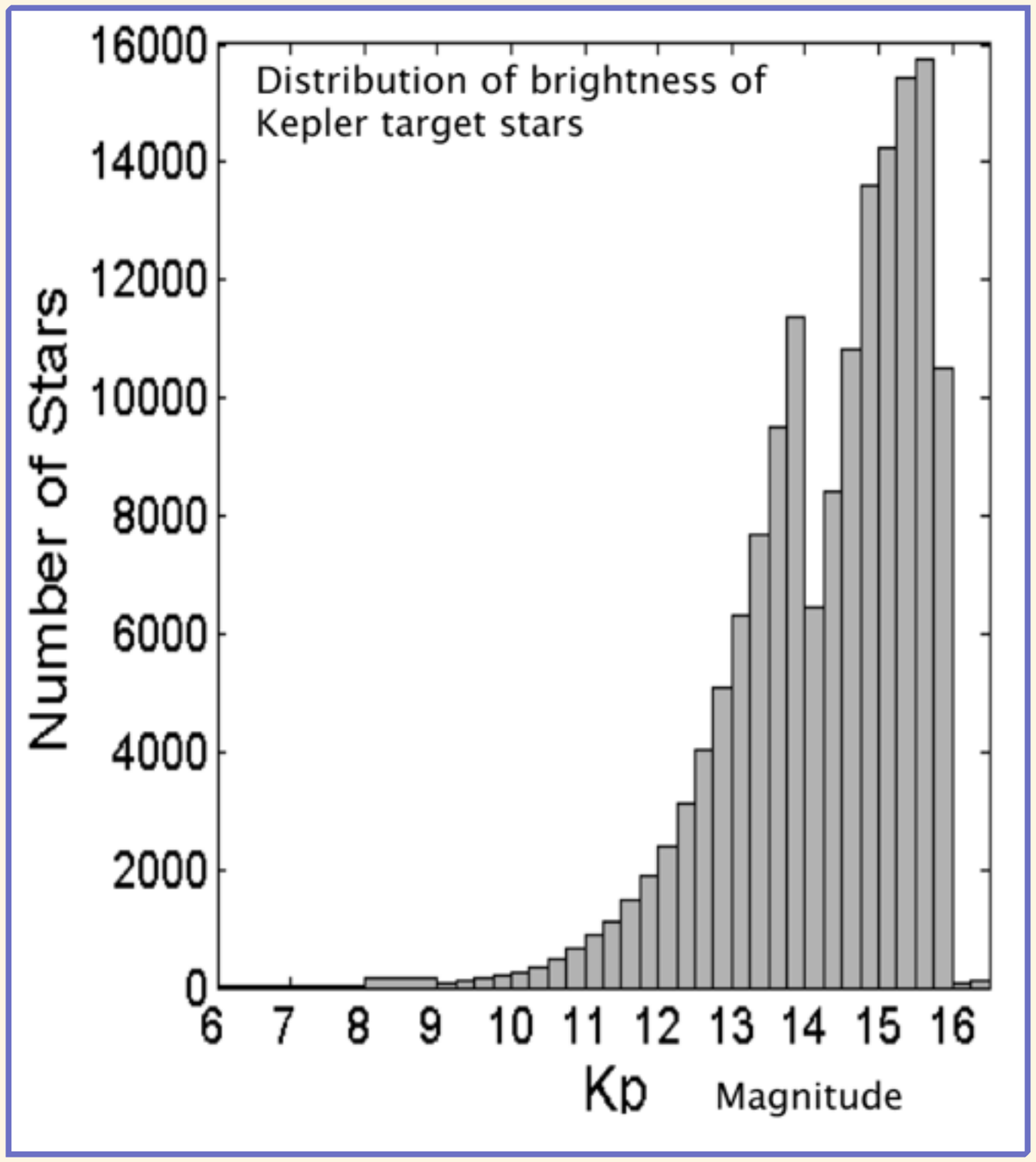
or small satellites: Kepler





KEPLER: There are more planets than stars

but Kepler targets generally faint



landscape

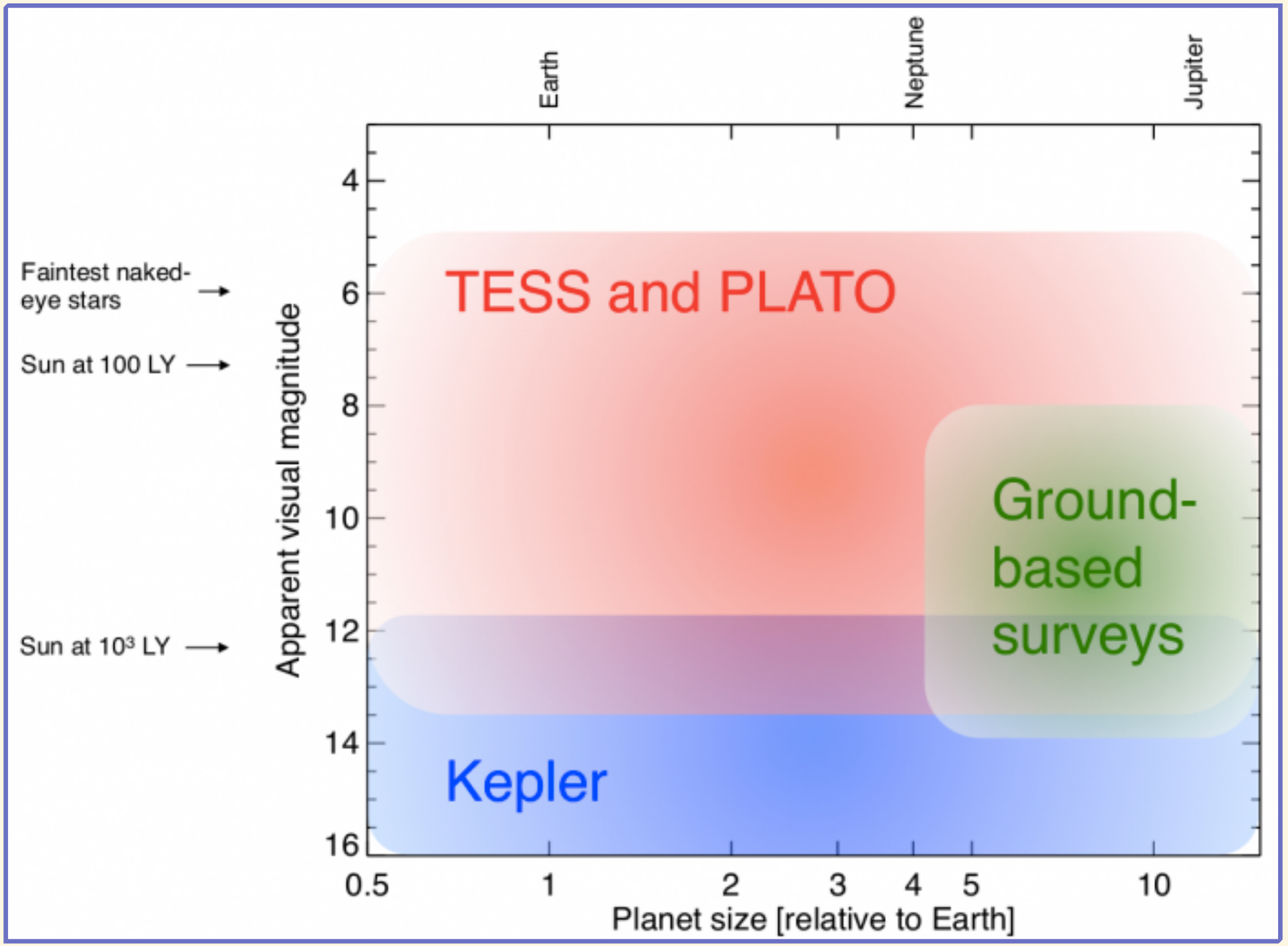
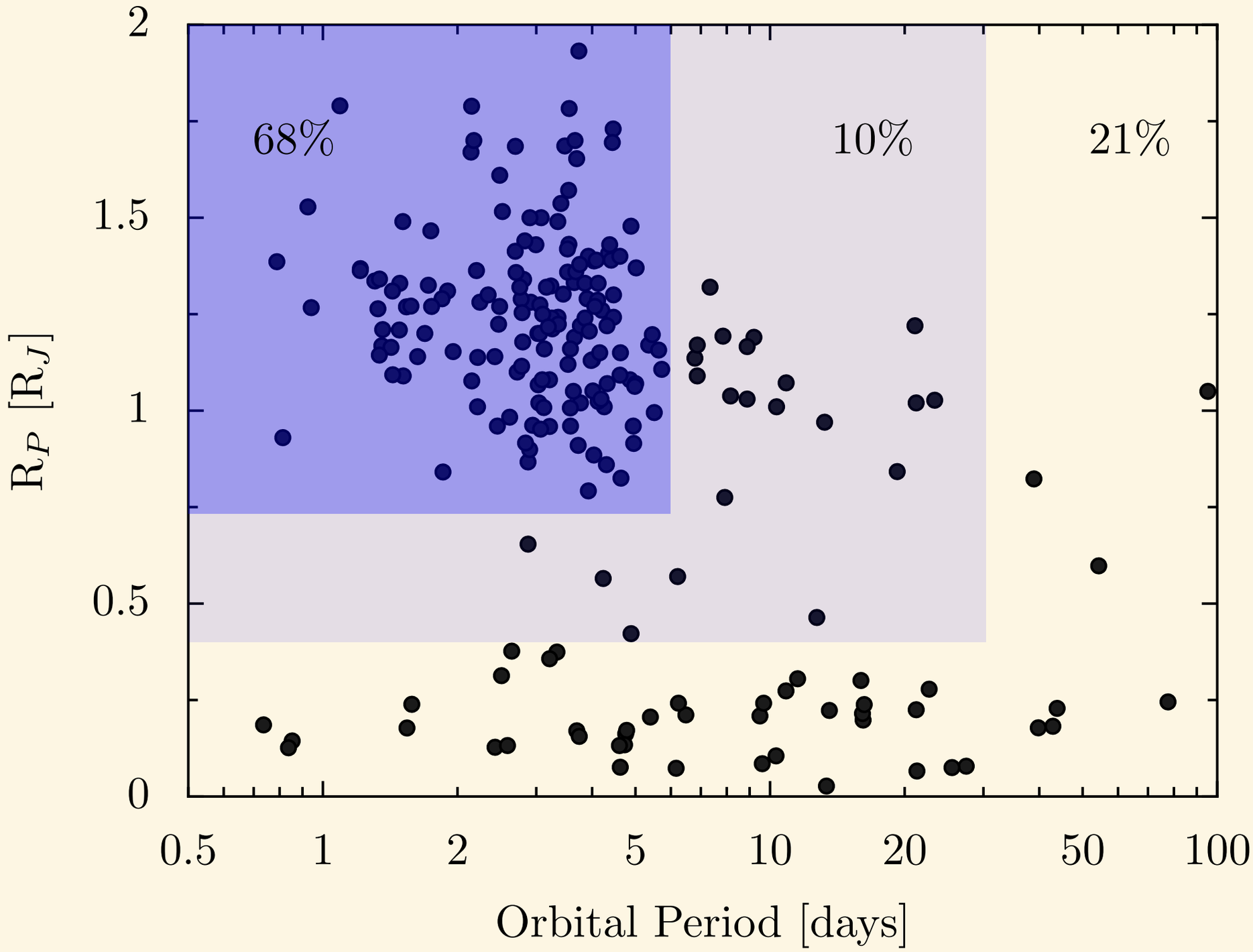
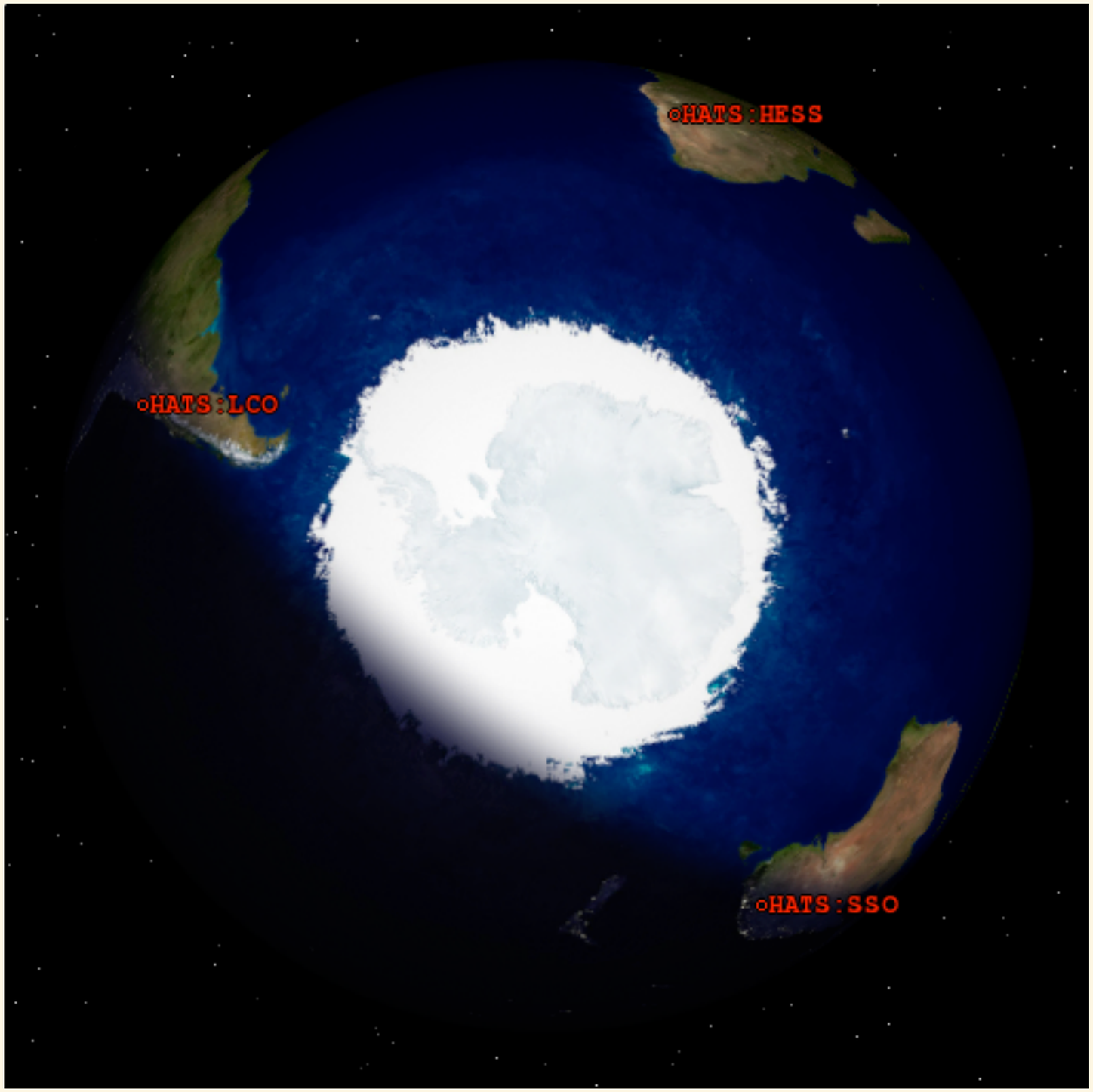


Figure from Heng & Winn 2015 (arXiv:1504.04017)

transits around bright stars



beating the diurnal cycle: HATSouth



collaboration between Princeton, PUC, Australian National University and Max-Planck-Gesselschaft

HATSouth

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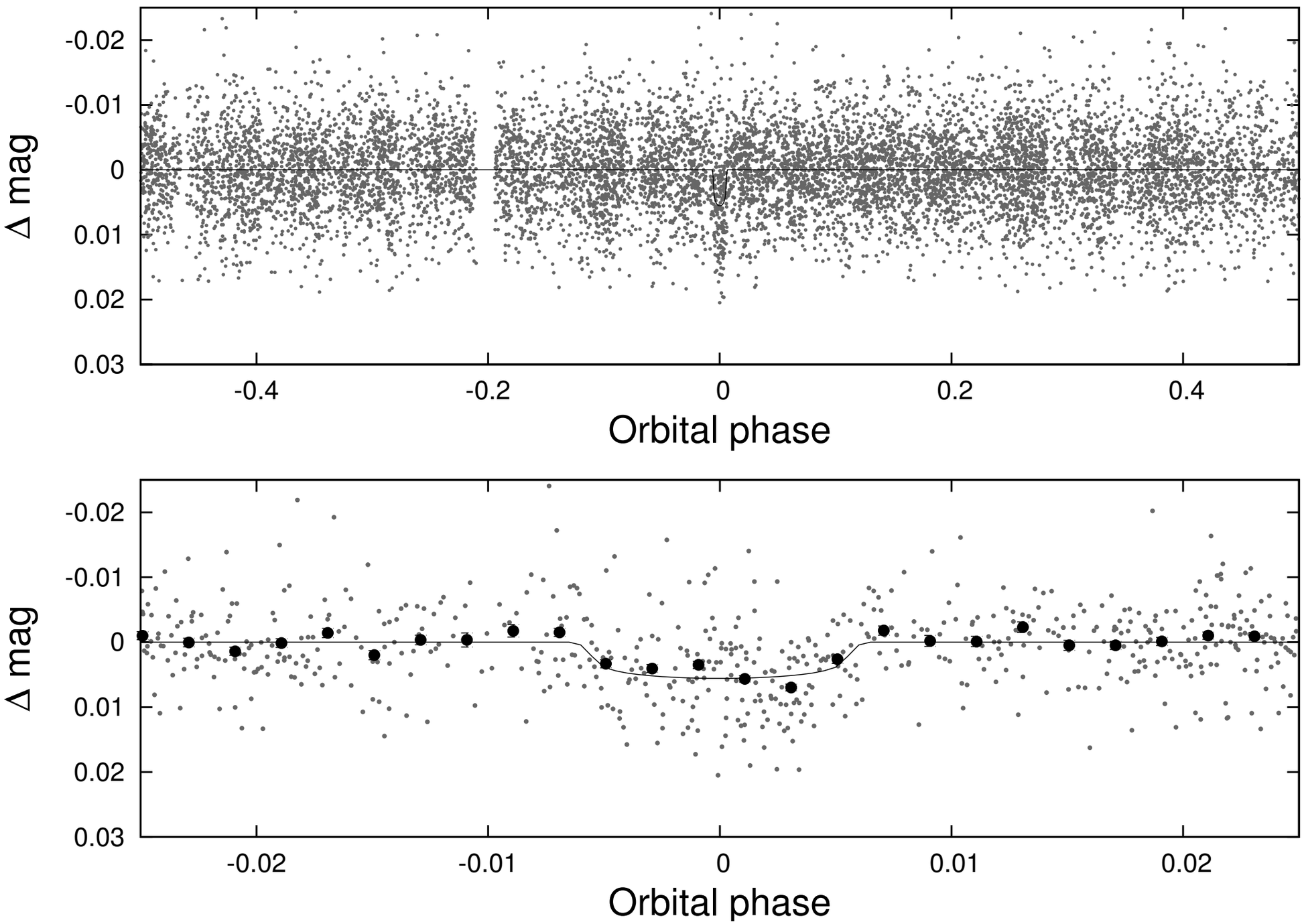
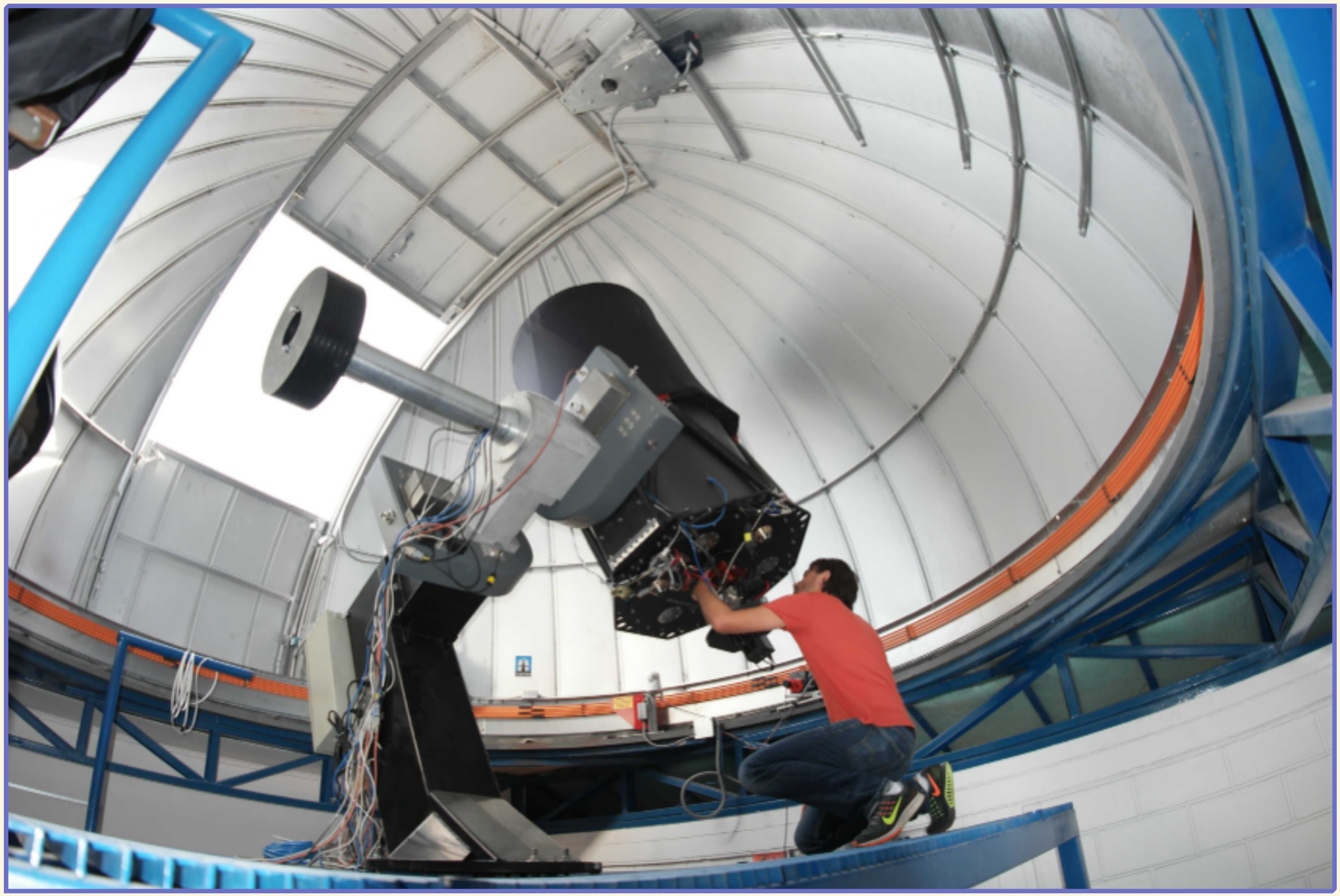


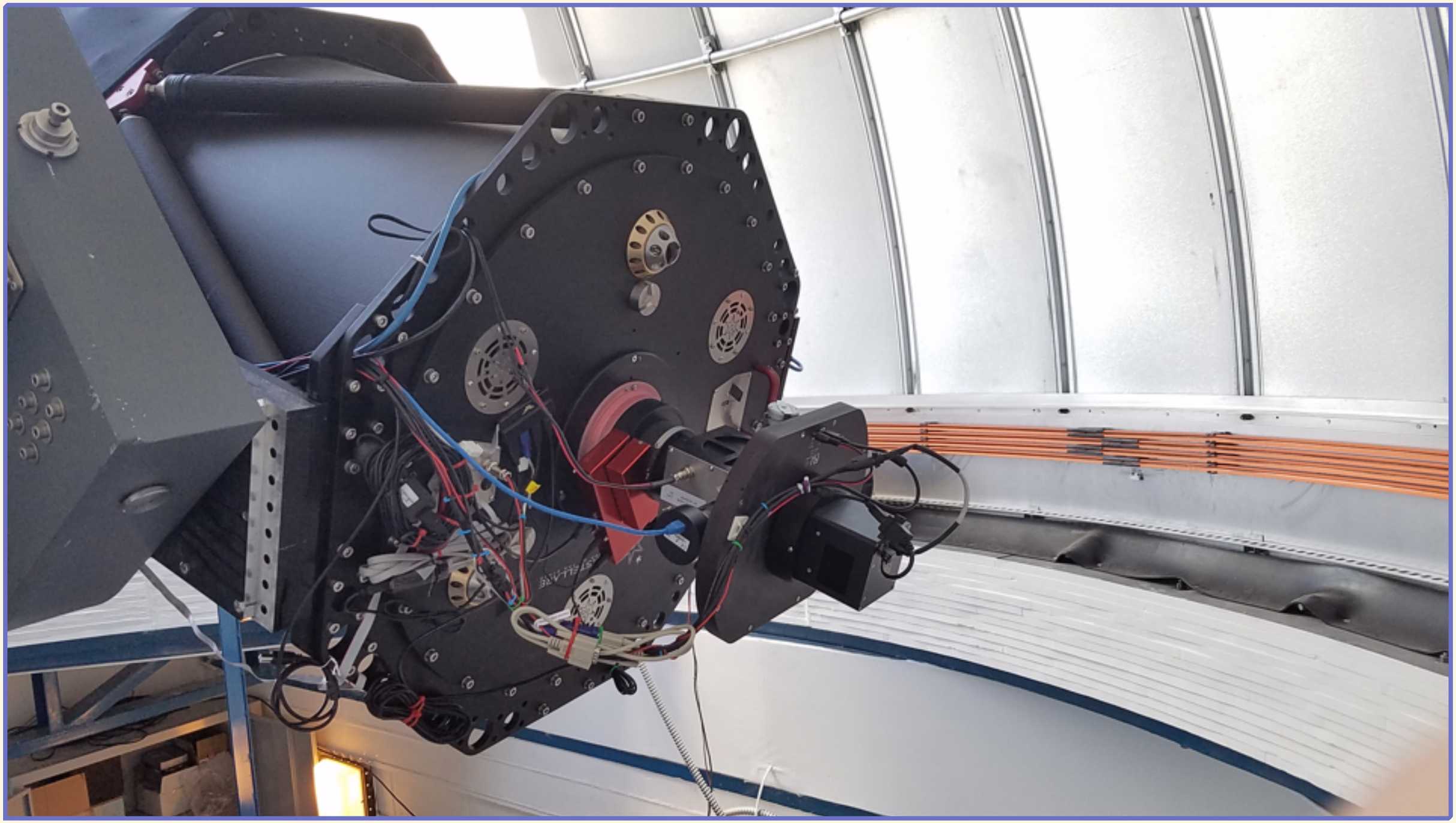
HATS17b —16d period (Brahm, Jordán, Bakos et al. 2016).

follow-up: CHAT



The largest Chilean-funded telescope in existence (PI: Jordán, funded by FONDEQUIP)

follow-up: CHAT



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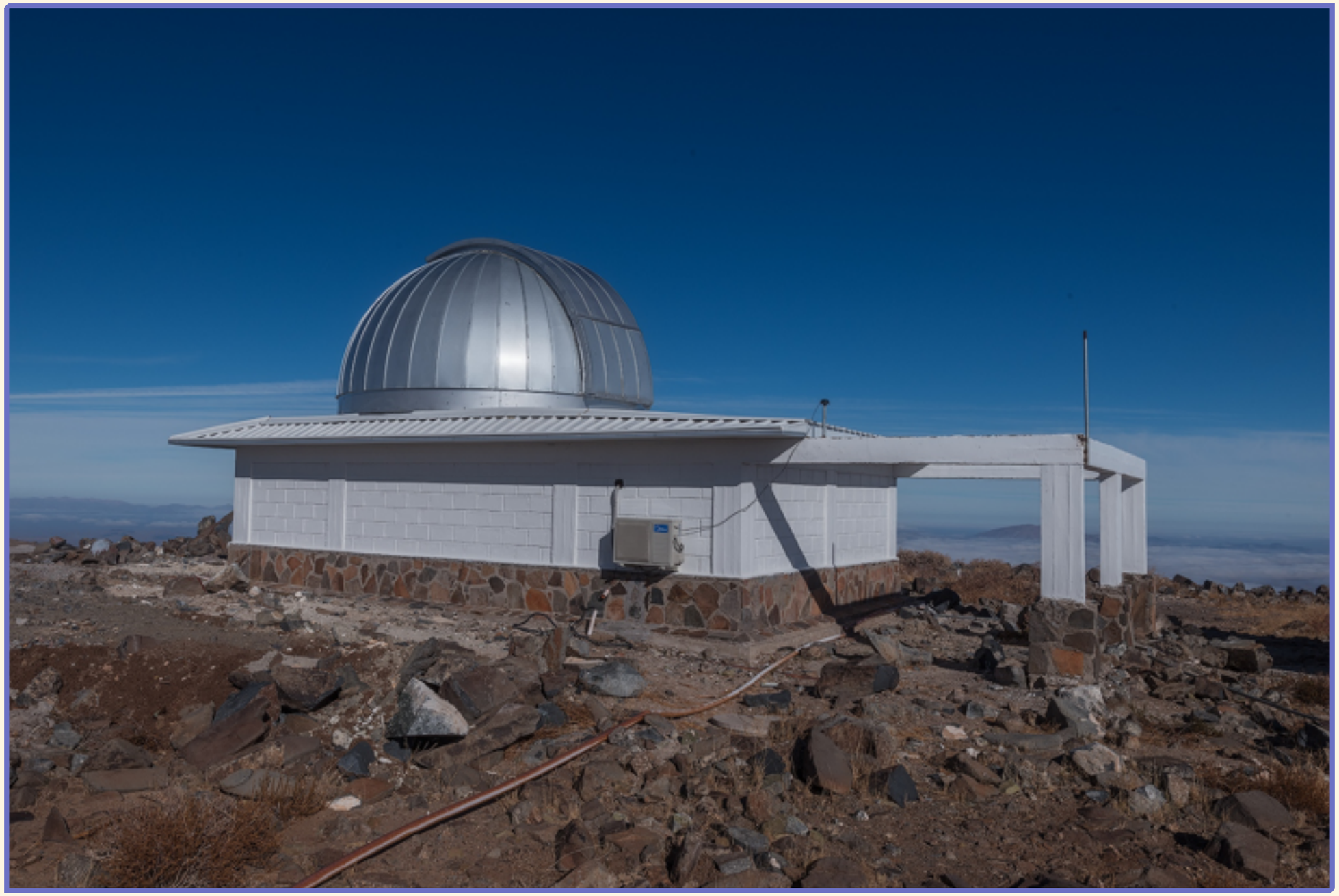

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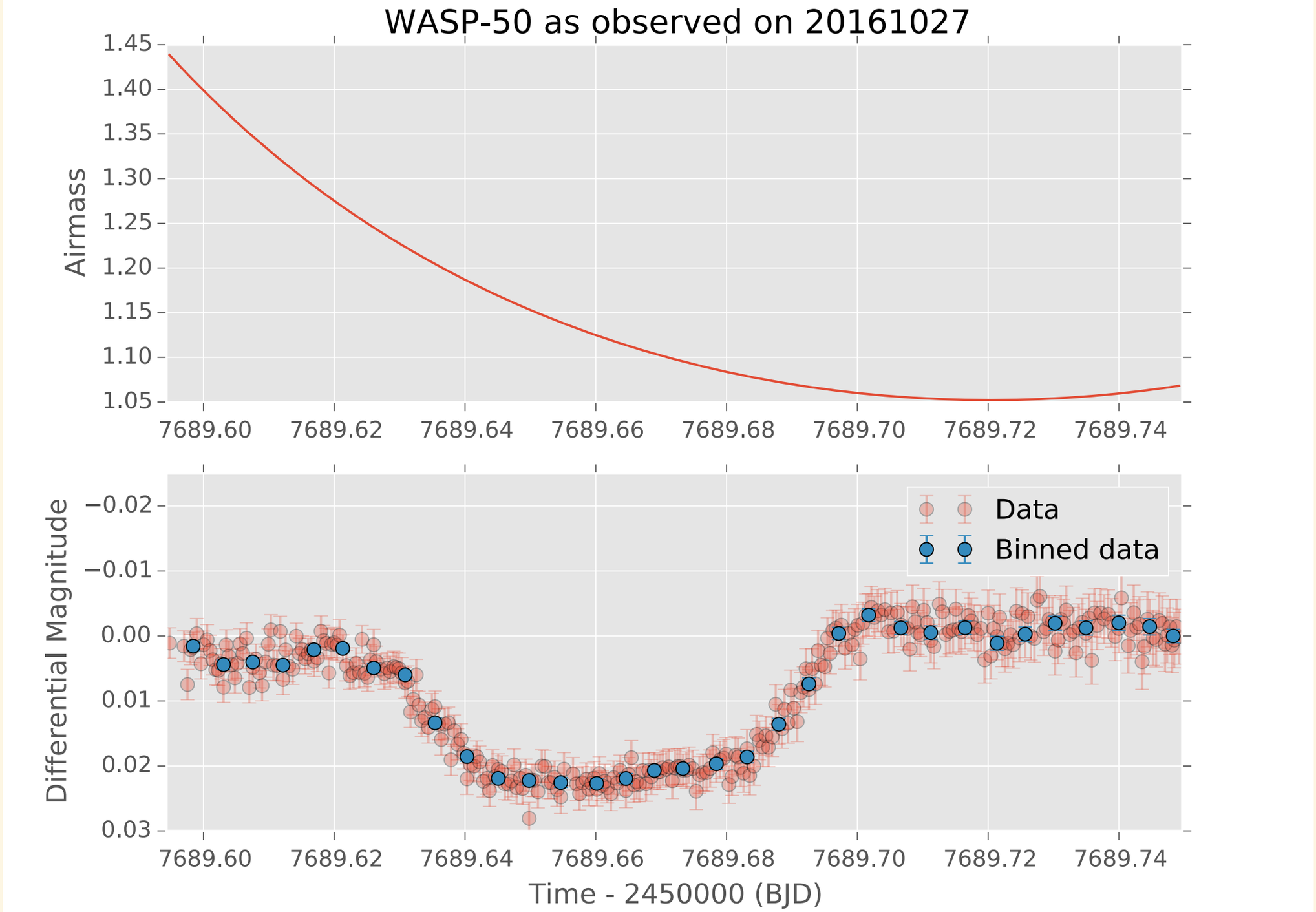
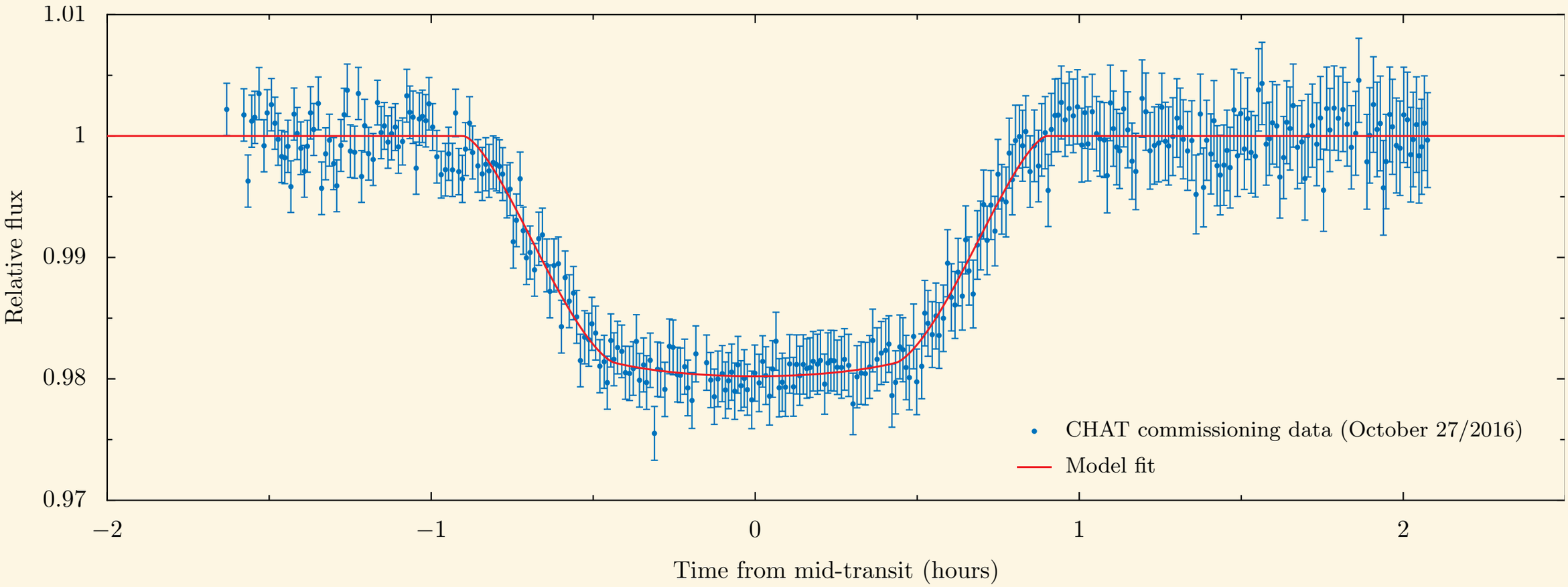


first light curves (last week)

follow-up: CHAT



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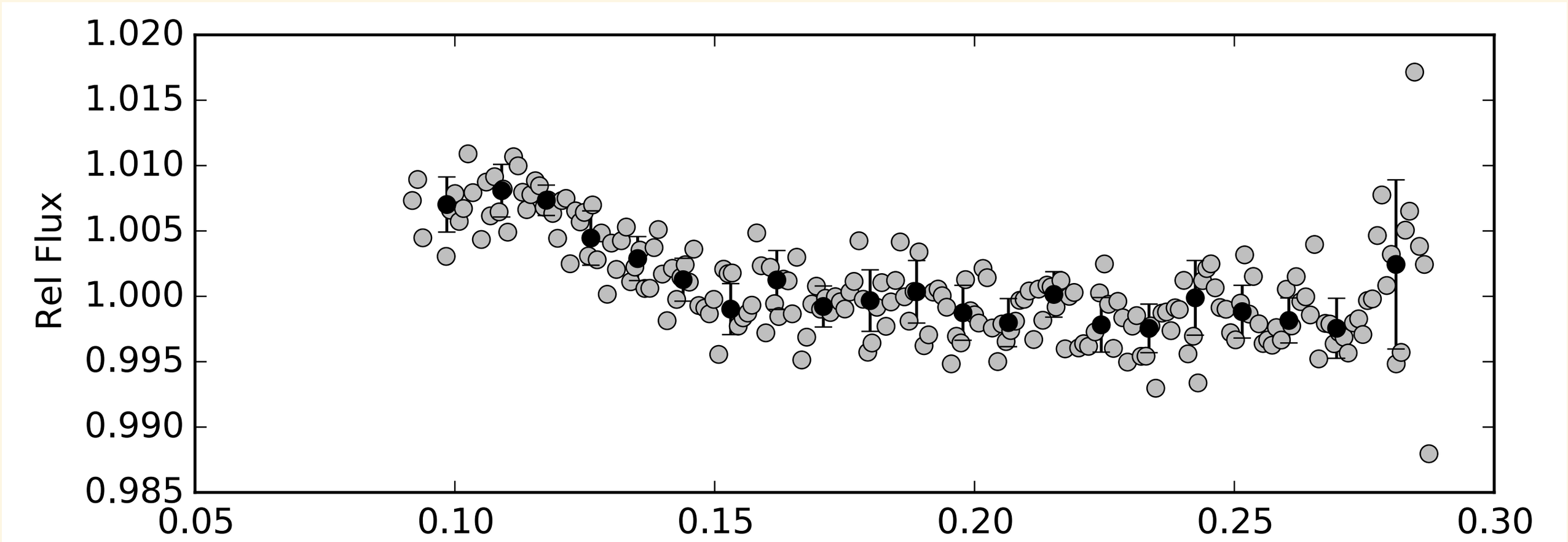
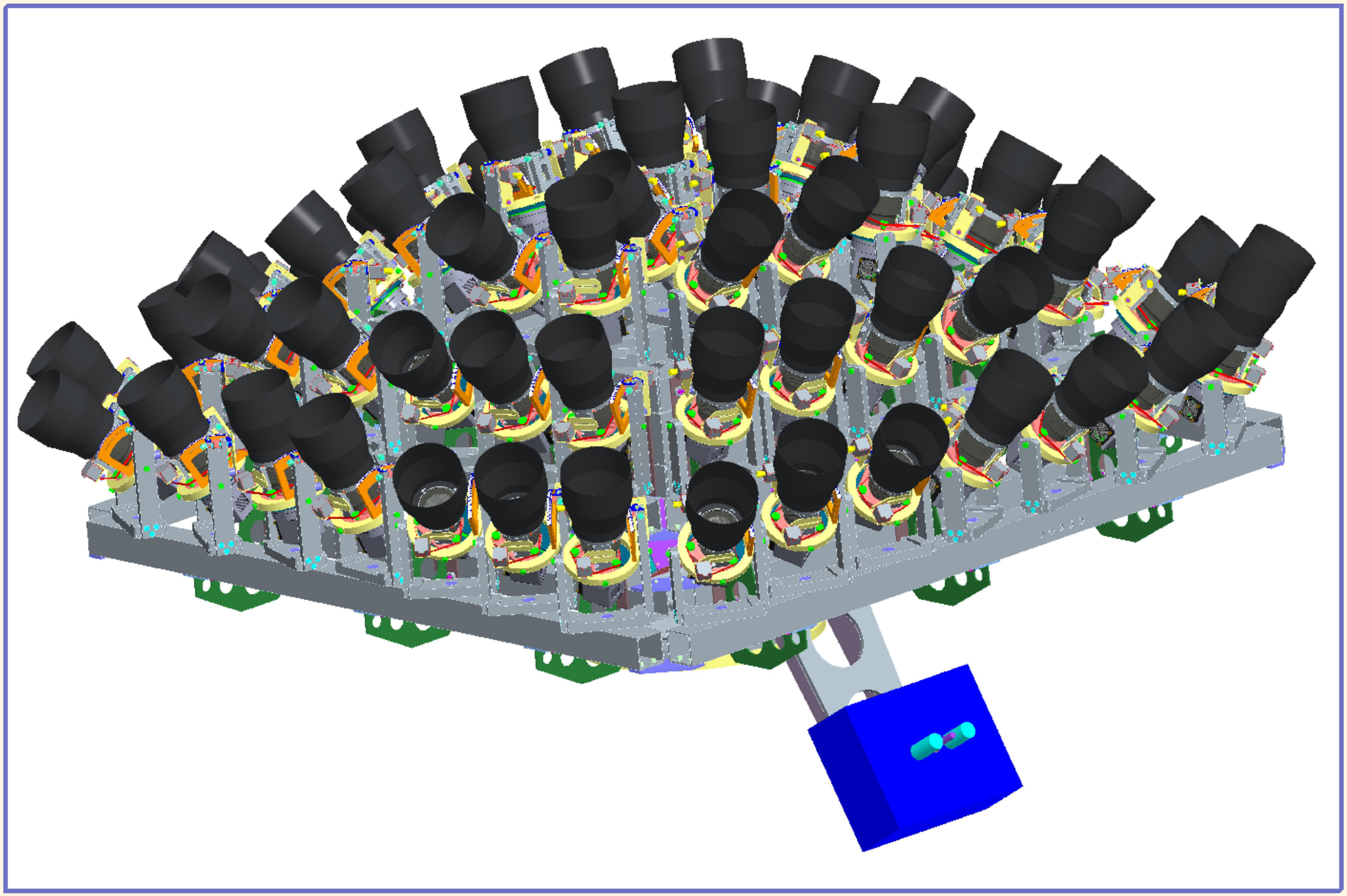


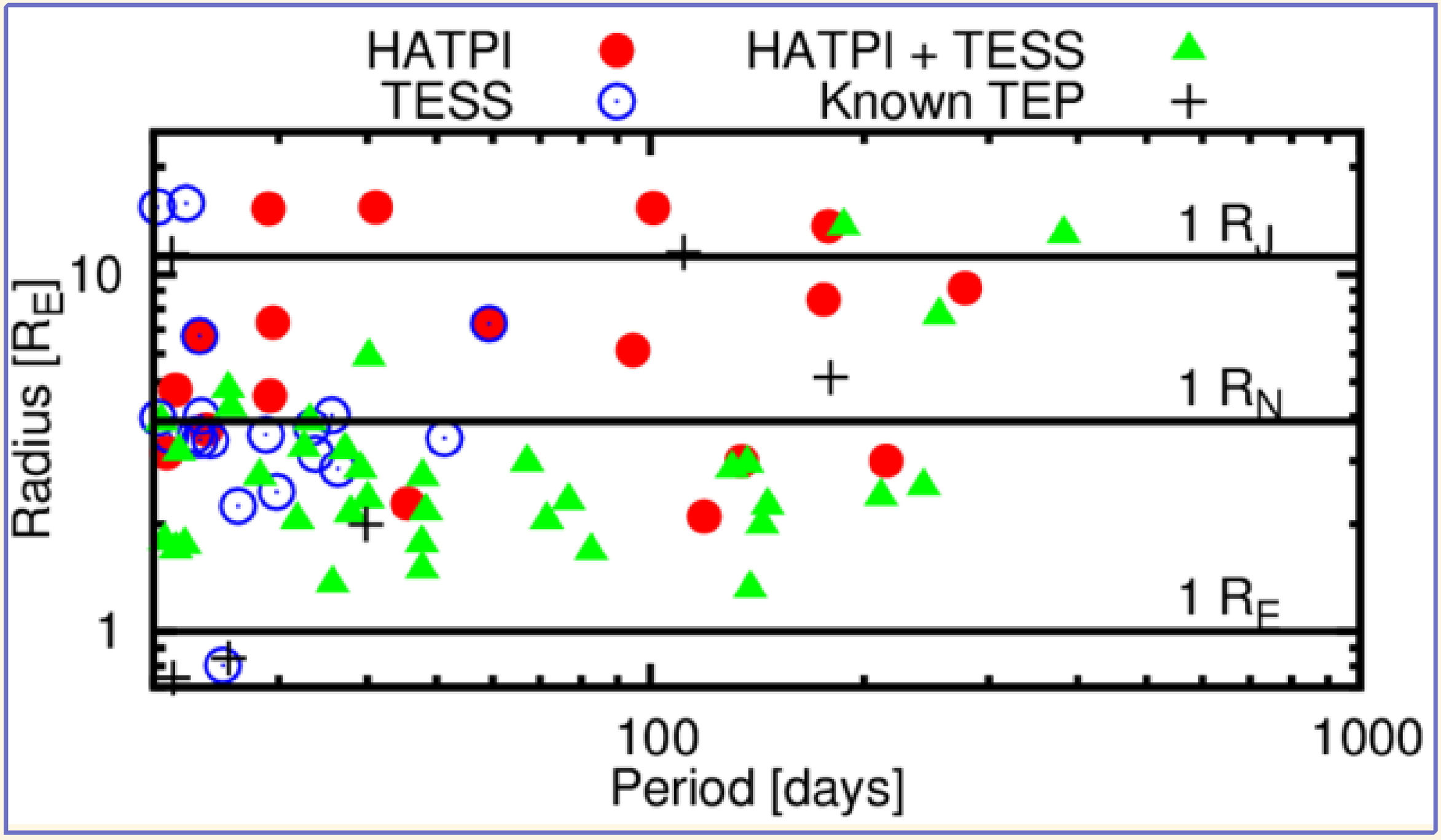
first light curves (YESTERDAY!! - 1mmag transit of WASP-78b)

the future: HATPI



collaboration between the groups of Gáspár Bakos (PI, Princeton), Andrés Jordán (PUC), Dave Osip@LCO

the future: HATPI



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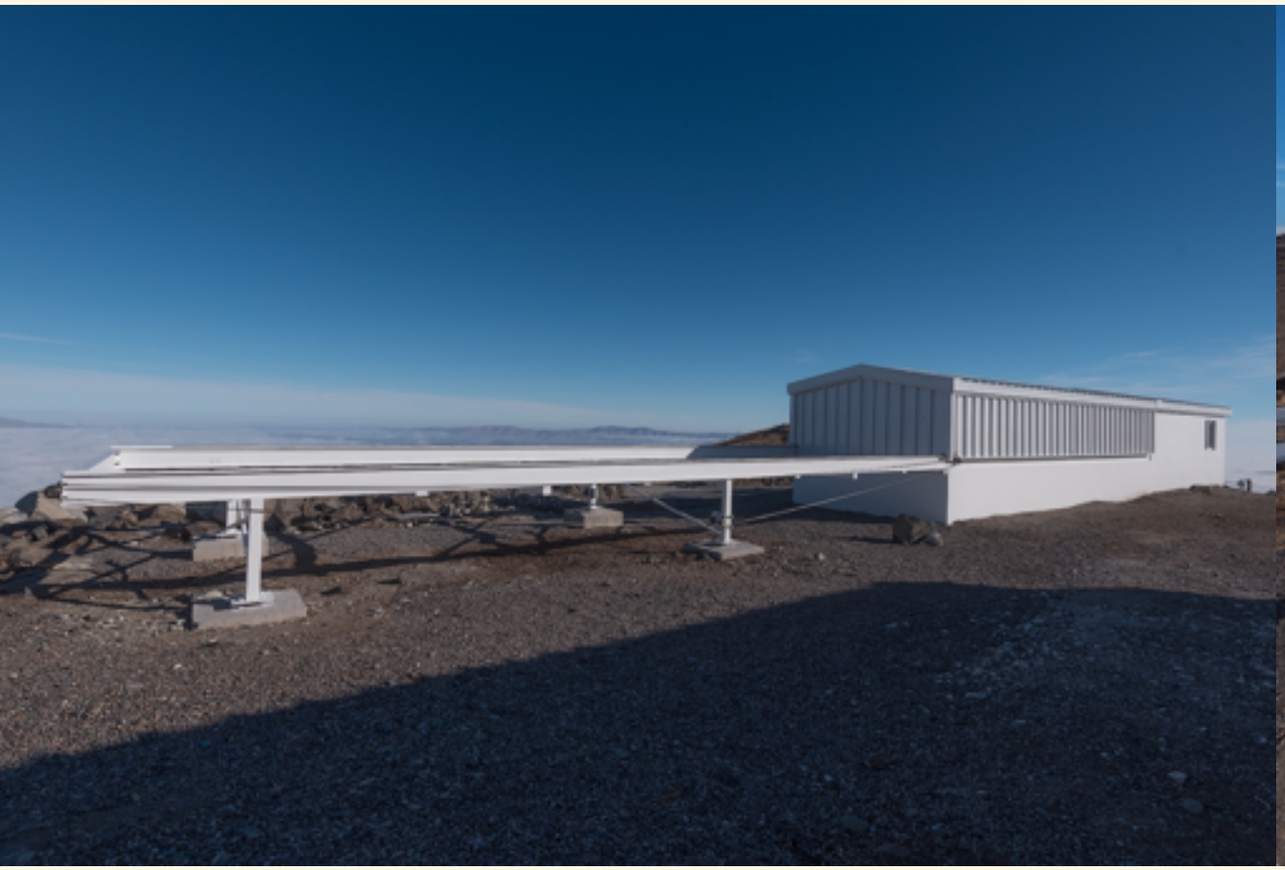
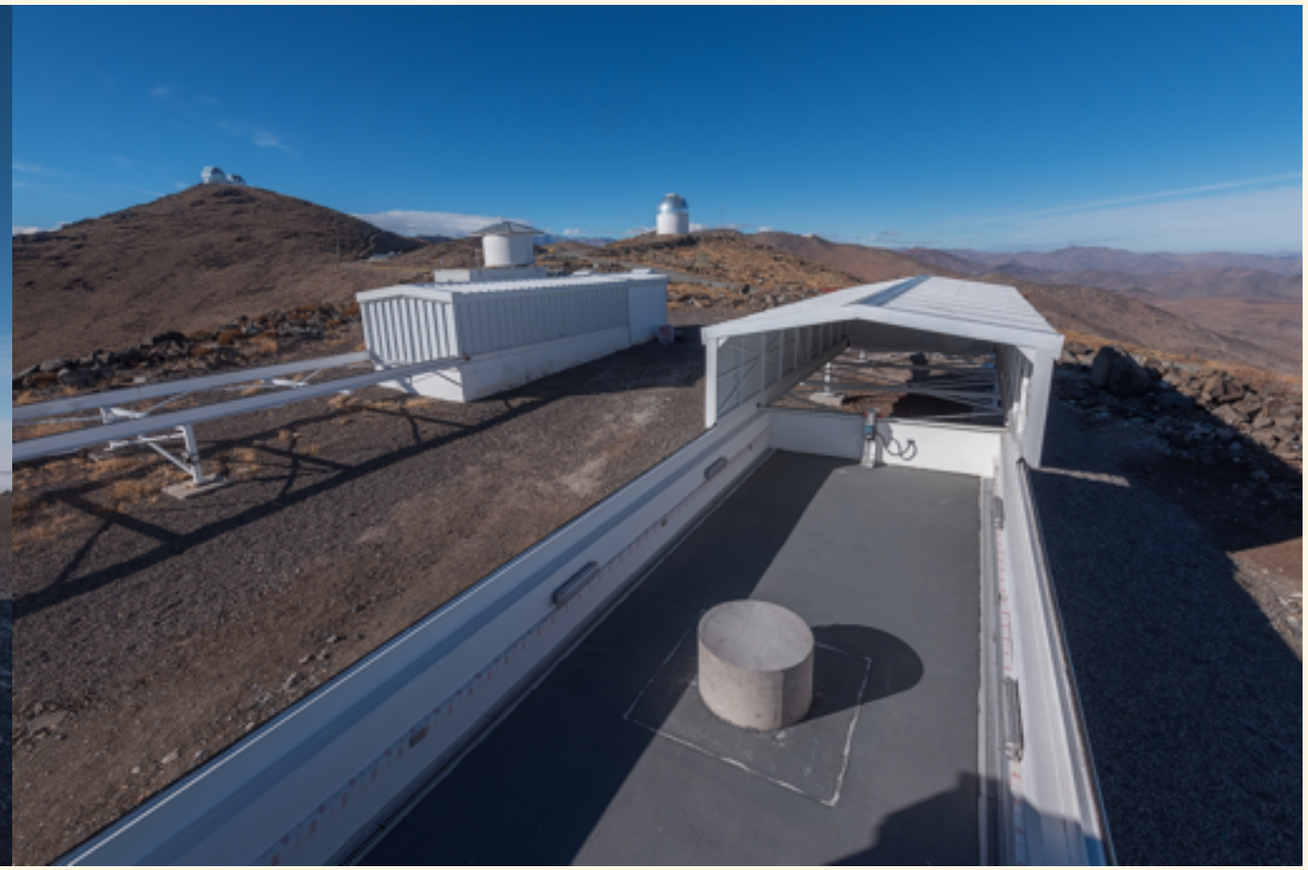
the future: HATPI





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thank you