An old warm Jupiter orbiting the metal poor G-dwarf star TIC466206508

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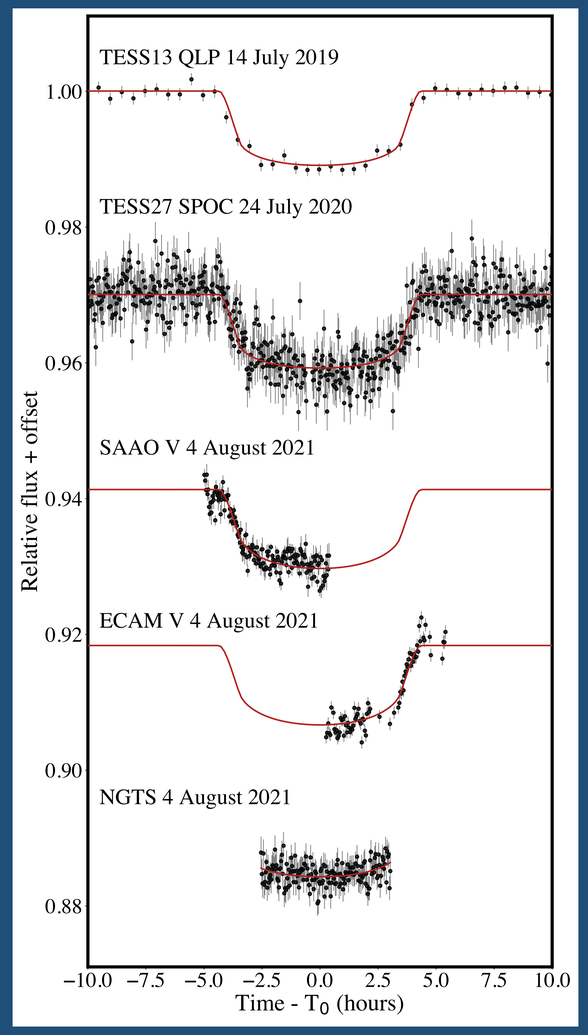
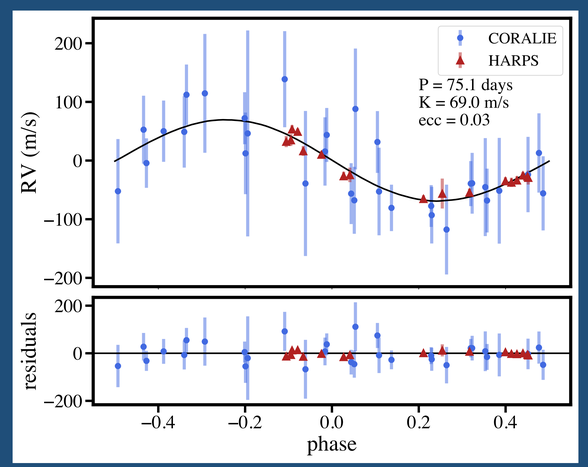
I specialize in RV follow-up of transiting planets, including warm/non-highly irradiated planets as well as planets orbiting M-dwarfs (with ESPRESSO and eventually NIRPS)

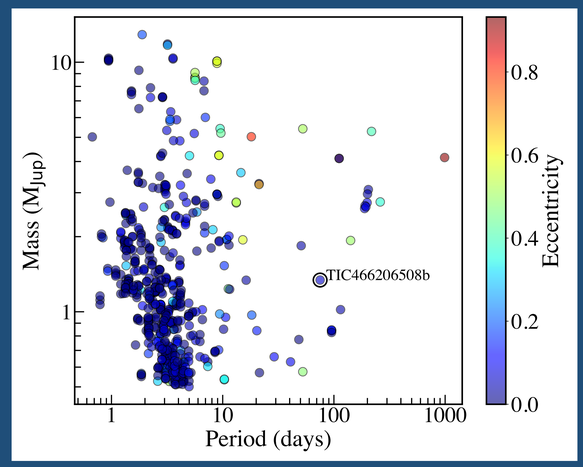
This poster is over a recently discovered warm Jupiter characterized with CORALIE and HARPS associated with the *PlanetS* ***monotransit*** initiative

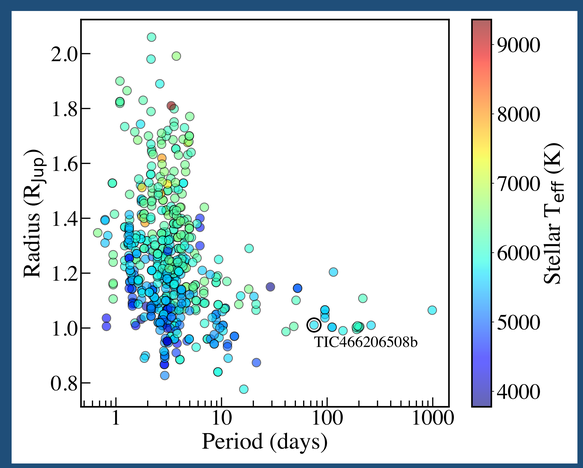
Swiss National Science Foundation

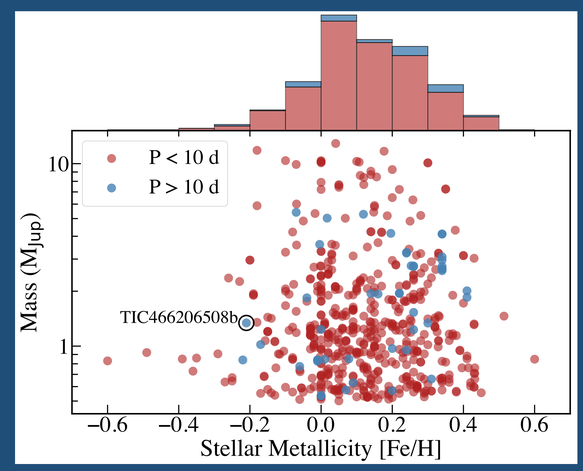


CORALIE RVs confirmed planet nature of 'duo' TESS transit + HARPS RVs to further characterize + third transit from the ground









In context with 565 well-defined giant planets:
- ($0.5\ M_{Jup} < M_p < 13\ M_{Jup}$)
- ($\sigma_{Mp}/M_p < 25\%$)
- ($\sigma_{Rp}/R_p < 8\%$)
- finite periods and $\sigma_{[Fe/H]} < 0.25$

Stellar parameters

Mass ($M_\odot$)	$0.943^{+0.062}_{-0.043}$
Radius ($R_\odot$)	$1.099^{+0.030}_{-0.029}$
Luminosity ($L_\odot$)	$1.181^{+0.054}_{-0.047}$
$T_{\rm eff}$ (K)	5700 ± 80
[Fe/H] (dex)	-0.21 ± 0.08
$\log g_*$ (cm s^{-2})	$4.331^{+0.038}_{-0.033}$
Spectral type	G3V
ρ_* (g cm^{-3})	$1.002^{+0.120}_{-0.093}$
$v \sin i_*$ (km s^{-1})	3.03 ± 0.50
$P_{\rm rot} / \sin i_*$ (days)	18.4 ± 3.1
Age (Gyrs)	$9.1^{+2.9}_{-3.5}$

Planet parameters

Period (days)	$75.12345^{+0.00021}_{-0.00021}$
Radial velocity semi-amplitude (m s^{-1})	$68.98^{+4.35}_{-4.26}$
Eccentricity of the orbit	$0.030^{+0.035}_{-0.019}$
Semi-major axis (AU)	$0.332^{+0.014}_{-0.014}$
Planetary mass (M_{Jup})	$1.37^{+0.11}_{-0.10}$
Planetary radius (R_{Jup})	$1.063^{+0.031}_{-0.031}$
Planetary density (g cm^{-3})	$1.42^{+0.17}_{-0.15}$
Insolation ($S_\oplus$)	$10.7^{+1.0}_{-0.9}$
Equilibrium Temperature (K)	$450.3^{+49.9}_{-75.9}$

Warm Jupiters (in between hot Jupiters and solar system giants) are ideal to test giant planet migration and formation theories

- Circular orbit and absence of close planet companions, based on RV and photometry data, suggests interactions with the protoplanetary disk as the most probable migration scenario **(disk migration or in situ formation rather than high-eccentricity migration mechanisms)**
- Host star relatively old and metal poor [Fe/H] = -0.21±0.8 → not traditional trend of high host star metallicity for giant planets and **does not bolster studies suggesting a difference in host star metallicities for low and high mass giant planets**
- With sample of well characterized giant planets find both high and low mass giants split at 4 M_{Jup} and hot and warm giant planets split at P=10 days are all preferentially around metal-rich stars with mean [Fe/H] > 0.1

*Monotransit initiative awarded HARPS time in P107, P108, P109 → ***see talk by Solène Ulmer-Moll***