

Table 1. Median values and 68% confidence interval for OGLE-TR-1013.

Parameter	Units	Values
Stellar Parameters:		
M_*	Mass (M_\odot)	$2.00^{+0.60}_{-0.55}$
R_*	Radius (R_\odot)	$1.47^{+0.13}_{-0.12}$
$R_{*,SED}$	Radius ¹ (R_\odot)	$1.48^{+0.15}_{-0.13}$
L_*	Luminosity (L_\odot)	42^{+62}_{-22}
F_{Bol}	Bolometric Flux (cgs)	$0.00000000193^{+0.00000000020}_{-0.00000000085}$
ρ_*	Density (cgs)	$0.88^{+0.37}_{-0.29}$
$\log g$	Surface gravity (cgs)	$4.40^{+0.13}_{-0.15}$
T_{eff}	Effective Temperature (K)	12100^{+3200}_{-2100}
$T_{eff,SED}$	Effective Temperature ¹ (K)	12100^{+3200}_{-2100}
[Fe/H]	Metallicity (dex)	$-1.59^{+0.93}_{-1.5}$
[Fe/H] ₀	Initial Metallicity ²	$-1.50^{+0.91}_{-1.5}$
Age	Age (Gyr)	$0.41^{+1.1}_{-0.31}$
EEP	Equal Evolutionary Phase ³	353^{+87}_{-37}
A_V	V-band extinction (mag)	$2.49^{+0.18}_{-0.20}$
σ_{SED}	SED photometry error scaling	$22.7^{+3.0}_{-2.6}$
ϖ	Parallax (mas)	$0.375^{+0.041}_{-0.044}$
d	Distance (pc)	2670^{+350}_{-260}
Planetary Parameters:		
		b
P	Period (days)	$23.89398^{+0.00024}_{-0.00025}$
R_P	Radius (R_J)	$1.049^{+0.085}_{-0.075}$
M_P	Mass ⁴ (M_J)	40^{+30}_{-28}
T_C	Time of conjunction ⁵ (BJD _{TDB})	$2455390.170^{+0.020}_{-0.016}$
T_T	Time of minimum projected separation ⁶ (BJD _{TDB})	$2455390.170^{+0.020}_{-0.016}$
T_0	Optimal conjunction Time ⁷ (BJD _{TDB})	$2456847.7046^{+0.0082}_{-0.0080}$
a	Semi-major axis (AU)	$0.206^{+0.019}_{-0.021}$
i	Inclination (Degrees)	$89.05^{+0.56}_{-0.48}$
T_{eq}	Equilibrium temperature ⁸ (K)	1570^{+310}_{-220}
τ_{circ}	Tidal circularization timescale (Gyr)	$150000^{+170000}_{-120000}$
K	RV semi-amplitude ⁴ (m/s)	1800^{+1300}_{-1200}
R_P/R_*	Radius of planet in stellar radii	$0.0734^{+0.0043}_{-0.0044}$
a/R_*	Semi-major axis in stellar radii	30.1 ± 3.7
δ	$(R_P/R_*)^2$	$0.00538^{+0.00065}_{-0.00063}$
δ_I	Transit depth in I (fraction)	$0.00561^{+0.00069}_{-0.00065}$
δ_V	Transit depth in V (fraction)	$0.00572^{+0.00071}_{-0.00067}$
τ	Ingress/egress transit duration (days)	$0.0214^{+0.0069}_{-0.0041}$
T_{14}	Total transit duration (days)	$0.240^{+0.017}_{-0.019}$

Table 1 continued on next page

Table 1 (continued)

Parameter	Units	Values	
T_{FWHM} . . .	FWHM transit duration (days)	0.218 ^{+0.016} _{-0.020}	
b	Transit Impact parameter	0.50 ^{+0.17} _{-0.28}	
$\delta_{S,2.5\mu m}$. . .	Blackbody eclipse depth at 2.5 μm (ppm)	86 ⁺³⁸ ₋₂₇	
$\delta_{S,5.0\mu m}$. . .	Blackbody eclipse depth at 5.0 μm (ppm)	275 ⁺⁴⁸ ₋₄₅	
$\delta_{S,7.5\mu m}$. . .	Blackbody eclipse depth at 7.5 μm (ppm)	385 ⁺⁵⁰ ₋₄₈	
ρ_P	Density ⁴ (cgs)	44 ⁺³⁸ ₋₃₂	
$\log g_P$	Surface gravity ⁴	4.97 ^{+0.26} _{-0.53}	
Θ	Safronov Number	8.0 ^{+6.5} _{-5.6}	
$\langle F \rangle$	Incident Flux (10 ⁹ erg s ⁻¹ cm ⁻²)	1.39 ^{+1.5} _{-0.63}	
T_P	Time of Periastron (BJD _{TDB})	2455390.170 ^{+0.020} _{-0.016}	
T_S	Time of eclipse (BJD _{TDB})	2455378.223 ^{+0.020} _{-0.016}	
T_A	Time of Ascending Node (BJD _{TDB})	2455408.091 ^{+0.020} _{-0.015}	
T_D	Time of Descending Node (BJD _{TDB})	2455396.144 ^{+0.020} _{-0.015}	
V_c/V_e	1.00	
$M_P \sin i$	Minimum mass ⁴ (M_J)	40 ⁺³⁰ ₋₂₈	
M_P/M_*	Mass ratio ⁴	0.019 ^{+0.016} _{-0.013}	
d/R_*	Separation at mid transit	30.1 \pm 3.7	
P_T	A priori non-grazing transit prob	0.0308 ^{+0.0043} _{-0.0034}	
$P_{T,G}$	A priori transit prob	0.0357 ^{+0.0050} _{-0.0038}	
Wavelength Parameters:		I	V
u_1	linear limb-darkening coeff	0.129 ^{+0.056} _{-0.054}	0.186 ^{+0.073} _{-0.063}
u_2	quadratic limb-darkening coeff	0.208 ^{+0.053} _{-0.052}	0.305 \pm 0.053
Transit Parameters:		OGLE UT 2010-07-12 (I)	OGLE UT 2010-07-12 (V)
σ^2	Added Variance	0.00004321 \pm 0.00000060	0.0000278 ^{+0.0000037} _{-0.0000034}
F_0	Baseline flux	1.000253 ^{+0.000059} _{-0.000058}	0.99999 ^{+0.00040} _{-0.00041}

See Table 3 in Eastman, J. et al., 2019, arXiv:1907.09480 for a detailed description of all parameters

¹This value ignores the systematic error and is for reference only

²The metallicity of the star at birth

³Corresponds to static points in a star's evolutionary history. See §2 in Dotter, A., 2016, ApJS, 222, 8

⁴Uses measured radius and estimated mass from Chen, J., & Kipping, D. 2017, ApJ, 834, 17

⁵Time of conjunction is commonly reported as the "transit time"

⁶Time of minimum projected separation is a more correct "transit time"

⁷Optimal time of conjunction minimizes the covariance between T_C and Period

⁸Assumes no albedo and perfect redistribution