

Table 1. Median values and 68% confidence interval for OGLE-TR-1012.

Parameter	Units	Values
Stellar Parameters:		
M_*	Mass (M_\odot)	$1.88^{+0.19}_{-0.25}$
R_*	Radius (R_\odot)	$1.78^{+0.15}_{-0.12}$
$R_{*,SED}$	Radius ¹ (R_\odot)	$1.82^{+0.18}_{-0.14}$
L_*	Luminosity (L_\odot)	$13.0^{+4.4}_{-2.9}$
F_{Bol}	Bolometric Flux (cgs)	$0.000000000662^{+0.000000000012}_{-0.0000000000089}$
ρ_*	Density (cgs)	$0.460^{+0.094}_{-0.11}$
$\log g$	Surface gravity (cgs)	$4.205^{+0.056}_{-0.088}$
T_{eff}	Effective Temperature (K)	8170^{+450}_{-400}
$T_{eff,SED}$	Effective Temperature ¹ (K)	8100^{+390}_{-340}
[Fe/H]	Metallicity (dex)	$0.10^{+0.25}_{-0.49}$
[Fe/H] ₀	Initial Metallicity ²	$0.19^{+0.19}_{-0.43}$
Age	Age (Gyr)	$0.38^{+0.61}_{-0.26}$
EEP	Equal Evolutionary Phase ³	323^{+27}_{-38}
A_V	V-band extinction (mag)	2.60 ± 0.15
σ_{SED}	SED photometry error scaling	$7.05^{+1.1}_{-0.89}$
ϖ	Parallax (mas)	$0.401^{+0.038}_{-0.039}$
d	Distance (pc)	2490^{+260}_{-220}
Planetary Parameters:		
		b
P	Period (days)	$3.576539^{+0.000023}_{-0.000014}$
R_P	Radius (R_J)	$1.088^{+0.099}_{-0.075}$
M_P	Mass ⁴ (M_J)	38^{+36}_{-28}
T_C	Time of conjunction ⁵ (BJD _{TDB})	$2455379.8131^{+0.0059}_{-0.0069}$
T_T	Time of minimum projected separation ⁶ (BJD _{TDB})	$2455379.8131^{+0.0059}_{-0.0069}$
T_0	Optimal conjunction Time ⁷ (BJD _{TDB})	$2456384.8211^{+0.0034}_{-0.0032}$
a	Semi-major axis (AU)	$0.0569^{+0.0018}_{-0.0025}$
i	Inclination (Degrees)	$86.4^{+1.8}_{-1.6}$
T_{eq}	Equilibrium temperature ⁸ (K)	2220^{+140}_{-110}
τ_{circ}	Tidal circularization timescale (Gyr)	28^{+35}_{-23}
K	RV semi-amplitude ⁴ (m/s)	3400^{+3100}_{-2500}
R_P/R_*	Radius of planet in stellar radii	$0.0630^{+0.0025}_{-0.0026}$
a/R_*	Semi-major axis in stellar radii	$6.82^{+0.45}_{-0.58}$
δ	$(R_P/R_*)^2$	0.00396 ± 0.00032
δ_I	Transit depth in I (fraction)	0.00423 ± 0.00033
δ_V	Transit depth in V (fraction)	$0.00447^{+0.00038}_{-0.00036}$
τ	Ingress/egress transit duration (days)	$0.0117^{+0.0026}_{-0.0015}$
T_{14}	Total transit duration (days)	$0.1629^{+0.0074}_{-0.0063}$

Table 1 continued on next page

Table 1 (continued)

Parameter	Units	Values	
T_{FWHM} ..	FWHM transit duration (days)	0.1505 ^{+0.0075} _{-0.0063}	
b	Transit Impact parameter	0.44 ^{+0.14} _{-0.21}	
$\delta_{S,2.5\mu m}$..	Blackbody eclipse depth at 2.5 μm (ppm)	325 ⁺⁵² ₋₃₇	
$\delta_{S,5.0\mu m}$..	Blackbody eclipse depth at 5.0 μm (ppm)	626 ⁺⁷² ₋₅₅	
$\delta_{S,7.5\mu m}$..	Blackbody eclipse depth at 7.5 μm (ppm)	759 ⁺⁸⁰ ₋₆₄	
ρ_P	Density ⁴ (cgs)	37 ⁺³⁴ ₋₂₉	
$\log g_P$	Surface gravity ⁴	4.92 ^{+0.28} _{-0.63}	
Θ	Safronov Number	2.2 ^{+2.2} _{-1.7}	
$\langle F \rangle$	Incident Flux (10 ⁹ erg s ⁻¹ cm ⁻²)	5.5 ^{+1.6} _{-1.0}	
T_P	Time of Periastron (BJD _{TDB})	2455379.8131 ^{+0.0059} _{-0.0069}	
T_S	Time of eclipse (BJD _{TDB})	2455381.6013 ^{+0.0059} _{-0.0069}	
T_A	Time of Ascending Node (BJD _{TDB})	2455382.4955 ^{+0.0059} _{-0.0068}	
T_D	Time of Descending Node (BJD _{TDB})	2455380.7072 ^{+0.0059} _{-0.0069}	
V_c/V_e	1.00	
$M_P \sin i$..	Minimum mass ⁴ (M_J)	38 ⁺³⁶ ₋₂₈	
M_P/M_*	Mass ratio ⁴	0.020 ^{+0.020} _{-0.015}	
d/R_*	Separation at mid transit	6.82 ^{+0.45} _{-0.58}	
P_T	A priori non-grazing transit prob	0.1374 ^{+0.013} _{-0.0085}	
$P_{T,G}$	A priori transit prob	0.1558 ^{+0.015} _{-0.0095}	
Wavelength Parameters:		I	V
u_1	linear limb-darkening coeff	0.163 \pm 0.053	0.297 ^{+0.054} _{-0.053}
u_2	quadratic limb-darkening coeff	0.276 \pm 0.060	0.329 \pm 0.052
Transit Parameters:		OGLE UT 2010-07-02 (I)	OGLE UT 2010-07-02 (V)
σ^2	Added Variance	0.00003912 \pm 0.00000056	0.0000184 ^{+0.0000030} _{-0.0000026}
F_0	Baseline flux	1.000013 \pm 0.000060	0.99993 \pm 0.00038

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