

Table 1. Median values and 68% confidence interval for OGLE-TR-1020.

Parameter	Units	Values
Stellar Parameters:		
M_*	Mass (M_\odot)	$0.57^{+0.17}_{-0.28}$
R_*	Radius (R_\odot)	$0.865^{+0.055}_{-0.041}$
$R_{*,SED}$	Radius ¹ (R_\odot)	$0.371^{+0.021}_{-0.019}$
L_*	Luminosity (L_\odot)	$0.134^{+0.030}_{-0.026}$
F_{Bol}	Bolometric Flux (cgs)	$0.000000000246^{+0.0000000000057}_{-0.0000000000038}$
ρ_*	Density (cgs)	$1.10^{+0.42}_{-0.43}$
$\log g$	Surface gravity (cgs)	$4.29^{+0.12}_{-0.25}$
T_{eff}	Effective Temperature (K)	3710^{+190}_{-110}
$T_{eff,SED}$	Effective Temperature ¹ (K)	5720^{+190}_{-170}
[Fe/H]	Metallicity (dex)	$0.16^{+0.24}_{-1.6}$
[Fe/H] ₀	Initial Metallicity ²	$0.12^{+0.21}_{-1.3}$
Age	Age (Gyr)	$1.2^{+12}_{-1.2}$
EEP	Equal Evolutionary Phase ³	261^{+88}_{-150}
A_V	V-band extinction (mag)	$1.84^{+0.31}_{-0.33}$
σ_{SED}	SED photometry error scaling	$24.1^{+24}_{-5.6}$
ϖ	Parallax (mas)	$2.43^{+0.17}_{-0.16}$
d	Distance (pc)	411^{+29}_{-26}
Planetary Parameters:		
		b
P	Period (days)	$37.78747^{+0.00017}_{-0.00021}$
R_p	Radius (R_J)	$1.206^{+0.14}_{-0.085}$
M_p	Mass ⁴ (M_J)	$1.4^{+2.8}_{-1.1}$
T_C	Time of conjunction ⁵ (BJD _{TDB})	$2455388.5955^{+0.015}_{-0.0083}$
T_T	Time of minimum projected separation ⁶ (BJD _{TDB})	$2455388.5955^{+0.015}_{-0.0083}$
T_0	Optimal conjunction Time ⁷ (BJD _{TDB})	$2455842.0447^{+0.013}_{-0.0067}$
a	Semi-major axis (AU)	$0.182^{+0.017}_{-0.038}$
i	Inclination (Degrees)	$89.858^{+0.098}_{-0.33}$
T_{eq}	Equilibrium temperature ⁸ (K)	403^{+34}_{-30}
τ_{circ}	Tidal circularization timescale (Gyr)	6800^{+15000}_{-5200}
K	RV semi-amplitude ⁴ (m/s)	150^{+200}_{-110}
R_p/R_*	Radius of planet in stellar radii	$0.1422^{+0.0041}_{-0.0049}$
a/R_*	Semi-major axis in stellar radii	$43.7^{+5.0}_{-6.5}$
δ	$(R_p/R_*)^2$	$0.0202^{+0.0012}_{-0.0014}$
δ_I	Transit depth in I (fraction)	$0.0239^{+0.0020}_{-0.0022}$
δ_V	Transit depth in V (fraction)	$0.0286^{+0.0037}_{-0.0053}$
τ	Ingress/egress transit duration (days)	$0.0415^{+0.0062}_{-0.0059}$
T_{14}	Total transit duration (days)	$0.313^{+0.046}_{-0.033}$

Table 1 continued on next page

Table 1 (continued)

Parameter	Units	Values	
T_{FWHM} ..	FWHM transit duration (days)	0.269 ^{+0.042} _{-0.025}	
b	Transit Impact parameter	0.107 ^{+0.20} _{-0.072}	
$\delta_{S,2.5\mu m}$..	Blackbody eclipse depth at 2.5 μm (ppm)	0.050 ^{+0.093} _{-0.034}	
$\delta_{S,5.0\mu m}$..	Blackbody eclipse depth at 5.0 μm (ppm)	19.1 ⁺¹³ _{-7.6}	
$\delta_{S,7.5\mu m}$..	Blackbody eclipse depth at 7.5 μm (ppm)	122 ⁺⁴⁵ ₋₃₇	
ρ_P	Density ⁴ (cgs)	1.03 ^{+1.6} _{-0.76}	
$\log g_P$..	Surface gravity ⁴	3.40 ^{+0.44} _{-0.62}	
Θ	Safronov Number	0.89 ^{+1.3} _{-0.62}	
$\langle F \rangle$	Incident Flux (10 ⁹ erg s ⁻¹ cm ⁻²)	0.0060 ^{+0.0023} _{-0.0016}	
T_P	Time of Periastron (BJD _{TDB})	2455388.5955 ^{+0.015} _{-0.0083}	
T_S	Time of eclipse (BJD _{TDB})	2455407.4892 ^{+0.015} _{-0.0084}	
T_A	Time of Ascending Node (BJD _{TDB})	2455416.9360 ^{+0.015} _{-0.0083}	
T_D	Time of Descending Node (BJD _{TDB})	2455398.0424 ^{+0.015} _{-0.0083}	
V_c/V_e	1.00	
$M_P \sin i$..	Minimum mass ⁴ (M_J)	1.4 ^{+2.8} _{-1.1}	
M_P/M_* ..	Mass ratio ⁴	0.0032 ^{+0.0037} _{-0.0022}	
d/R_* ..	Separation at mid transit	43.7 ^{+5.0} _{-6.5}	
P_T	A priori non-grazing transit prob	0.0199 ^{+0.0034} _{-0.0024}	
$P_{T,G}$	A priori transit prob	0.0273 ^{+0.0034} _{-0.0037}	
Wavelength Parameters:		I	V
u_1	linear limb-darkening coeff	0.35 ^{+0.11} _{-0.18}	0.64 ^{+0.13} _{-0.39}
u_2	quadratic limb-darkening coeff	0.20 ^{+0.13} _{-0.12}	0.10 ^{+0.20} _{-0.13}
Transit Parameters:		OGLE UT 2010-07-11 (I)	OGLE UT 2010-07-11 (V)
σ^2	Added Variance	0.00002654 ^{+0.00000070} _{-0.00000065}	0.000051 ^{+0.0015} _{-0.000011}
F_0	Baseline flux	0.999860 ^{+0.000083} _{-0.000086}	0.9993 ^{+0.0014} _{-0.0010}

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