

**Table 1.** Median values and 68% confidence interval for OGLE-TR-1087.

| Parameter             | Units   | Values  |
|-----------------------|---|---|
| Stellar Parameters:   |   |   |
| $M_*$                 | Mass ( $M_\odot$ )  | $1.18 \pm 0.24$                                       |
| $R_*$                 | Radius ( $R_\odot$ )  | $2.38^{+0.32}_{-0.63}$                                |
| $R_{*,SED}$           | Radius <sup>1</sup> ( $R_\odot$ )                                       | $2.38^{+0.31}_{-0.56}$                                |
| $L_*$                 | Luminosity ( $L_\odot$ )  | $4.0^{+1.8}_{-1.1}$                                   |
| $F_{Bol}$             | Bolometric Flux (cgs)   | $0.000000000212^{+0.000000000010}_{-0.0000000000045}$ |
| $\rho_*$              | Density (cgs)   | $0.119^{+0.22}_{-0.039}$                              |
| $\log g$              | Surface gravity (cgs)   | $3.75^{+0.30}_{-0.13}$                                |
| $T_{eff}$             | Effective Temperature (K)   | $5380^{+790}_{-500}$                                  |
| $T_{eff,SED}$         | Effective Temperature <sup>1</sup> (K)                                  | $5350^{+770}_{-460}$                                  |
| [Fe/H]                | Metallicity (dex)   | $0.16^{+0.27}_{-0.89}$                                |
| [Fe/H] <sub>0</sub>   | Initial Metallicity <sup>2</sup>  | $0.16^{+0.25}_{-0.84}$                                |
| Age                   | Age (Gyr)   | $6.2^{+4.7}_{-3.0}$                                   |
| EEP                   | Equal Evolutionary Phase <sup>3</sup>                                   | $470.1^{+8.0}_{-61}$                                  |
| $A_V$                 | V-band extinction (mag)   | $1.16^{+0.52}_{-0.40}$                                |
| $\sigma_{SED}$        | SED photometry error scaling  | $5.4^{+2.4}_{-1.6}$                                   |
| $\varpi$              | Parallax (mas)  | $0.406^{+0.076}_{-0.046}$                             |
| $d$                   | Distance (pc)   | $2460^{+310}_{-390}$                                  |
| Planetary Parameters: |   |   |
|                       |   | b   |
| $P$                   | Period (days)   | $4.243166^{+0.000012}_{-0.000011}$                    |
| $R_p$                 | Radius ( $R_J$ )  | $1.92^{+0.31}_{-0.61}$                                |
| $M_p$                 | Mass <sup>4</sup> ( $M_J$ )   | $174^{+32}_{-110}$                                    |
| $T_C$                 | Time of conjunction <sup>5</sup> (BJD <sub>TDB</sub> )                  | $2455378.3629^{+0.0048}_{-0.0053}$                    |
| $T_T$                 | Time of minimum projected separation <sup>6</sup> (BJD <sub>TDB</sub> ) | $2455378.3629^{+0.0048}_{-0.0053}$                    |
| $T_0$                 | Optimal conjunction Time <sup>7</sup> (BJD <sub>TDB</sub> )             | $2457020.4682^{+0.0023}_{-0.0024}$                    |
| $a$                   | Semi-major axis (AU)  | $0.0563^{+0.0032}_{-0.0035}$                          |
| $i$                   | Inclination (Degrees)   | $81.5^{+4.8}_{-1.9}$                                  |
| $T_{eq}$              | Equilibrium temperature <sup>8</sup> (K)                                | $1650^{+170}_{-110}$                                  |
| $\tau_{circ}$         | Tidal circularization timescale (Gyr)                                   | $13.6^{+15}_{-5.6}$                                   |
| $K$                   | RV semi-amplitude <sup>4</sup> (m/s)                                    | $18000^{+3600}_{-10000}$                              |
| $R_p/R_*$             | Radius of planet in stellar radii                                       | $0.0822^{+0.0031}_{-0.0043}$                          |
| $a/R_*$               | Semi-major axis in stellar radii  | $5.06^{+1.8}_{-0.57}$                                 |
| $\delta$              | $(R_p/R_*)^2$   | $0.00676^{+0.00052}_{-0.00072}$                       |
| $\delta_I$            | Transit depth in I (fraction)   | $0.00685^{+0.00030}_{-0.00032}$                       |
| $\delta_V$            | Transit depth in V (fraction)   | $0.00695 \pm 0.00047$                                 |
| $\tau$                | Ingress/egress transit duration (days)                                  | $0.034^{+0.012}_{-0.017}$                             |
| $T_{14}$              | Total transit duration (days)   | $0.211^{+0.011}_{-0.018}$                             |

Table 1 continued on next page

Table 1 (continued)

| Parameter                 | Units   | Values   |   |
|---------------------------|---|--|---|
| $T_{FWHM}$ ..             | FWHM transit duration (days) .....  | 0.1755 <sup>+0.0061</sup> <sub>-0.0057</sub>             |   |
| $b$ .....                 | Transit Impact parameter .....  | 0.751 <sup>+0.062</sup> <sub>-0.30</sub>                 |   |
| $\delta_{S,2.5\mu m}$ ..  | Blackbody eclipse depth at 2.5 $\mu m$ (ppm) .....                          | 420 <sup>+140</sup> <sub>-130</sub>                      |   |
| $\delta_{S,5.0\mu m}$ ..  | Blackbody eclipse depth at 5.0 $\mu m$ (ppm) .....                          | 1050 <sup>+200</sup> <sub>-290</sub>                     |   |
| $\delta_{S,7.5\mu m}$ ..  | Blackbody eclipse depth at 7.5 $\mu m$ (ppm) .....                          | 1360 <sup>+230</sup> <sub>-360</sub>                     |   |
| $\rho_P$ .....            | Density <sup>4</sup> (cgs) .....  | 27.7 <sup>+12</sup> <sub>-7.8</sub>                      |   |
| $\log g_P$ ..             | Surface gravity <sup>4</sup> .....  | 5.047 <sup>+0.071</sup> <sub>-0.082</sub>                |   |
| $\Theta$ .....            | Safronov Number .....   | 8.5 <sup>+1.6</sup> <sub>-2.7</sub>                      |   |
| $\langle F \rangle$ ..... | Incident Flux (10 <sup>9</sup> erg s <sup>-1</sup> cm <sup>-2</sup> ) ..... | 1.67 <sup>+0.83</sup> <sub>-0.39</sub>                   |   |
| $T_P$ .....               | Time of Periastron (BJD <sub>TDB</sub> ) .....                              | 2455378.3629 <sup>+0.0048</sup> <sub>-0.0053</sub>       |   |
| $T_S$ .....               | Time of eclipse (BJD <sub>TDB</sub> ) .....                                 | 2455380.4845 <sup>+0.0048</sup> <sub>-0.0053</sub>       |   |
| $T_A$ .....               | Time of Ascending Node (BJD <sub>TDB</sub> ) .....                          | 2455381.5453 <sup>+0.0048</sup> <sub>-0.0053</sub>       |   |
| $T_D$ .....               | Time of Descending Node (BJD <sub>TDB</sub> ) .....                         | 2455379.4237 <sup>+0.0048</sup> <sub>-0.0053</sub>       |   |
| $V_c/V_e$ ..              | .....   | 1.00   |   |
| $M_P \sin i$ ..           | Minimum mass <sup>4</sup> ( $M_J$ ) .....                                   | 172 <sup>+31</sup> <sub>-110</sub>                       |   |
| $M_P/M_*$ ..              | Mass ratio <sup>4</sup> .....   | 0.141 <sup>+0.044</sup> <sub>-0.081</sub>                |   |
| $d/R_*$ ..                | Separation at mid transit .....   | 5.06 <sup>+1.8</sup> <sub>-0.57</sub>                    |   |
| $P_T$ .....               | A priori non-grazing transit prob .....                                     | 0.181 <sup>+0.023</sup> <sub>-0.048</sub>                |   |
| $P_{T,G}$ .....           | A priori transit prob .....   | 0.214 <sup>+0.028</sup> <sub>-0.058</sub>                |   |
| Wavelength Parameters:    |   | I  | V   |
| $u_1$ .....               | linear limb-darkening coeff .....   | 0.335 <sup>+0.098</sup> <sub>-0.12</sub>                 | 0.55 <sup>+0.16</sup> <sub>-0.17</sub>                  |
| $u_2$ .....               | quadratic limb-darkening coeff .....  | 0.253 <sup>+0.072</sup> <sub>-0.070</sub>                | 0.20 <sup>+0.10</sup> <sub>-0.12</sub>                  |
| Transit Parameters:       |   | OGLE UT 2010-06-30 (I)                                   | OGLE UT 2010-06-30 (V)                                  |
| $\sigma^2$ .....          | Added Variance .....  | 0.00002252 <sup>+0.00000037</sup> <sub>-0.00000036</sub> | 0.0000186 <sup>+0.00000031</sup> <sub>-0.00000028</sub> |
| $F_0$ .....               | Baseline flux .....   | 1.000208 <sup>+0.000049</sup> <sub>-0.000048</sub>       | 1.00030 ± 0.00038                                       |

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

<sup>1</sup>This value ignores the systematic error and is for reference only

<sup>2</sup>The metallicity of the star at birth

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

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

<sup>5</sup>Time of conjunction is commonly reported as the "transit time"

<sup>6</sup>Time of minimum projected separation is a more correct "transit time"

<sup>7</sup>Optimal time of conjunction minimizes the covariance between  $T_C$  and Period

<sup>8</sup>Assumes no albedo and perfect redistribution