TABLE 1 MODEL COMPARISON

AICc Qualitative Comparison	Free Parameters	$N_{ m free}$	$N_{ m data}$	RMS	$\ln \mathcal{L}$	BIC	AICc	$\Delta { m AICc}$
AICc Favored Model	$K_b, K_c, K_d, K_e, K_f, \dot{\gamma}, \sigma, \gamma$	12	127	3.54	-331.12	738.92	707.53	0.00
Somewhat Disfavored	$K_b, K_c, K_d, K_e, K_f, \sigma, \gamma$	11	127	3.60	-333.46	738.76	709.77	2.24
Strongly Disfavored	$K_b, K_c, K_e, K_f, \dot{\gamma}, \sigma, \gamma$	11	127	3.70	-336.60	745.04	716.04	8.51
	$K_b, K_c, K_e, K_f, \sigma, \gamma$	10	127	3.73	-337.84	742.67	716.12	8.59
Ruled Out	$K_b, K_c, K_d, K_e, \dot{\gamma}, \sigma, \gamma$	9	127	4.10	-350.23	762.61	738.55	31.02
	$K_b, K_c, K_d, K_f, \dot{\gamma}, \sigma, \gamma$	11	127	4.04	-348.27	768.37	739.38	31.85
	$K_b, K_c, K_d, K_e, \sigma, \gamma$	8	127	4.15	-351.85	761.02	739.48	31.95
	$K_b, K_c, K_d, K_f, \sigma, \gamma$	10	127	4.12	-350.62	768.24	741.70	34.17
	$K_b, K_c, K_e, \sigma, \gamma$	7	127	4.27	-355.50	763.46	744.50	36.97
	$K_b, K_c, K_e, \dot{\gamma}, \sigma, \gamma$	8	127	4.24	-354.49	766.29	744.76	37.23
	$K_c, K_d, K_e, K_f, \dot{\gamma}, \sigma, \gamma$	11	127	4.19	-352.83	777.49	748.50	40.97
	$K_c, K_d, K_e, K_f, \sigma, \gamma$	10	127	4.28	-355.55	778.10	751.56	44.03
	$K_b, K_c, K_f, \sigma, \gamma$	9	127	4.34	-357.27	776.69	752.63	45.10
	$K_b, K_c, K_f, \dot{\gamma}, \sigma, \gamma$	10	127	4.31	-356.14	779.28	752.74	45.21
	$K_c, K_e, K_f, \dot{\gamma}, \sigma, \gamma$	10	127	4.31	-356.31	779.61	753.07	45.54
	$K_b, K_d, K_e, K_f, \gamma, \sigma, \gamma$	11	127	4.30	-355.75	783.34	754.35	46.82
	$K_c, K_e, K_f, \sigma, \gamma$	9	127	4.37	-358.15	778.45	754.39	46.86
	$K_b, K_d, K_e, K_f, \sigma, \gamma$	10	127	4.34	-357.17	781.34	754.80	47.27
	$K_b,K_e,K_f,\sigma,\gamma$	9	127	4.46	-360.28	782.72	758.66	51.13
	$K_b,K_e,K_f,\dot{\gamma},\sigma,\gamma$	10	127	4.43	-359.50	786.00	759.46	51.93
	$K_c, K_d, K_f, \dot{\gamma}, \sigma, \gamma$	10	127	4.62	-365.36	797.71	771.17	63.64
	$K_b, K_c, K_d, \dot{\gamma}, \sigma, \gamma$	8	127	4.71	-367.80	792.90	771.37	63.84
	$K_b, K_c, K_d, \sigma, \gamma$	7	127	4.77	-369.55	791.56	772.59	65.06
	$K_c, K_d, K_f, \sigma, \gamma$	9	127	4.73	-368.25	798.65	774.59	67.06
	$K_b, K_d, K_e, \dot{\gamma}, \sigma, \gamma$	8	127	4.79	-369.81	796.94	775.40	67.87
	$K_c, K_d, K_e, \dot{\gamma}, \sigma, \gamma$	8	127	4.79	-370.06	797.42	775.89	68.36
	$K_b, K_d, K_e, \sigma, \gamma$	7	127	4.84	-371.34	795.14	776.17	68.64
	$K_c, K_d, K_e, \sigma, \gamma$	7	127	4.89	-372.45	797.36	778.39	70.86
	$K_c, K_e, \dot{\gamma}, \sigma, \gamma$	7	127	4.92	-373.21	798.89	779.92	72.39
	$K_c, K_f, \dot{\gamma}, \sigma, \gamma$	9	127	4.84	-371.20	804.55	780.49	72.96
	K_b,K_e,σ,γ	6	127	4.97	-374.65	796.92	780.55	73.02
	$K_b,K_e,\dot{\gamma},\sigma,\gamma$	7	127	4.94	-373.69	799.84	780.88	73.35
	K_c, K_e, σ, γ	6	127	4.98	-374.99	797.61	781.24	73.71
	$K_b, K_d, K_f, \dot{\gamma}, \sigma, \gamma$	10	127	4.82	-370.53	808.06	781.51	73.98
	K_c, K_f, σ, γ	8	127	4.90	-372.88	803.06	781.53	74.00
	K_b, K_c, σ, γ	6	127	5.00	-375.34	798.29	781.93	74.40
	$K_b, K_c, \dot{\gamma}, \sigma, \gamma$	7	127	4.97	-374.34	801.15	782.18	74.65
	$K_b, K_d, K_f, \sigma, \gamma$	9	127	4.88	-372.13	806.40	782.34	74.81
	$K_d, K_e, K_f, \dot{\gamma}, \sigma, \gamma$	10	127	4.84	-371.32	809.63	783.08	75.55
	$K_d, K_e, K_f, \sigma, \gamma$	9	127	4.91	-373.15	808.45	784.39	76.86
	$K_e,K_f,\dot{\gamma},\sigma,\gamma$	9	127	4.95	-374.11	810.38	786.32	78.79
	K_e, K_f, σ, γ	8	127	5.00	-375.34	807.99	786.46	78.93
	K_b, K_f, σ, γ	8	127	5.09	-377.50	812.30	790.77	83.24
	$K_b, K_f, \gamma, \sigma, \gamma$	9	127	5.07	-376.76	815.67	791.61	84.08
	$K_c, K_d, \dot{\gamma}, \sigma, \gamma$	7	127	5.36	-384.10	820.66	801.69	94.16
	$K_d, K_f, \dot{\gamma}, \sigma, \gamma$	9	127	5.31	-383.17	828.50	804.44	96.91
	K_c, K_d, σ, γ	6	127	5.47	-386.75	821.11	804.75	97.22
	$K_d, K_e, \dot{\gamma}, \sigma, \gamma$	7	127	5.42	-385.77	824.01	805.04	97.51
	$K_b, K_d, \dot{\gamma}, \sigma, \gamma$	7	127	5.44	-386.13	824.72	805.75	98.22
	K_d, K_f, σ, γ	8	127	5.41	-385.35	828.01	806.48	98.95

TABLE 2 MCMC Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
Modified :	MCMC Step Para	ameters	
P_b .	$\equiv 4.3074$	$\equiv 4.3074$	days
$T_{\text{conj}_{\mathbf{b}}}$	$\equiv 2458686.5648$	$\equiv 2458686.5648$	JD
$T_{\mathrm{peri_b}}$	$\equiv 2458685.488 \equiv 0.0$	$\equiv 2458685.488 \equiv 0.0$	JD
$e_b \ \omega_b$	$\equiv 0.0$ $\equiv 0.0$	$\equiv 0.0$ $\equiv 0.0$	radians
K_b	3.32 ± 0.49	3.3	${ m m~s^{-1}}$
P_c	$\equiv 5.9032$	$\equiv 5.9032$	days
$T_{\rm conj_c}$	$\equiv 2458683.4746$	$\equiv 2458683.4746$	JD
$Tperi_{c}$	$\equiv 2458681.9988$	$\equiv 2458681.9988$	JD
e_c	$\equiv 0.0$	$\equiv 0.0$	
ω_c	$\equiv 0.0$	$\equiv 0.0$	radians
K_c	$3.52^{+0.48}_{-0.47}$	3.51	${ m m\ s^{-1}}$
P_d	$\equiv 18.6524$	$\equiv 18.6524$	days
$T_{\text{conj}_{\mathbf{d}}}$	$\equiv 2458688.9403$ $\equiv 2458684.2772$	$\equiv 2458688.9403$ $\equiv 2458684.2772$	JE JE
T peri $_{ m d}$	= 2450004.2772 = 0.0	= 2450004.2112 = 0.0	JL
ω_d	= 0.0 ≡ 0.0	= 0.0 ≡ 0.0	radians
K_d	$1.59_{-0.48}^{+0.5}$	1.6	${ m m\ s^{-1}}$
P_e	$\equiv 37.9198$	≡ 37.9198	days
$T_{\text{conj}_{e}}$	$\equiv 2458700.7204$	$\equiv 2458700.7204$	JD
$T_{\text{peri}_{\mathbf{e}}}^{\text{e}}$	$\equiv 2458691.2405$	$\equiv 2458691.2405$	JD
e_e	$\equiv 0.0$	$\equiv 0.0$	
ω_e	$\equiv 0.0$	$\equiv 0.0$	radians
K_e	$2.91_{-0.48}^{+0.5}$	2.89	${ m m~s^{-1}}$
P_f	$76.41^{+0.77}_{-0.76}$	76.35	days
$T_{\text{conj}_{\text{f}}}$	2459383.6 ± 2.2	2459383.5	ĴD
$Tperi_{\mathbf{f}}$	2459364.5 ± 2.1	2459364.4	JD
e_f	$\equiv 0.0$	$\equiv 0.0$	-
ω_f	$\equiv 0.0$	$\equiv 0.0$	radians
K_f	$3.11^{+0.53}_{-0.52}$	3.22	m s ⁻¹
Orbital Pa	arameters		
P_b	$\equiv 4.3074$	$\equiv 4.3074$	days
Tconj _b	$\equiv 2458686.5648$	$\equiv 2458686.5648$	JD
$T_{\mathrm{peri_b}}$	$\equiv 2458685.488$	$\equiv 2458685.488$	JD
e_b	$\equiv 0.0$ $\equiv 0.0$	$\begin{array}{c} \equiv 0.0 \\ \equiv 0.0 \end{array}$	radians
K_b	3.32 ± 0.49	3.3	m s ⁻¹
P_c	$\equiv 5.9032$	$\equiv 5.9032$	days
$T_{\text{conj}_{c}}$	$\equiv 2458683.4746$	$\equiv 2458683.4746$	JD
$T_{\text{peri}_{c}}$	$\equiv 2458681.9988$	$\equiv 2458681.9988$	JD
e_c	$\equiv 0.0$	$\equiv 0.0$	
ω_c			
1/	$\equiv 0.0$	$\equiv 0.0$	
K_c	$\equiv 0.0$ $3.52^{+0.48}_{-0.47}$	3.51	
P_d	$3.52_{-0.47}^{+0.48} \equiv 18.6524$	$3.51 \\ \equiv 18.6524$	${ m m~s^{-1}}$
P_d T conj _d	$ 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 $	3.51 $\equiv 18.6524$ $\equiv 2458688.9403$	${ m m~s^{-1}}$ days
P_d T conj _d T peri _d	$\begin{array}{c} 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \end{array}$	3.51 $\equiv 18.6524$ $\equiv 2458688.9403$ $\equiv 2458684.2772$	${ m m~s^{-1}}$ days
P_d T conj _d T peri _d e_d	$\begin{array}{c} 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \end{array}$	m s ⁻¹ days JD JD
P_d $T ext{conj}_d$ $T ext{peri}_d$ e_d ω_d	$\begin{array}{c} 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.59^{+0.5} \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \end{array}$	m s ⁻¹ days JE JE radians
$egin{aligned} P_d \ T \mathrm{conj_d} \ T \mathrm{peri_d} \ e_d \ \omega_d \ K_d \end{aligned}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48} \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \end{array}$	${ m m~s^{-1}}$ days JE JC radians ${ m m~s^{-1}}$
$egin{aligned} P_d \ T ext{conj}_{ ext{d}} \ T ext{peri}_{ ext{d}} \ e_d \ \omega_d \ K_d \ P_e \end{aligned}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198 \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \end{array}$	${ m m~s^{-1}}$ days JE JE radians ${ m m~s^{-1}}$ days
$egin{aligned} P_d \ T & ext{conj}_d \ T & ext{peri}_d \ e_d \ \omega_d \ K_d \ P_e \ T & ext{conj}_e \end{aligned}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48} \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \end{array}$	$ m m~s^{-1}$ days JE JE radians $ m m~s^{-1}$ days JE
$egin{aligned} P_d \ T & ext{conj}_d \ T & ext{peri}_d \ e_d \ \omega_d \ K_d \ P_e \ T & ext{conj}_e \ T & ext{peri}_e \end{aligned}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204 \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \end{array}$	$ m m\ s^{-1}$ days JE radians $ m m\ s^{-1}$ days JE
$\begin{array}{l} P_d \\ T\mathrm{conj_d} \\ T\mathrm{peri_d} \\ e_d \\ \omega_d \\ K_d \\ P_e \\ T\mathrm{conj_e} \\ T\mathrm{peri_e} \\ e_e \\ \omega_e \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.59^{+0.5}_{-0.48} \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE JE radians
$\begin{array}{l} P_d \\ T\mathrm{conj_d} \\ T\mathrm{peri_d} \\ e_d \\ \omega_d \\ K_d \\ P_e \\ T\mathrm{conj_e} \\ T\mathrm{peri_e} \\ e_e \\ \omega_e \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE JE radians
$egin{array}{l} P_d \ T \mathrm{conj_d} \ T \mathrm{conj_d} \ T \mathrm{peri_d} \ e_d \ \omega_d \ K_d \ P_e \ T \mathrm{conj_e} \ T \mathrm{peri_e} \ e_e \ \omega_e \ K_e \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \end{array}$	$ m m\ s^{-1}$ days $ m JE$ $ m JE$ radians $ m m\ s^{-1}$ days $ m JE$ $ m JE$ radians $ m m\ s^{-1}$
$egin{array}{l} P_d \ T ext{conj}_{ ext{d}} \ T ext{peri}_{ ext{d}} \ e_d \ \omega_d \ K_d \ P_e \ T ext{conj}_{ ext{e}} \ T ext{peri}_{ ext{e}} \ e_e \ \omega_e \ K_e \ P_f \ T ext{conj}_{ ext{f}} \ \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47} \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.59^{+0.5}_{-0.48} \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \end{array}$	$ m m~s^{-1}$ days $ m JE$ $ m JE$ $ m radians$ $ m m~s^{-1}$ days $ m radians$ $ m m~s^{-1}$ days days
$egin{array}{l} P_d \ T ext{conj}_{ ext{d}} \ T ext{peri}_{ ext{d}} \ e_d \ \omega_d \ K_d \ P_e \ T ext{conj}_{ ext{e}} \ T ext{peri}_{ ext{e}} \ e_e \ \omega_e \ K_e \ P_f \ T ext{conj}_{ ext{f}} \ \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.76}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \end{array}$	${ m m\ s^{-1}}$ days ${ m JE}$ radians ${ m m\ s^{-1}}$ days ${ m JE}$ radians ${ m m\ s^{-1}}$ days ${ m JE}$ radians ${ m m\ s^{-1}}$ days ${ m JE}$
$egin{array}{l} P_d \ T \mathrm{conj_d} \ T \mathrm{conj_d} \ T \mathrm{peri_d} \ e_d \ \omega_d \ K_d \ P_e \ T \mathrm{conj_e} \ T \mathrm{peri_e} \ e_e \ \omega_e \ K_e \ P_f \ T \mathrm{conj_f} \ T \mathrm{peri_f} \ e_f \ \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.77}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \end{array}$	$ m m\ s^{-1}$ $ m days$ $ m JE$ $ m radians$ $ m m\ s^{-1}$ $ m days$ $ m radians$ $ m m\ s^{-1}$ $ m days$ $ m JE$ $ m JE$
$P_d \\ T\text{conj}_d \\ T\text{peri}_d \\ e_d \\ \omega_d \\ K_d \\ P_e \\ T\text{conj}_e \\ T\text{peri}_e \\ e_e \\ \omega_e \\ K_e \\ P_f \\ T\text{conj}_f \\ T\text{peri}_f \\ e_f \\ \omega_f$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.76}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ \equiv 0.0\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ \equiv 0.0 \\ \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE radians m s ⁻¹ days JE JE radians
$egin{array}{l} P_d \ T ext{conj}_{ ext{d}} \ E ext{conj}_{ ext{d}} \ E_d \ E \ E \ E \ E \ E \ E \ E \ E \ E \ $	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52} \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE radians m s ⁻¹ days JE JE radians
P_d T conj _d T peri _d e_d ω_d K_d P_e T conj _e T peri _e e_e ω_e K_e P_f T conj _f T peri _f e_f ω_f K_f	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.5}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \text{rameters} \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459384.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE radians m s ⁻¹ days JE JE radians m s ⁻¹
$egin{array}{l} P_d & T ext{conj_d} \ T ext{peri_d} & e_d \ \omega_d & K_d \ P_e & T ext{conj_e} \ T ext{peri_e} & e_e \ \omega_e & K_e \ P_f & T ext{conj_f} \ T ext{peri_f} & e_f \ \omega_f & K_f \ \end{array}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.77}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE radians m s ⁻¹ days JE radians m s ⁻¹ m s ⁻¹
P_d T conj _d T conj _d P_e	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \end{array}$	m s ⁻¹ days JE JE radians m s ⁻¹ days JE JE radians m s ⁻¹ days s m s ⁻¹ days m s ⁻¹ days
P_d T conj _d T peri _d e_d ω_d ω_d K_d P_e T conj _e T peri _e ω_e ω_e ω_e K_e P_f T conj _f T peri _f e_f ω_f K_f Other Par γ_j $\gamma_{harps-n}$ $\dot{\gamma}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \text{rameters}\\ 0.18\pm 0.67\\ 2.74^{+0.78}_{-0.79}\\ -0.0038\pm 0.0018\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ = 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \end{array}$	${ m m\ s^{-1}}$ days ${ m JE}$ radians ${ m m\ s^{-1}}$ days ${ m JE}$ radians ${ m m\ s^{-1}}$ days ${ m JE}$ ${ m radians}$ ${ m m\ s^{-1}}$
P_d T conj _d T peri _d e_d ω_d ω_d K_d P_e T conj _e T peri _e ω_e ω_e ω_e K_e P_f T conj _f T peri _f e_f ω_f K_f Other Par γ_j $\gamma_{harps-n}$ $\dot{\gamma}$	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458691.2405\\ \equiv 0.0\\ = 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.77}_{-0.76}\\ 2459383.6 \pm 2.2\\ 2459364.5 \pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \text{rameters} \\ 0.18 \pm 0.67\\ 2.74^{+0.78}_{-0.79}\\ -0.0038 \pm 0.0018\\ \equiv 0.0\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ \equiv 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \\ \end{array}$	$\begin{array}{c} \text{m s}^{-1} \\ \text{days} \\ \text{JE} \\ \text{JE} \\ \text{radians} \\ \text{m s}^{-1} \\ \text{days} \\ \text{JE} \\ \text{radians} \\ \text{m s}^{-1} \\ \text{days} \\ \text{JE} \\ \text{radians} \\ \text{m s}^{-1} \\ \text{m s}^{-1} \\ \text{m s}^{-1} \\ \text{m s}^{-1} \\ \text{d}^{-1} \\ \text{m s}^{-1} \\ \text{d}^{-2} \end{array}$
P_d T conj _d T conj _d P_e	$\begin{array}{c} 3.52^{+0.48}_{-0.47}\\ \equiv 18.6524\\ \equiv 2458688.9403\\ \equiv 2458684.2772\\ \equiv 0.0\\ \equiv 0.0\\ 1.59^{+0.5}_{-0.48}\\ \equiv 37.9198\\ \equiv 2458700.7204\\ \equiv 2458691.2405\\ \equiv 0.0\\ \equiv 0.0\\ 2.91^{+0.5}_{-0.48}\\ 76.41^{+0.76}\\ 2459383.6\pm 2.2\\ 2459364.5\pm 2.1\\ \equiv 0.0\\ \equiv 0.0\\ 3.11^{+0.53}_{-0.52}\\ \text{rameters}\\ 0.18\pm 0.67\\ 2.74^{+0.78}_{-0.79}\\ -0.0038\pm 0.0018\\ \end{array}$	$\begin{array}{c} 3.51 \\ \equiv 18.6524 \\ \equiv 2458688.9403 \\ \equiv 2458684.2772 \\ \equiv 0.0 \\ \equiv 0.0 \\ = 0.0 \\ 1.6 \\ \equiv 37.9198 \\ \equiv 2458700.7204 \\ \equiv 2458691.2405 \\ \equiv 0.0 \\ \equiv 0.0 \\ 2.89 \\ 76.35 \\ 2459383.5 \\ 2459364.4 \\ \equiv 0.0 \\ \equiv 0.0 \\ 3.22 \\ \end{array}$	radians m s ⁻¹ days JE JE radians m s ⁻¹

Report produced by RadVel v1.4.7: http://radvel.readthedocs.io Reference epoch for $\gamma,\dot{\gamma},\ddot{\gamma}$: 2458989.783463

TABLE 3 DERIVED POSTERIORS

Parameter	Credible Interval	Maximum Likelihood	Units
$M_b \sin i$	7.7 ± 1.2	8.3	${ m M}_{\oplus}$
a_b	$0.04943^{+0.00093}_{-0.00097}$	0.05089	AU
$M_c \sin i$	9.0 ± 1.3	9.8	M_{\oplus}
a_c	0.061 ± 0.0012	0.0628	m A m U
$M_d \sin i$	$6.0^{+1.9}_{-1.8}$	5.3	${ m M}_{\oplus}$
a_d	$0.1313^{+0.0025}_{-0.0026}$	0.1352	AU
$M_e \sin i$	$13.9^{+2.5}_{-2.3}$	15.7	${ m M}_{\oplus}$
a_e	$0.2108^{+0.0041}_{-0.0041}$	0.217	AU
$M_f \sin i$	$18.8_{-3.2}^{+3.3}$	18.9	${ m M}_{\oplus}$
a_f	$0.3363^{+0.0067}_{-0.007}$	0.3461	AU

TABLE 4 SUMMARY OF PRIORS

K constrained to be >0

Gaussian prior on $P_d\colon 18.652357 \pm 0.00665$

Gaussian prior on $P_b\colon \, 4.307412 \pm 0.001355$

Gaussian prior on $P_c\colon 5.903194 \pm 0.000474$

Gaussian prior on P_e : 37.919841 ± 0.001333

Bounded prior: $40 < P_f < 300$

Bounded prior: $-20.0 < \sigma_{\rm j} < 20.0$

Bounded prior: $-20.0 < \sigma_{\text{harps-n}} < 20.0$

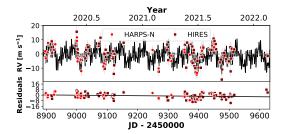
TABLE 5
FINAL CONVERGENCE
CRITERION

Criterion	Final Value
minAfactor	62.901
maxArchange	0.023
maxGR	1.003
minTz	10415.477

TABLE 6
RADIAL VELOCITIES

Time	RV	RV Unc.	Inst.
(JD)	$(m s^{-1})$	$(m \ s^{-1})$	
2458896.74755	4.58	2.12	harps-n
2458897.75866	0.61	1.75	harps-n
2458898.74416	-0.37	1.67	harps-n
2458904.73602	3.83	1.65	harps-n
2458905.73390	10.47	1.51	harps-n
2458925.71780	5.64	1.70	harps-n
2458926.71870	9.68	1.32	harps-n
2458929.70046	9.51	1.17	harps-n
2459000.54607	11.88	1.40	harps-n
2459000.63124	14.38	1.48	harps-n
2459002.54860	-0.38	1.08	harps-n
2459002.63607	-2.57	1.28	harps-n
2459012.55197	-0.95	1.37	harps-n
2459012.64142	-1.33	1.10	harps-n
2459014.64077	-9.39	1.44	harps-n
2459087.39446	-6.02	1.73	harps-n
2459089.38672	-3.96	2.59	harps-n
2459248.76044	5.52	1.37	harps-n
2459268.71880	-7.49	2.45	harps-n
2459309.60757	1.47	1.85	harps-n
2459310.61642	-2.39	2.29	harps-n
2459353.69927	5.61	2.07	harps-n
2459353.71693	3.84	1.98	harps-n
2459370.54051	2.13	2.41	harps-n
2459393.63808	-11.84	1.33	harps-n
2459394.53732	-10.61	1.55	harps-n
2459410.47261	4.92	2.14	harps-n
2459450.43500	7.39	1.33	harps-n
2458917.06227	4.32	1.78	j
2458918.06580	8.52	1.66	j
2458919.05511	0.10	1.53	j
2458995.87585	5.54	1.93	j
2458999.89268	15.33	1.72	j
2459002.92823	2.95	1.60	j
2459003.89134	0.30	1.56	j
2459006.88414	-4.17	1.60	j
2459013.87325	-3.55	1.66	j
2459016.87492	-4.46	1.82	j
2459024.86927	-2.41	1.57	j
2459027.83837	-3.46	1.39	j
2459030.89287	2.69	1.63	j
2459034.85573	5.75	1.59	j
2459036.79199	4.47	1.46	j
2459038.84046	-0.08	1.57	j
2459069.00985	4.96	2.56	j
2459071.93664	5.47	1.77	j
2459072.87996	6.98	1.75	j
2459077.88344	11.11	1.67	j
2459086.87479 2459089.87543	-9.45 0.28	2.27 1.61	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
2459089.87543	0.28	1.01	J

Note. — Only the first 50 of 127 RVs are displayed in this table. Use radvel table -t rv to save the full LATEX table as a separate file.



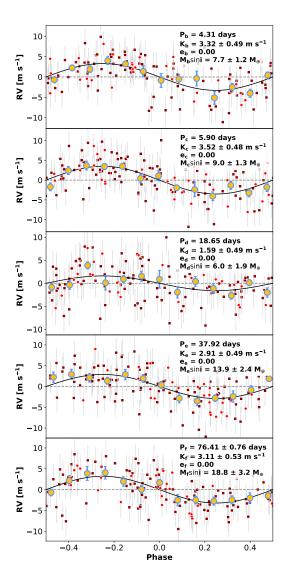


Fig. 1.— Best-fit 5-planet Keplerian orbital model for T001246. The maximum likelihood model is plotted while the orbital parameters listed in Table 2 are the median values of the posterior distributions. The thin blue line is the best fit 5-planet model. We add in quadrature the RV jitter term(s) listed in Table 2 with the measurement uncertainties for all RVs. b) Residuals to the best fit 5-planet model. c) RVs phase-folded to the ephemeris of planet b. The Keplerian orbital models for all other planets (if any) have been subtracted. The small point colors and symbols are the same as in panel a. Red circles (if present) are the same velocities binned in 0.08 units of orbital phase. The phase-folded model for planet b is shown as the blue line.

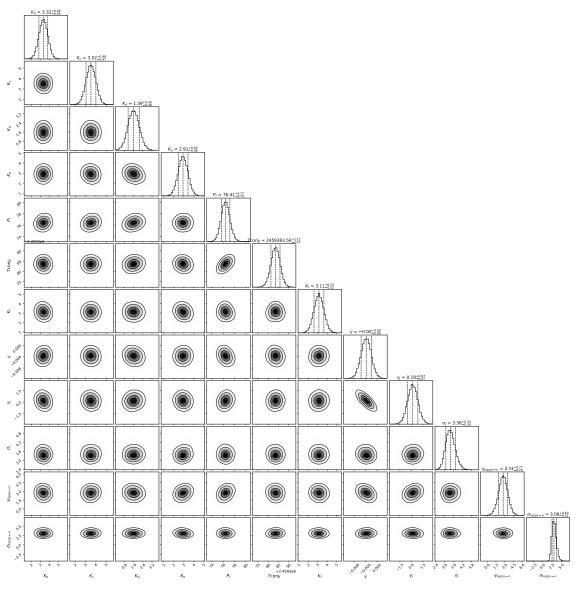


Fig. 2.— Posterior distributions for all free parameters.

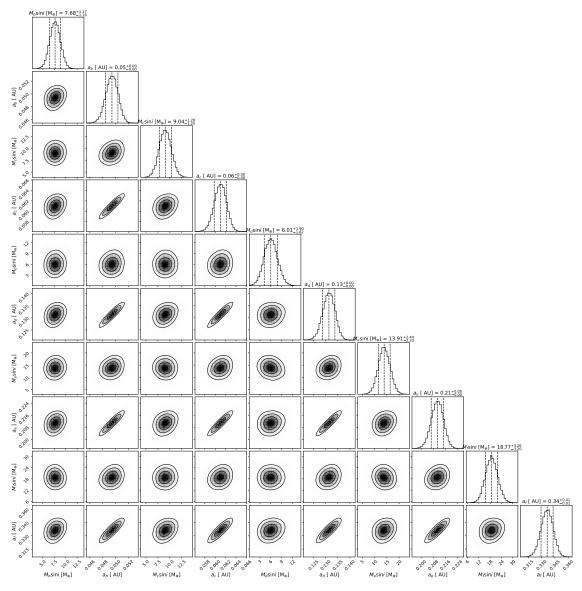


Fig. 3.— Posterior distributions for all derived parameters.