TABLE 1
Model Comparison

AICc Qualitative Comparison	Free Parameters	$N_{\rm free}$	$N_{\rm data}$	RMS	$\ln \mathcal{L}$	BIC	AICc	ΔAICc
AICc Favored Model	e_b, K_b, e_c, K_c, σ, γ	22	349	3.61	-936.20	1973.61	1891.90	0.00
Nearly Indistinguishable	e_b, K_b, K_c, σ, γ	20	349	3.64	-939.03	1967.57	1893.02	1.12
Somewhat Disfavored	K_b, e_c, K_c, σ, γ	20	349	3.65	-940.29	1970.09	1895.55	3.65
	K_b, K_c, σ, γ	18	349	3.68	-942.64	1963.08	1895.76	3.86
Ruled Out	e_b, K_b, σ, γ	17	349	7.33	-1118.13	2308.20	2244.51	352.61
	K_b, σ, γ	15	349	7.45	-1156.49	2373.22	2316.84	424.94
	K_c, σ, γ	15	349	12.67	-1388.34	2836.91	2780.53	888.63
	e_c, K_c, σ, γ	17	349	12.61	-1403.05	2878.04	2814.35	922.45
	σ, γ	12	349	16.87	-1627.22	3297.11	3251.78	1359.88
	e_b, K_b, e_c, K_c, γ	16	349	3.60	-2144.07	4354.22	4294.18	2402.28
	e_b, K_b, K_c, γ	14	349	3.66	-2174.85	4404.08	4351.36	2459.46
	K_b, e_c, K_c, γ	14	349	3.67	-2180.12	4414.61	4361.90	2470.00
	K_b, K_c, γ	12	349	3.70	-2203.91	4450.50	4405.17	2513.27
	e_b, K_b, γ	11	349	7.30	-5778.68	11594.17	11552.55	9660.65
	K_b, γ	9	349	7.66	-6487.05	12999.20	12965.04	11073.14
	e_c, K_c, γ	11	349	12.87	-23049.58	46135.98	46094.36	44202.46
	K_c, γ	9	349	17.54	-28654.06	57333.23	57299.06	55407.16
	γ	6	349	16.91	-38096.01	76199.57	76176.68	74284.78

TABLE 2
MCMC Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
Modified MCMC Step Parameters			
P_b	$1918.6^{+4.8}_{-3.9}$	1917.6	days
$T\mathrm{conj}_\mathrm{b}$	$2455816.2^{+11.0}_{-7.1}$	2455816.0	BJD
$T\mathrm{peri}_\mathrm{b}$	2455860^{+130}_{-110}	2455853	BJD
e_b	$0.03^{+0.013}_{-0.014}$	0.031	
ω_b	$1.73^{+0.43}_{-0.34}$	1.7	radians
K_b	$24.99^{+0.39}_{-0.38}$	25.02	m s^{-1}
P_c	5748^{+170}_{-41}	5761	days
$T\mathrm{conj}_\mathrm{c}$	2458837^{+160}_{-29}	2458851	BJD
$T\mathrm{peri}_\mathrm{c}$	2460355^{+470}_{-540}	2460407	BJD
e_c	$0.05^{+0.024}_{-0.022}$	0.044	
ω_c	$-3.0^{+0.56}_{-0.65}$	-2.9	radians
K_c	$18.02^{+0.7}_{-0.71}$	18.01	m s^{-1}
Orbital Parameters			
P_b	$1918.6^{+4.8}_{-3.9}$	1917.6	days
$T\mathrm{conj}_\mathrm{b}$	$2455816.2^{+11.0}_{-7.1}$	2455816.0	BJD
$T\mathrm{peri}_\mathrm{b}$	2455860^{+130}_{-110}	2455853	BJD
e_b	$0.03^{+0.013}_{-0.014}$	0.031	
ω_b	$1.73^{+0.43}_{-0.34}$	1.7	radians
K_b	$24.99^{+0.39}_{-0.38}$	25.02	m s^{-1}
P_c	5748^{+170}_{-41}	5761	days
$T\mathrm{conj}_\mathrm{c}$	2458837^{+160}_{-29}	2458851	BJD
$T\mathrm{peri}_\mathrm{c}$	2460355^{+470}_{-540}	2460407	BJD
e_c	$0.05^{+0.024}_{-0.022}$	0.044	
ω_c	$-3.0^{+0.56}_{-0.65}$	-2.9	radians
K_c	$18.02^{+0.7}_{-0.71}$	18.01	m s^{-1}
Other Parameters			
$\gamma_{\mathrm{HIRES-pre}}$	$9.6^{+1.1}_{-1.0}$	10	m s−1
$\gamma_{\mathrm{HIRES-post}}$	$5.33^{+0.66}_{-0.67}$	5.24	m s−1
$\gamma_{\mathrm{HARPS-pre}}$	$22.25^{+0.75}_{-0.71}$	22.25	m s−1
$\gamma_{\mathrm{HARPS-post}}$	$9.6^{+1.4}_{-1.8}$	9.8	m s−1
$\gamma_{\mathrm{HARPS-N}}$	$-6.61^{+0.97}_{-2.0}$	-6.6	m s−1
$\gamma_{\mathrm{CARMENES}}$	$-3.4^{+1.2}_{-1.7}$	-3.2	m s−1
$\dot{\gamma}$	$\equiv 0.0$	$\equiv 0.0$	m s^{-1} d^{-1}
$\ddot{\gamma}$	$\equiv 0.0$	$\equiv 0.0$	m s^{-1} d^{-2}
$\sigma_{\mathrm{HIRES-pre}}$	2.9 ± 1.2	2.5	m s^{-1}
$\sigma_{\mathrm{HIRES-post}}$	$4.22^{+0.41}_{-0.36}$	4.11	m s^{-1}
$\sigma_{\mathrm{HARPS-pre}}$	$1.94^{+0.32}_{-0.28}$	1.8	m s^{-1}
$\sigma_{\mathrm{HARPS-post}}$	$3.99^{+0.75}_{-0.6}$	3.72	m s^{-1}
$\sigma_{\mathrm{HARPS-N}}$	$3.4^{+0.3}_{-0.27}$	3.34	m s^{-1}
$\sigma_{\mathrm{CARMENES}}$	$2.4^{+0.37}_{-0.32}$	2.29	m s^{-1}

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Reference epoch for γ,$\dot{\gamma}$,$\ddot{\gamma}$: 2454909.68363

TABLE 3
Derived Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
a_b	2.394 ± 0.015	2.41	AU
$M_b \sin i$	0.958 ± 0.019	0.968	$\mathrm{M_{Jup}}$
a_c	$4.985^{+0.089}_{-0.05}$	5.101	AU
$M_c \sin i$	$0.997^{+0.044}_{-0.043}$	1.02	$\mathrm{M_{Jup}}$

TABLE 4
Summary of Priors

e_b constrained to be < 0.99
e_c constrained to be < 0.99
K constrained to be > 0
Bounded prior: $0.0 < \sigma_{\mathrm{HARPS-pre}} < 10.0$
Bounded prior: $0.0 < \sigma_{\mathrm{HARPS-post}} < 10.0$
Bounded prior: $0.0 < \sigma_{\mathrm{HARPS-N}} < 10.0$
Bounded prior: $0.0 < \sigma_{\mathrm{HIRES-pre}} < 10.0$
Bounded prior: $0.0 < \sigma_{\mathrm{HIRES-post}} < 10.0$
Bounded prior: $0.0 < \sigma_{\mathrm{CARMENES}} < 10.0$

TABLE 5
Final Convergence Criterion

Criterion	Final Value
minAfactor	43.221
maxArchange	0.015
maxGR	1.010
minTz	2974.040

TABLE 6
Radial Velocities

Time (JD)	RV (m s^{-1})	RV Unc. (m s^{-1})	Inst.
2452990.54328	27.41	2.10	HARPS-pre
2453158.91773	32.47	1.29	HARPS-pre
2453339.53760	40.46	1.14	HARPS-pre
2453517.91261	36.90	1.05	HARPS-pre
2453520.91165	37.31	1.17	HARPS-pre
2453920.88648	3.79	1.05	HARPS-pre
2453945.80725	3.00	0.78	HARPS-pre
2453951.80592	-1.93	1.05	HARPS-pre
2453975.69672	0.68	1.07	HARPS-pre
2454048.55249	-11.44	1.05	HARPS-pre
2454052.54916	-9.56	0.74	HARPS-pre
2454078.55020	-9.60	1.10	HARPS-pre
2454227.92119	-19.07	1.00	HARPS-pre
2454291.85394	-22.56	1.14	HARPS-pre
2454295.78093	-19.74	0.91	HARPS-pre
2454297.86995	-18.82	0.97	HARPS-pre
2454301.76570	-16.32	1.21	HARPS-pre
2454320.79409	-20.52	1.02	HARPS-pre
2454339.69337	-17.04	1.08	HARPS-pre
2454343.77895	-20.02	1.11	HARPS-pre
2454350.68608	-24.11	1.16	HARPS-pre
2454390.57572	-24.96	1.05	HARPS-pre
2454421.51651	-16.73	0.86	HARPS-pre
2454427.53844	-21.92	0.94	HARPS-pre
2454639.92735	-10.89	1.07	HARPS-pre
2454647.91394	-10.04	1.08	HARPS-pre
2454662.84521	-7.88	1.13	HARPS-pre
2454665.83753	-10.83	1.07	HARPS-pre
2454675.82568	-9.69	1.05	HARPS-pre
2454682.81147	-7.57	0.98	HARPS-pre
2454702.74582	-6.94	1.03	HARPS-pre
2454705.76515	-8.38	1.17	HARPS-pre
2454730.69235	-2.79	0.95	HARPS-pre
2454734.66299	-1.90	1.13	HARPS-pre
2454742.59762	-7.79	2.64	HARPS-pre
2454746.59424	-4.36	1.04	HARPS-pre
2454954.91296	16.61	0.96	HARPS-pre
2454955.90211	13.03	1.00	HARPS-pre
2454989.91532	15.61	0.88	HARPS-pre
2454990.92356	14.15	1.33	HARPS-pre
2454992.89534	17.11	1.05	HARPS-pre
2455042.78209	21.39	1.01	HARPS-pre
2455048.80564	21.67	1.20	HARPS-pre
2455055.85219	22.44	1.27	HARPS-pre
2455122.61634	28.35	1.12	HARPS-pre
2455413.77179	39.06	1.18	HARPS-pre
2455782.72110	22.11	1.11	HARPS-pre
2455814.73463	24.54	1.09	HARPS-pre
2457683.63404	25.36	1.77	HARPS-post
2457980.84084	-7.90	1.28	HARPS-post

Note. — Only the first 50 of 349 RVs are displayed in this table. Use `radvel table -t rv` to save the full LaTeX table as a separate file.

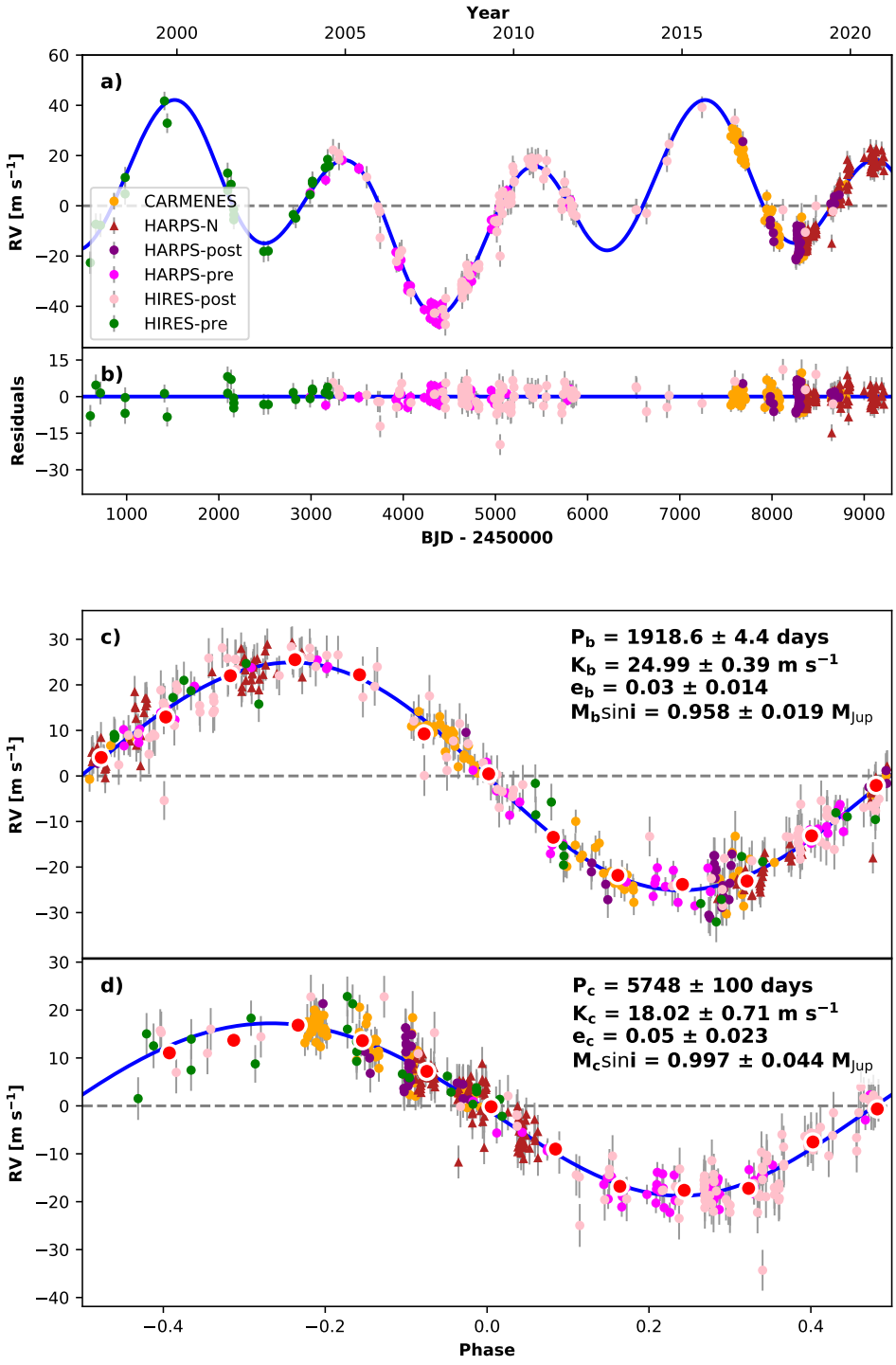

FIG. 1.— Best-fit 2-planet Keplerian orbital model for GJ849. The maximum likelihood model is plotted while the orbital parameters listed in Table 2 are the median values of the posterior distributions. The thin blue line is the best fit 2-planet model. We add in quadrature the RV jitter term(s) listed in Table 2 with the measurement uncertainties for all RVs. **b)** Residuals to the best fit 2-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.

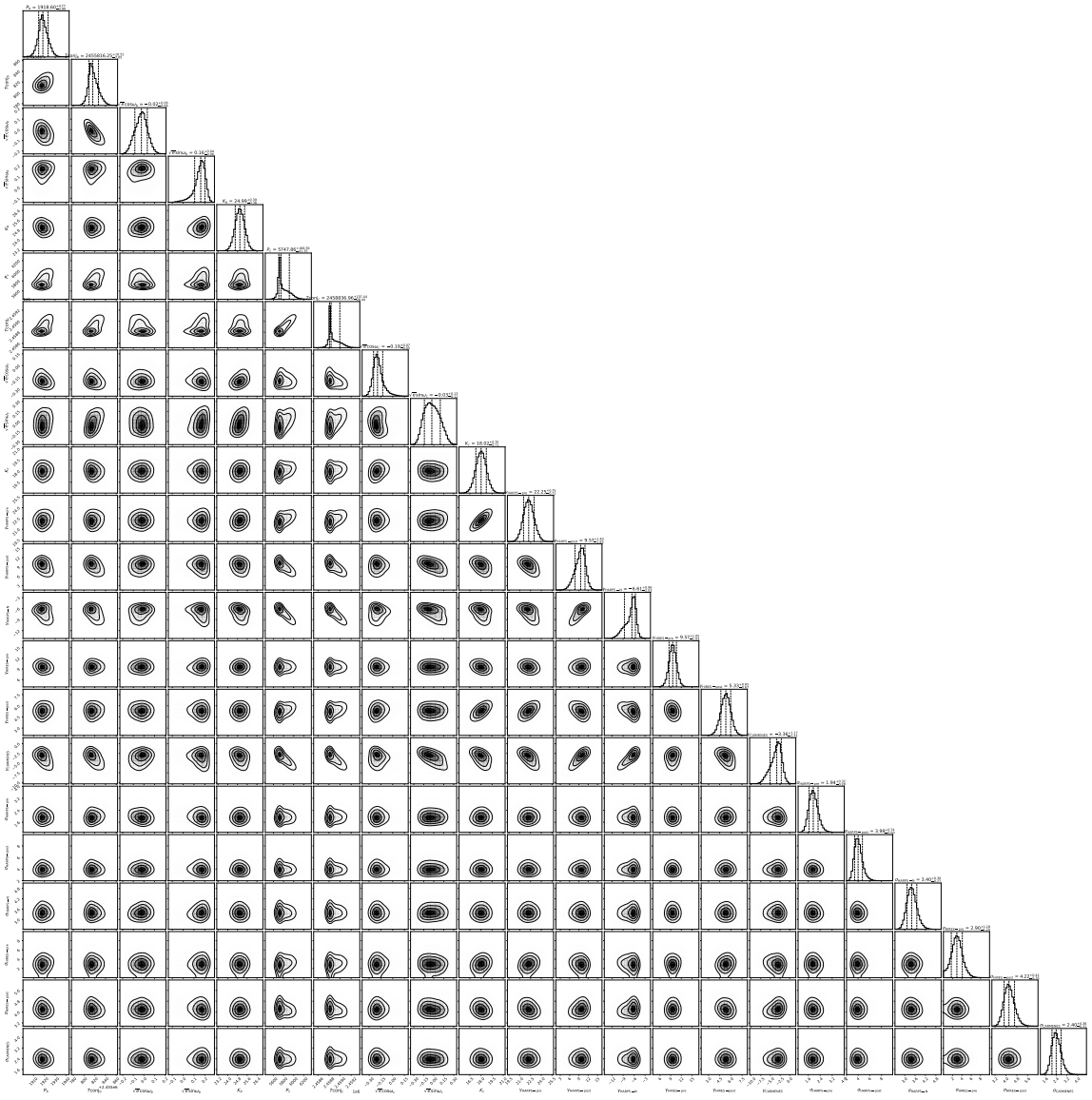

FIG. 2.— Posterior distributions for all free parameters.

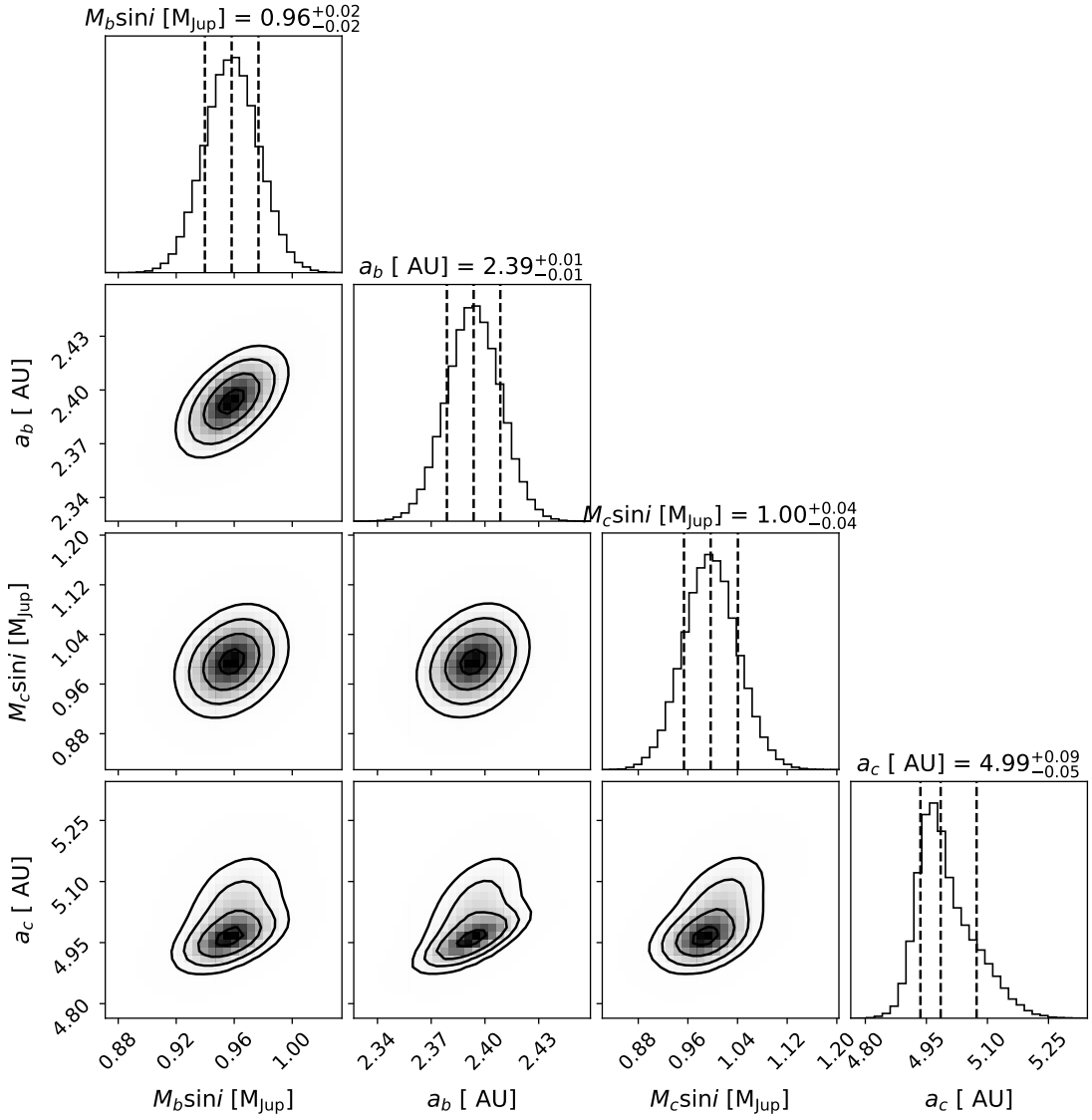

FIG. 3.— Posterior distributions for all derived parameters.