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	K_b, K_c, e_d, K_d, K_e, K_f, σ, γ	35	884	7.27	-2924.40	6049.51	5885.03	0.00
Nearly Indistinguishable	K_b, K_c, e_d, K_d, K_e, e_f, K_f, σ, γ	37	884	7.26	-2922.88	6060.05	5886.35	1.32
Somewhat Disfavored	e_b, K_b, K_c, e_d, K_d, K_e, K_f, σ, γ	37	884	7.26	-2923.57	6061.42	5887.72	2.69
	K_b, K_c, e_d, K_d, e_e, K_e, K_f, σ, γ	37	884	7.28	-2923.97	6062.23	5888.53	3.50
	e_b, K_b, K_c, e_d, K_d, K_e, e_f, K_f, σ, γ	39	884	7.26	-2921.97	6071.79	5888.89	3.86
Strongly Disfavored	K_b, e_c, K_c, e_d, K_d, K_e, K_f, σ, γ	37	884	7.27	-2924.43	6063.13	5889.43	4.40
	K_b, K_c, e_d, K_d, e_e, K_e, e_f, K_f, σ, γ	39	884	7.26	-2922.47	6072.78	5889.89	4.86
	K_b, e_c, K_c, e_d, K_d, K_e, e_f, K_f, σ, γ	39	884	7.26	-2922.83	6073.52	5890.62	5.59
	e_b, K_b, K_c, e_d, K_d, e_e, K_e, K_f, σ, γ	39	884	7.27	-2923.21	6074.27	5891.38	6.35
	e_b, K_b, e_c, K_c, e_d, K_d, K_e, K_f, σ, γ	39	884	7.27	-2923.60	6075.05	5892.15	7.12
	e_b, K_b, K_c, e_d, K_d, e_e, K_e, e_f, K_f, σ, γ	41	884	7.26	-2921.62	6084.66	5892.58	7.55
	K_b, e_c, K_c, e_d, K_d, e_e, K_e, K_f, σ, γ	39	884	7.27	-2923.97	6075.79	5892.89	7.86
	e_b, K_b, e_c, K_c, e_d, K_d, K_e, e_f, K_f, σ, γ	41	884	7.25	-2921.93	6085.29	5893.22	8.19
	K_b, e_c, K_c, e_d, K_d, e_e, K_e, e_f, K_f, σ, γ	41	884	7.26	-2922.40	6086.22	5894.15	9.12
Ruled Out	e_b, K_b, e_c, K_c, e_d, K_d, e_e, K_e, K_f, σ, γ	41	884	7.27	-2923.21	6087.84	5895.77	10.74
	e_b, K_b, e_c, K_c, e_d, K_d, e_e, K_e, e_f, K_f, σ, γ	43	884	7.25	-2921.57	6098.13	5896.90	11.87
	K_b, K_c, K_d, K_e, K_f, σ, γ	33	884	7.70	-2975.40	6137.95	5982.70	97.67
	K_b, K_c, K_d, K_e, e_f, K_f, σ, γ	35	884	7.69	-2974.13	6148.97	5984.49	99.46
	e_b, K_b, K_c, K_d, K_e, K_f, σ, γ	35	884	7.69	-2974.34	6149.40	5984.92	99.89
	K_b, K_c, K_d, e_e, K_e, K_f, σ, γ	35	884	7.70	-2975.08	6150.87	5986.38	101.35
	K_b, e_c, K_c, K_d, K_e, K_f, σ, γ	35	884	7.70	-2975.32	6151.36	5986.87	101.84
	e_b, K_b, K_c, K_d, K_e, e_f, K_f, σ, γ	37	884	7.68	-2973.18	6160.64	5986.94	101.91
	K_b, K_c, K_d, e_e, K_e, e_f, K_f, σ, γ	37	884	7.68	-2973.82	6161.92	5988.22	103.19
	e_b, K_b, K_c, K_d, e_e, K_e, K_f, σ, γ	37	884	7.69	-2974.04	6162.36	5988.65	103.62
	K_b, e_c, K_c, K_d, K_e, e_f, K_f, σ, γ	37	884	7.69	-2974.08	6162.43	5988.73	103.70
	e_b, K_b, e_c, K_c, K_d, K_e, K_f, σ, γ	37	884	7.70	-2974.22	6162.72	5989.02	103.99
	K_b, e_c, K_c, K_d, e_e, K_e, K_f, σ, γ	37	884	7.70	-2975.01	6164.31	5990.61	105.58
	e_b, K_b, K_c, K_d, e_e, K_e, e_f, K_f, σ, γ	39	884	7.68	-2972.88	6173.61	5990.72	105.69
	e_b, K_b, e_c, K_c, K_d, K_e, e_f, K_f, σ, γ	39	884	7.68	-2973.09	6174.03	5991.13	106.10
	K_b, e_c, K_c, K_d, e_e, K_e, e_f, K_f, σ, γ	39	884	7.69	-2973.78	6175.42	5992.52	107.49
	e_b, K_b, e_c, K_c, K_d, e_e, K_e, K_f, σ, γ	39	884	7.69	-2973.94	6175.72	5992.83	107.80
	e_b, K_b, e_c, K_c, K_d, e_e, K_e, e_f, K_f, σ, γ	41	884	7.68	-2972.81	6187.05	5994.97	109.94
	K_b, K_c, e_d, K_d, K_e, σ, γ	32	884	7.85	-3031.18	6242.72	6092.10	207.07
	e_b, K_b, K_c, e_d, K_d, K_e, σ, γ	34	884	7.84	-3029.36	6252.66	6092.79	207.76
	K_b, e_c, K_c, e_d, K_d, K_e, σ, γ	34	884	7.84	-3030.58	6255.08	6095.22	210.19
	e_b, K_b, e_c, K_c, e_d, K_d, K_e, σ, γ	36	884	7.83	-3028.72	6264.93	6095.84	210.81
	K_b, K_c, e_d, K_d, e_e, K_e, σ, γ	34	884	7.85	-3031.04	6256.01	6096.14	211.11
	e_b, K_b, K_c, e_d, K_d, e_e, K_e, σ, γ	36	884	7.84	-3029.17	6265.83	6096.74	211.71
	K_b, e_c, K_c, e_d, K_d, e_e, K_e, σ, γ	36	884	7.84	-3030.39	6268.28	6099.18	214.15
	e_b, K_b, e_c, K_c, e_d, K_d, e_e, K_e, σ, γ	38	884	7.83	-3028.48	6278.04	6099.74	214.71
	K_b, K_c, K_d, K_e, σ, γ	30	884	8.16	-3063.60	6293.98	6152.63	267.60
	e_b, K_b, K_c, K_d, K_e, σ, γ	32	884	8.16	-3062.08	6304.52	6153.90	268.87
	K_b, e_c, K_c, K_d, K_e, σ, γ	32	884	8.16	-3062.53	6305.41	6154.79	269.76
	e_b, K_b, e_c, K_c, K_d, K_e, σ, γ	34	884	8.15	-3061.37	6316.68	6156.81	271.78
	K_b, K_c, K_d, e_e, K_e, σ, γ	32	884	8.16	-3063.60	6307.56	6156.94	271.91
	e_b, K_b, K_c, K_d, e_e, K_e, σ, γ	34	884	8.16	-3062.05	6318.03	6158.16	273.13
	K_b, e_c, K_c, K_d, e_e, K_e, σ, γ	34	884	8.16	-3062.49	6318.91	6159.05	274.02
	e_b, K_b, e_c, K_c, K_d, e_e, K_e, σ, γ	36	884	8.15	-3061.33	6330.16	6161.06	276.03
	e_b, K_b, K_c, e_d, K_d, K_f, σ, γ	34	884	8.46	-3111.50	6416.92	6257.05	372.02
	K_b, K_c, e_d, K_d, K_f, σ, γ	32	884	8.48	-3113.75	6407.85	6257.23	372.20

TABLE 2
MCMC Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
Modified MCMC Step Parameters			
P_b	$14.651634 \pm 6.9e-05$	14.651622	days
$T\mathrm{conj_b}$	$2458909.442^{+0.027}_{-0.026}$	2458909.441	BJD
$T\mathrm{peri_b}$	$2458911.3^{+2.1}_{-2.7}$	2458911.3	BJD
e_b	$0.0045^{+0.0041}_{-0.0031}$	0.0046	
ω_b	$2.52^{+1.1}_{-0.92}$	2.4	radians
K_b	71.31 ± 0.31	71.31	m s^{-1}
P_c	44.3939 ± 0.0047	44.3939	days
$T\mathrm{conj_c}$	$2458910.52^{+0.52}_{-0.53}$	2458910.52	BJD
$T\mathrm{peri_c}$	2458905^{+22}_{-14}	2458891	BJD
e_c	$0.018^{+0.023}_{-0.013}$	0.008	
ω_c	$-0.8^{+2.3}_{-1.1}$	-1.2	radians
K_c	$9.65^{+0.3}_{-0.31}$	9.68	m s^{-1}
P_d	5046^{+12}_{-13}	5046	days
$T\mathrm{conj_d}$	$2456233.3^{+14.0}_{-9.3}$	2456235	BJD
$T\mathrm{peri_d}$	2453874^{+65}_{-60}	2453865	BJD
e_d	0.089 ± 0.009	0.09	
ω_d	$-1.406^{+0.071}_{-0.077}$	-1.411	radians
K_d	43.24 ± 0.49	43.24	m s^{-1}
P_e	$0.736546 \pm 2e-06$	0.736546	days
$T\mathrm{conj_e}$	2458916.353 ± 0.014	2458916.353	BJD
$T\mathrm{peri_e}$	$2458916.28^{+0.17}_{-0.13}$	2458916.27	BJD
e_e	$0.041^{+0.04}_{-0.028}$	0.033	
ω_e	$0.6^{+1.1}_{-1.4}$	0.8	radians
K_e	$6.6^{+0.31}_{-0.32}$	6.62	m s^{-1}
P_f	$261.08^{+0.22}_{-0.23}$	261.06	days
$T\mathrm{conj_f}$	$2458891.3^{+4.9}_{-6.3}$	2458891.0	BJD
$T\mathrm{peri_f}$	2458962^{+26}_{-36}	2458971	BJD
e_f	$0.089^{+0.054}_{-0.051}$	0.086	
ω_f	$-2.74^{+0.7}_{-0.69}$	-2.6	radians
K_f	5.06 ± 0.35	5.14	m s^{-1}
Orbital Parameters			
P_b	$14.651634 \pm 6.9e-05$	14.651622	days
$T\mathrm{conj_b}$	$2458909.442^{+0.027}_{-0.026}$	2458909.441	BJD
$T\mathrm{peri_b}$	$2458911.3^{+2.1}_{-2.7}$	2458911.3	BJD
e_b	$0.0045^{+0.0041}_{-0.0031}$	0.0046	
ω_b	$2.52^{+1.1}_{-0.92}$	2.4	radians
K_b	71.31 ± 0.31	71.31	m s^{-1}
P_c	44.3939 ± 0.0047	44.3939	days
$T\mathrm{conj_c}$	$2458910.52^{+0.52}_{-0.53}$	2458910.52	BJD
$T\mathrm{peri_c}$	2458905^{+22}_{-14}	2458891	BJD
e_c	$0.018^{+0.023}_{-0.013}$	0.008	
ω_c	$-0.8^{+2.3}_{-1.1}$	-1.2	radians
K_c	$9.65^{+0.3}_{-0.31}$	9.68	m s^{-1}
P_d	5046^{+12}_{-13}	5046	days
$T\mathrm{conj_d}$	$2456233.3^{+14.0}_{-9.3}$	2456235	BJD
$T\mathrm{peri_d}$	2453874^{+65}_{-60}	2453865	BJD
e_d	0.089 ± 0.009	0.09	
ω_d	$-1.406^{+0.071}_{-0.077}$	-1.411	radians
K_d	43.24 ± 0.49	43.24	m s^{-1}
P_e	$0.736546 \pm 2e-06$	0.736546	days
$T\mathrm{conj_e}$	2458916.353 ± 0.014	2458916.353	BJD
$T\mathrm{peri_e}$	$2458916.28^{+0.17}_{-0.13}$	2458916.27	BJD
e_e	$0.041^{+0.04}_{-0.028}$	0.033	
ω_e	$0.6^{+1.1}_{-1.4}$	0.8	radians
K_e	$6.6^{+0.31}_{-0.32}$	6.62	m s^{-1}
P_f	$261.08^{+0.22}_{-0.23}$	261.06	days
$T\mathrm{conj_f}$	$2458891.3^{+4.9}_{-6.3}$	2458891.0	BJD
$T\mathrm{peri_f}$	2458962^{+26}_{-36}	2458971	BJD
e_f	$0.089^{+0.054}_{-0.051}$	0.086	
ω_f	$-2.74^{+0.7}_{-0.69}$	-2.6	radians
K_f	5.06 ± 0.35	5.14	m s^{-1}
Other Parameters			
γ_{SOPHIE}	27435.1 ± 1.4	27435.2	m s−1
$\gamma_{\mathrm{Hamilton}}$	-3.08 ± 0.46	-3.1	m s−1

TABLE 3
Derived Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
$M_b \sin i$	0.845 ± 0.026	0.834	M_{Jup}
a_b	0.1162 ± 0.0018	0.1153	AU
$M_c \sin i$	52.5 ± 2.3	52.8	$M_\oplus$
a_c	$0.2433^{+0.0037}_{-0.0038}$	0.2414	AU
$M_d \sin i$	3.58 ± 0.12	3.5	M_{Jup}
a_d	$5.716^{+0.087}_{-0.09}$	5.664	AU
$M_e \sin i$	9.14 ± 0.52	9.07	$M_\oplus$
a_e	$0.01583^{+0.00024}_{-0.00025}$	0.0157	AU
$M_f \sin i$	$49.4^{+3.8}_{-3.7}$	49.8	$M_\oplus$
a_f	0.793 ± 0.012	0.787	AU

TABLE 4
Summary of Priors

e_b constrained to be < 0.99
e_c constrained to be < 0.99
e_d constrained to be < 0.99
e_e constrained to be < 0.99
e_f constrained to be < 0.99
K constrained to be > 0
Bounded prior: $0.0 < \sigma_{\rm HJS} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm HRS} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm Hamilton} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm HIRES-pre} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm HIRES-post} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm APF} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm HARPS-N} < 10.0$
Bounded prior: $0.0 < \sigma_{\rm SOPHIE} < 10.0$

TABLE 5
Final Convergence Criterion

Criterion	Final Value
minAfactor	40.193
maxArchange	0.005
maxGR	1.003
minTz	10175.642

TABLE 6
Radial Velocities

Time (JD)	RV (m s^{-1})	RV Unc. (m s^{-1})	Inst.
2451326.62945	-22567.53	11.80	HJS
2451503.88981	-22568.26	2.70	HJS
2451529.97611	-22626.99	1.28	HJS
2451532.85023	-22546.88	3.39	HJS
2451555.84473	-22613.15	2.02	HJS
2451627.70595	-22601.62	2.71	HJS
2451655.71887	-22562.95	1.87	HJS
2451688.64300	-22676.90	1.92	HJS
2451861.88605	-22617.17	1.51	HJS
2451917.86709	-22557.66	1.84	HJS
2451987.75113	-22591.87	2.79	HJS
2452004.73347	-22550.49	3.48	HJS
2452039.68473	-22668.18	4.20	HJS
2452221.00927	-22622.91	2.39	HJS
2452248.99124	-22655.19	2.49	HJS
2452303.80685	-22679.91	5.86	HJS
2452353.77650	-22608.38	2.97	HJS
2452385.66837	-22560.65	2.29	HJS
2452661.73325	-22611.36	3.98	HJS
2452742.73449	-22676.27	2.33	HJS
2452804.63018	-22682.65	3.41	HJS
2453015.91522	-22547.57	2.68	HJS
2453037.85119	-22661.49	1.07	HJS
2453066.77944	-22680.40	2.79	HJS
2453692.95532	-22574.56	4.90	HJS
2453747.82402	-22488.12	5.58	HJS
2453806.74820	-22494.44	1.20	HJS
2453863.66017	-22521.49	3.83	HJS
2454068.00404	-22526.01	1.77	HJS
2454781.99883	-22583.62	5.50	HJS
2454838.86031	-22582.86	2.16	HJS
2455200.97902	-22490.53	1.80	HJS
2455287.67769	-22467.48	2.82	HJS
2455314.68671	-22484.16	6.30	HJS
2455316.63027	-22456.81	1.87	HJS
2455502.97930	-22548.37	4.71	HJS
2455524.94661	-22536.57	1.78	HJS
2455526.94071	-22595.66	1.30	HJS
2455527.94630	-22604.25	0.76	HJS
2455528.94011	-22604.74	2.97	HJS
2455529.96830	-22598.50	1.21	HJS
2455583.79261	-22562.38	1.71	HJS
2455584.83096	-22586.73	1.49	HJS
2455587.86770	-22628.97	2.50	HJS
2455617.89010	-22594.16	1.56	HJS
2455632.74439	-22600.18	1.27	HJS
2455639.71567	-22497.50	1.92	HJS
2455640.76607	-22511.07	1.00	HJS
2455641.67708	-22541.83	0.52	HJS
2455643.71692	-22594.17	1.15	HJS

Note. — Only the first 50 of 884 RVs are displayed in this table. Use `radvel table -t rv` to save the full LaTeX table as a separate file.

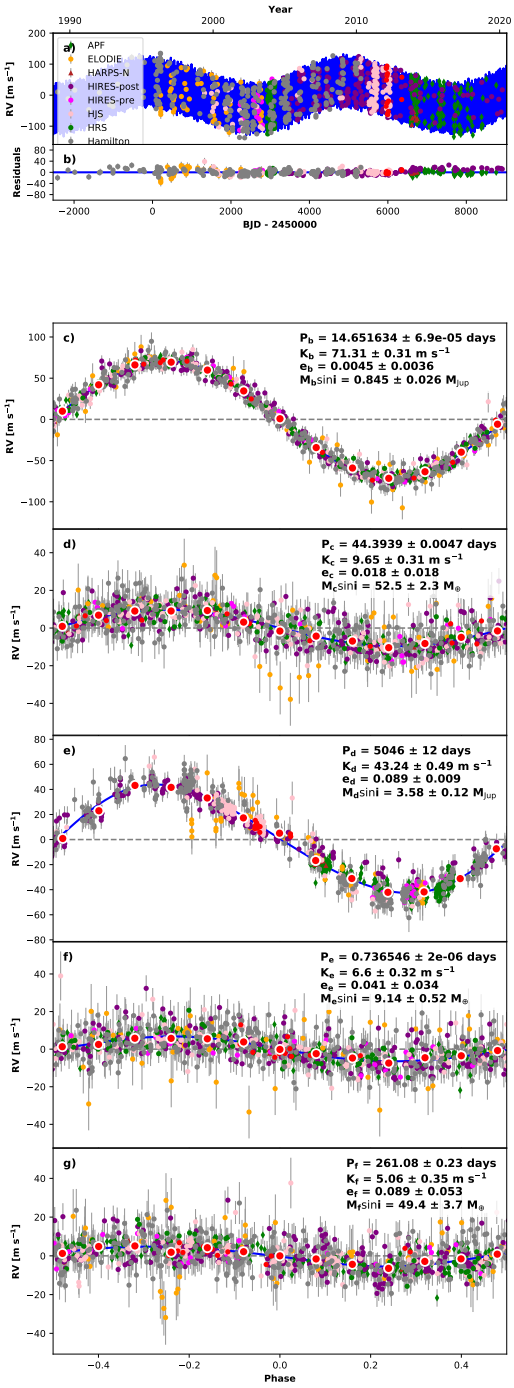

FIG. 1.— Best-fit 5-planet Keplerian orbital model for 55Cnc. The maximum likelihood model is plotted while the orbital parameters listed in Table 2 are the median values of the posterior distributions. The thin blue line is the best fit 5-planet model. We add in quadrature the RV jitter term(s) listed 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.

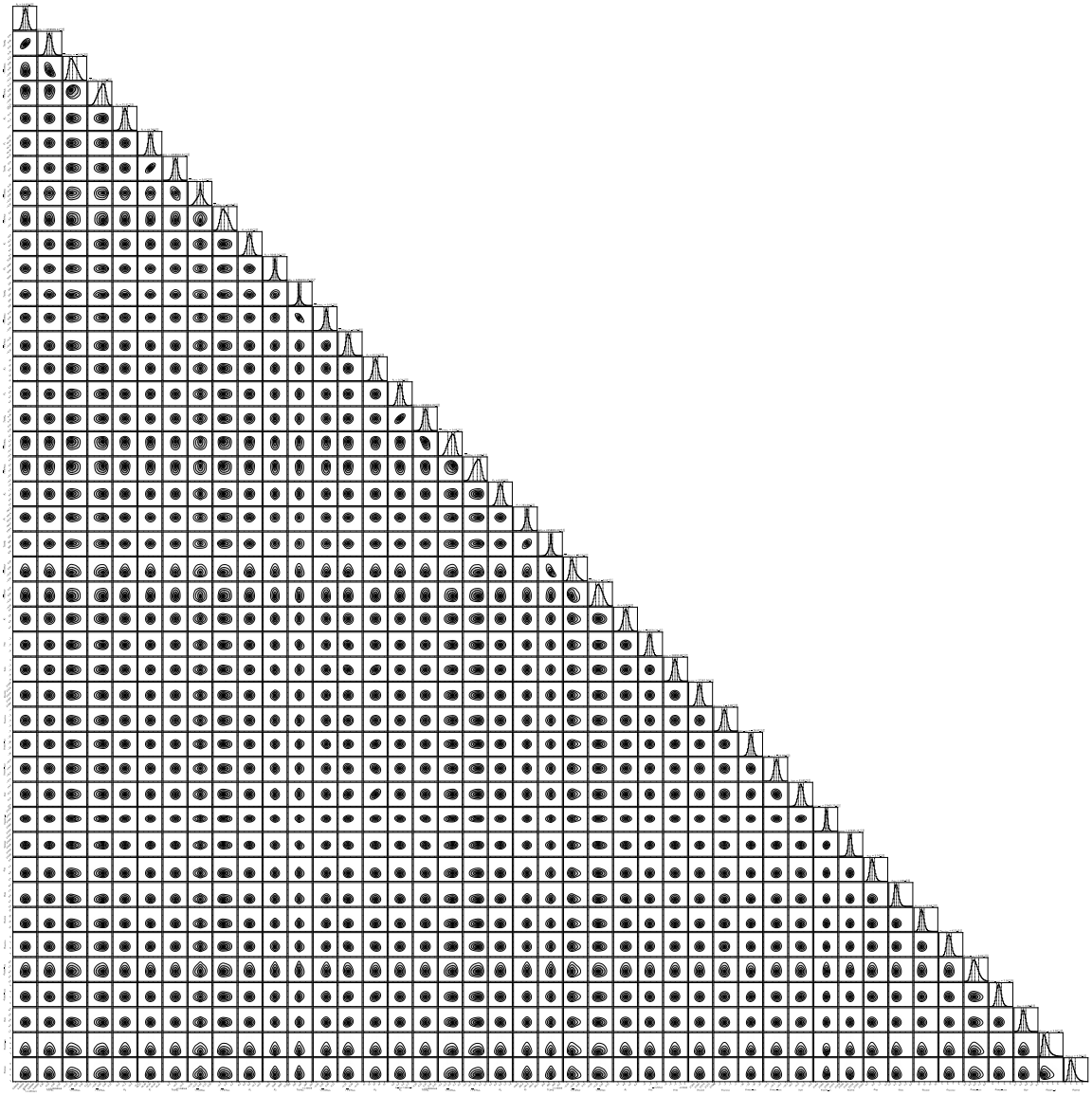

FIG. 2.— Posterior distributions for all free parameters.

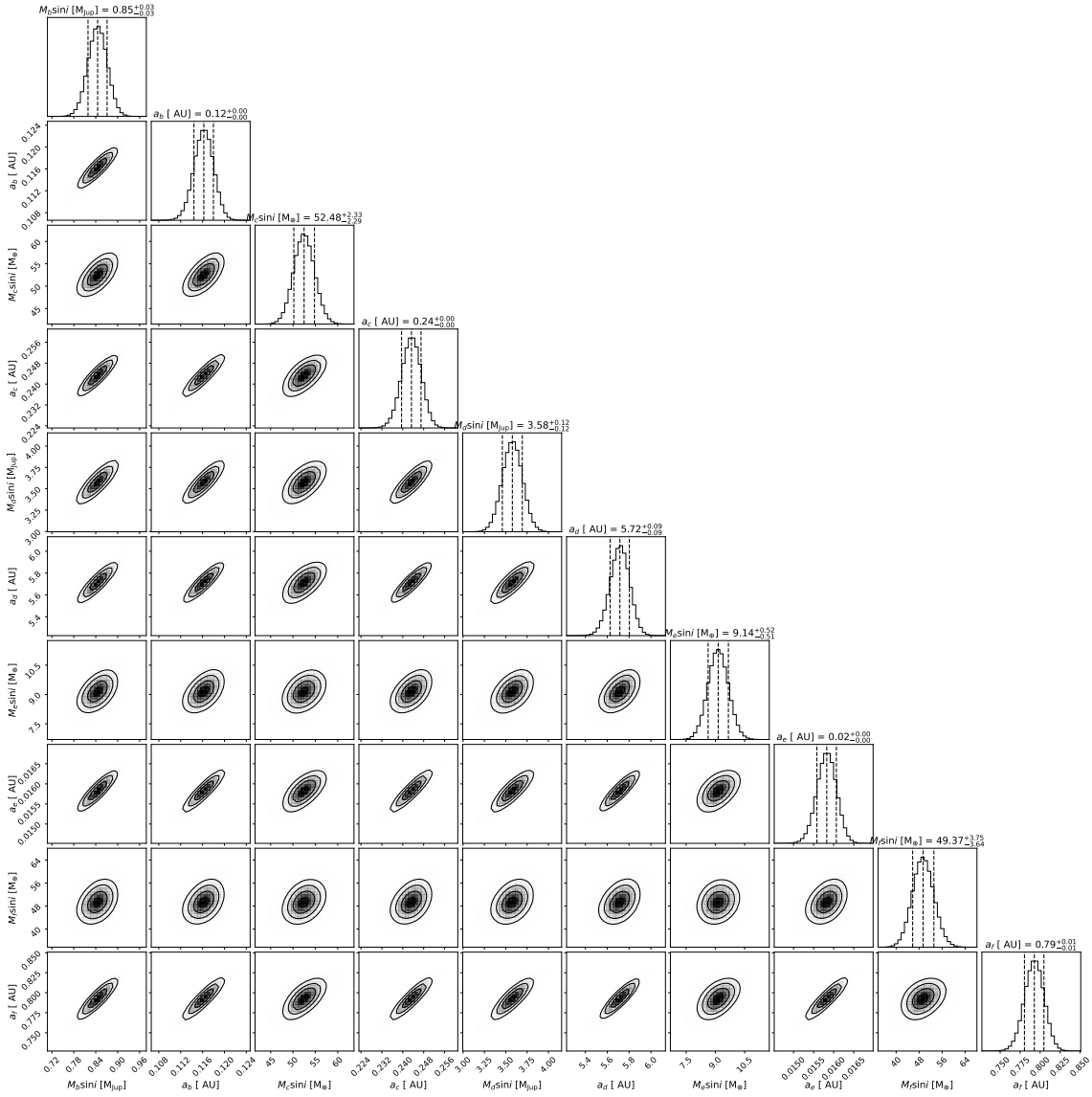

FIG. 3.— Posterior distributions for all derived parameters.