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	$K_b, e_c, K_c, \sigma, \gamma$	18	768	2.61	-1772.69	3630.99	3548.32	0.00
Nearly Indistinguishable	K_b, K_c, σ, γ $e_b, K_b, K_c, \sigma, \gamma$ $e_b, K_b, e_c, K_c, \sigma, \gamma$	16 18 20	768 768 768	2.62 2.63 2.62	-1774.89 -1772.90 -1771.00	3622.12 3631.42 3640.90	3548.54 3548.75 3549.15	0.22 0.43 0.83
Ruled Out	K_{b}, σ, γ $e_{b}, K_{b}, \sigma, \gamma$ $e_{c}, K_{c}, \sigma, \gamma$ $e_{c}, K_{c}, \sigma, \gamma$ $e_{c}, K_{c}, \sigma, \gamma$ $e_{b}, K_{b}, e_{c}, K_{c}, \gamma$ $e_{b}, K_{b}, K_{c}, \gamma$ $K_{b}, e_{c}, K_{c}, \gamma$ K_{b}, K_{c}, γ e_{b}, K_{b}, γ e_{c}, K_{c}, γ e_{c}, K_{c}, γ	13 15 13 15 10 15 13 13 11 10 8	768 768 768 768 768 768 768 768 768 768	2.87 2.87 3.04 3.04 3.27 2.64 2.63 2.63 2.90 2.88 3.06 3.05 3.28	-1878.44 -1878.23 -1923.45 -1922.46 -1993.78 -7222.76 -7264.58 -7269.03 -7324.75 -10901.73 -10990.29 -12617.59 -12637.81	3809.28 3822.14 3899.31 3911.60 4020.02 14511.20 14581.57 14590.45 14688.61 21835.94 21999.75 25267.65 25406.79 31274.88	3749.39 3753.13 3839.42 3842.58 3973.87 14442.18 14521.68 14530.57 14637.88 21789.79 21962.79 25221.50 25369.82 31251.74	201.07 204.81 291.10 294.26 425.55 10893.86 10973.36 10982.25 11089.56 18241.47 18414.47 21673.18 21821.50 27703.42

TABLE 2 MCMC Posteriors

$ P_b 74.276 \pm 0.041 \qquad 74.279 \qquad \text{days} \\ Tconj_b 2455174.0^{+1.2}_{-1.1} \qquad 2455174.3 \qquad JD \\ Tperi_b 2455178.8^{+7.6}_{-8.6} \qquad 2455178.7 \qquad JD \\ e_b 0.08^{+0.05}_{-0.053} \qquad 0.101 \\ \omega_b 2.07^{+0.79}_{-0.79} \qquad 2.03 \qquad \text{radians} \\ K_b 2.37^{+0.13}_{-0.12} \qquad 2.39 \qquad \text{m s}^{-1} \\ P_c 547.7^{-0.12}_{-17.0} \qquad 548 \qquad \text{days} \\ Tconj_c 2439394^{+520}_{-150} \qquad 2439346 \qquad JD \\ Tperi_c 2439417^{+450}_{-460} \qquad 2439416 \qquad JD \\ e_c 0.092^{+0.067}_{-0.061} \qquad 0.103 \\ \omega_c 1.95^{+0.2}_{-0.89} \qquad 1.9 \qquad \text{radians} \\ K_c 1.95^{+0.29}_{-0.89} \qquad 1.9 \qquad \text{radians} \\ K_c 1.95^{+0.29}_{-0.89} \qquad 0.103 \qquad \text{m s}^{-1} \\ Teonj_b 2455174.0^{+1.2}_{-1.2} \qquad 2455174.3 \qquad JD \\ Tperi_b 2455174.0^{+1.2}_{-1.2} \qquad 2455174.3 \qquad JD \\ Tperi_b 2455178.0^{+1.2}_{-1.8} \qquad 2455178.7 \qquad JD \\ e_b 0.08^{+0.063}_{-0.053} \qquad 0.101 \\ \omega_b 2.07^{+0.79}_{-0.89} \qquad 2.03 \qquad \text{radians} \\ K_b 2.37^{+0.13}_{-0.12} \qquad 2.03 \qquad \text{radians} \\ K_b 2.37^{+0.13}_{-0.12} \qquad 2.39 \qquad \text{m s}^{-1} \\ P_c 547.7^{+5.2}_{-1.9} \qquad 548 \qquad \text{days} \\ Tconj_c 2439417^{+450}_{-160} \qquad 2439396 \qquad JD \\ Tperi_c 2439417^{+160}_{-160} \qquad 2439396 \qquad JD \\ Tperi_c 2439417^{-160}_{-160} \qquad 2439396 \qquad JD \\ Tperi_c 2439417^{-160}_{-160} \qquad 0.103 \qquad 0.10$	Parameter	Credible Interval	Maximum Likelihood	Units		
	Modified M	Modified MCMC Step Parameters				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	P_b		74.279	days		
e_b $0.08 + 0.0653 \\ 0.053$	Tconj _b	$2455174.0^{+1.2}_{-1.1}$	2455174.3	$_{ m JD}$		
$ω_b$ 2.07 $_{-0.6}^{+0.79}$ 2.03 radians K_b 2.37 $_{-0.12}^{+0.13}$ 2.39 m s ⁻¹ P_c 547.7 $_{-1.7}^{+5.2}$ 548 days T conj _c 2439394 $_{-1.00}^{+5.00}$ 2439396 JD T peri _c 2439417 $_{-1.60}^{+5.00}$ 2439416 JD E_c 0.092 $_{-0.061}^{+0.067}$ 0.103 E_c 1.95 $_{-0.89}^{+1.2}$ 1.9 radians E_c 1.8 ± 0.13 1.83 m s ⁻¹ Orbital Parameters P_b 74.276 ± 0.041 74.279 days T conj _b 2455174.0 $_{-1.1}^{+1.2}$ 2455174.3 JD T peri _b 2455174.0 $_{-1.1}^{+1.2}$ 2455178.7 JD E_c 0.08 E_c 0.08 $_{-0.053}^{+0.067}$ 0.101 E_c 0.08 E_c 0.08 E_c 0.08 E_c 0.08 E_c 0.08 E_c 0.09 E_c	Tperi _b		2455178.7	$_{ m JD}$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	e_b	$0.08^{+0.064}_{-0.053}$	0.101			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ω_b	$2.07_{-0.6}^{+0.79}$	2.03	radians		
	K_b	$2.37^{+0.13}_{-0.12}$	2.39	${ m m~s^{-1}}$		
	P_c	$547.7^{+5.2}_{-17.0}$	548	days		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Tconj _c	2439394^{+520}_{-150}	2439396	$_{ m JD}$		
	$T_{\rm peri_c}$	- 100	2439416	$_{ m JD}$		
K_c 1.8± 0.13 1.83 m s ⁻¹ Orbital Parameters P_b 74.276 ± 0.041 74.279 days T_{conj_b} 74.276 ± 0.041 3 m s ⁻¹ T_{conj_b} 2455178.7 JD T_{conj_b} 2455178.7 JD W_b 0.203 radians K_b 2.39 m s ⁻¹ P_c 547.7+5.2 2.39 m s ⁻¹ P_c 547.7+5.2 548 days T_{conj_c} 548 days <th< td=""><td>e_c</td><td>$0.092^{+0.067}_{-0.061}$</td><td>0.103</td><td></td></th<>	e_c	$0.092^{+0.067}_{-0.061}$	0.103			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ω_c	$1.95^{+1.2}_{-0.89}$	1.9	radians		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	K_c		1.83	$\mathrm{m}\;\mathrm{s}^{-1}$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Orbital Par	ameters				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		110	74.279	days		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Tconj _b	$2455174.0_{-1.1}$	2455174.3			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$T_{\mathrm{peri_b}}$			$_{ m JD}$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	e_b	$0.08^{+0.064}_{-0.053}$	0.101			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ω_b	$2.07^{+0.79}_{-0.6}$	2.03			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0	$2.37^{+0.13}_{-0.12}$	2.39	${ m m~s^{-1}}$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-	$547.7^{+5.2}_{-17.0}$	548	days		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		- 150				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$T_{\rm peri_c}$		2439416	$_{ m JD}$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	e_c		0.103			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						
$\begin{array}{llllllllllllllllllllllllllllllllllll$	K_c	1.8 ± 0.13	1.83	m s ⁻¹		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Other Para	meters				
$\begin{array}{llllllllllllllllllllllllllllllllllll$	$\gamma_{ m UCLES}$			m s-1		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	$\gamma_{\mathrm{PFS-Pre}}$	-0.0				
$\begin{array}{llllllllllllllllllllllllllllllllllll$	$\gamma_{\rm HIRES-post}$					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\gamma_{\rm HARPS-pre}$	10.20				
$\begin{array}{llllllllllllllllllllllllllllllllllll$		$1.27_{-0.5}$				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$				m s ⁻¹ d ⁻¹		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	•	$= 0.0$ $_{3.63} + 0.23$				
$\sigma_{\rm HIRES-post}$ 2.62 $^{+0.18}_{-0.17}$ 2.57 m s $^{-1}$ $\sigma_{\rm HARPS-pre}$ 1.747 $^{+0.085}_{-0.077}$ 1.701 m s $^{-1}$		$\begin{array}{c} 3.03 - 0.22 \\ 2.3 + 0.59 \end{array}$				
$\sigma_{\text{HARPS-pre}}$ 1.747 $^{+0.085}_{-0.077}$ 1.701 m s ⁻¹		2.9 - 0.42 $2.62 + 0.18$				
	-	2.02-0.17	=,			
OHARPS—post 2.40—0.2 2.37 III S	•	2 42 +0 22				
	UHARPS-post	2.49-0.2	2.37	111 5		

TABLE 3 DERIVED POSTERIORS

Parameter	Credible Interval	Maximum Likelihood	Units
$a_b \\ M_b \sin i \\ a_c \\ M_c \sin i$	$\begin{array}{c} 0.3276^{+0.0025}_{-0.0026} \\ 13.88^{+0.78}_{-0.76} \\ 1.238^{+0.015}_{-0.021} \\ 20.5^{+1.5}_{-1.6} \end{array}$	0.3272 13.96 1.244 21.0	$\begin{array}{c} AU \\ M_{\oplus} \\ AU \\ M_{\oplus} \end{array}$

 $\begin{array}{c} {\rm TABLE} \ 4 \\ {\rm SUMMARY} \ {\rm OF} \ {\rm PRIORS} \end{array}$

 e_b constrained to be < 0.99

 e_c constrained to be < 0.99

K constrained to be >0

Bounded prior: $0.0 < \sigma_{\text{HARPS-post}} < 30.0$

Bounded prior: $0.0 < \sigma_{\text{HARPS-pre}} < 30.0$

Bounded prior: $0.0 < \sigma_{\rm HIRES-post} < 30.0$

Bounded prior: $0.0 < \sigma_{\mathrm{PFS-Pre}} < 30.0$

Bounded prior: $0.0 < \sigma_{\text{UCLES}} < 30.0$

TABLE 5 FINAL CONVERGENCE CRITERION

Criterion	Final Value
minAfactor	51.566
maxArchange	0.022
maxGR	1.009
minTz	3054.201

TABLE 6 RADIAL VELOCITIES

Time	RV	RV Unc.	Inst.
(JD)	$(m s^{-1})$	$(m s^{-1})$	
2457181.86401	-1.48	0.44	HARPS-post
2457182.71703	-2.12	0.35	HARPS-post
2457183.70525	-5.20	0.57	HARPS-post
2457184.78973	-3.10	0.30	HARPS-post
2457196.91300	2.95	0.66	HARPS-post
2457198.91467	1.51	0.90	HARPS-post
2457199.83493	5.33	0.45	HARPS-post
2457200.80377	3.46	0.46	HARPS-post
2457202.75263	6.63	0.58	HARPS-post
2457203.81043	6.22	0.45	HARPS-post
2457204.80444	4.27	0.47	HARPS-post
2457210.88642	-3.26	0.97	HARPS-post
2457211.89973	-2.57	0.75	HARPS-post
2457212.86077	-1.53	0.70	HARPS-post
2457218.77109	-0.22	0.75	HARPS-post
2457219.70307	1.20	1.31	HARPS-post
2457220.77224	1.70	0.89	HARPS-post
2457221.84507	1.54	1.10	HARPS-post
2457222.76389	3.55	0.38	HARPS-post
2457248.79352	3.54	0.82	HARPS-post
2457249.73734	1.16	0.48	HARPS-post
2457250.65044	2.01	0.51	HARPS-post
2457252.65406	2.17	0.41	HARPS-post
2457255.62030	2.26	0.64	HARPS-post
2457256.64043	0.72	0.48	HARPS-post
2457258.66953	-0.91	0.51	HARPS-post
2457259.59369	-1.13	0.97	HARPS-post
2457260.61933	-0.30	0.43	HARPS-post
2457263.63595	-0.76	0.77	HARPS-post
2457264.63850	1.09	0.57	HARPS-post
2457265.63006	0.84	0.47	HARPS-post
2457266.68091	0.11	0.58	HARPS-post
2457267.73233	-0.43 0.14	$0.50 \\ 0.56$	HARPS-post
2457268.67008 2457269.69807	$0.14 \\ 0.67$	$0.50 \\ 0.42$	HARPS-post
2457270.63583	$\frac{0.07}{2.37}$	0.42	HARPS-post HARPS-post
2457270.05383	$\frac{2.37}{2.05}$	0.31 0.41	HARPS-post
2457271.51905	4.13	$0.41 \\ 0.27$	HARPS-post
2457276.63096	4.19	0.21	HARPS-post
2457277.61101	4.43	0.29	HARPS-post
2457277.01101	3.83	0.50	HARPS-post
2457278.07704	3.53	0.31	HARPS-post
2457291.01488	4.97	0.23	HARPS-post
2457293.61762	3.48	0.32 0.22	HARPS-post
2457294.61918	2.72	0.24	HARPS-post
2457295.64185	2.72	0.45	HARPS-post
2457604.64174	0.30	0.45	HARPS-post
2457605.80172	1.60	0.43	HARPS-post
2457606.78797	1.50	0.40	HARPS-post
2457607.77142	0.65	0.31	HARPS-post
_ 101001.111112	0.00	0.01	111101 D POST

Note. — Only the first 50 of 768 RVs are displayed in this table. Use radvel table -t rv to save the full LATEX table as a separate file.

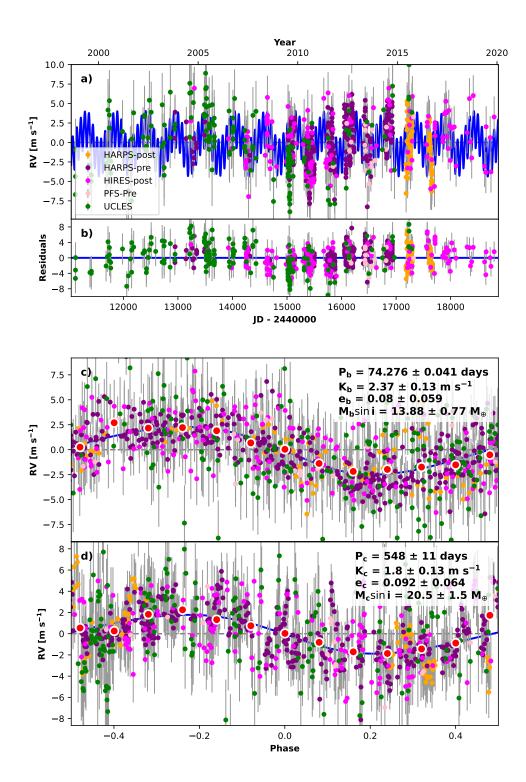


Fig. 1.— Best-fit 2-planet Keplerian orbital model for HD 192310. The maximum likelihood model is plotted while the orbital parameters listed in Table 2 are the median values of the posterior distributions. The thin blue line is the best fit 2-planet model. We add in quadrature the RV jitter term(s) 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.

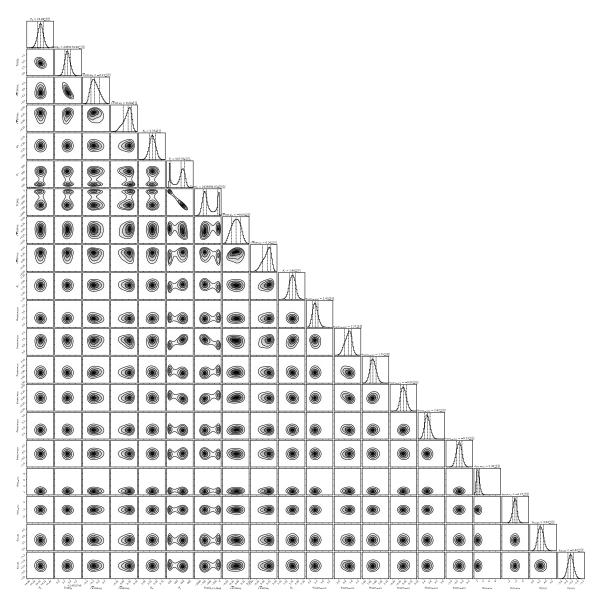


Fig. 2.— Posterior distributions for all free parameters.

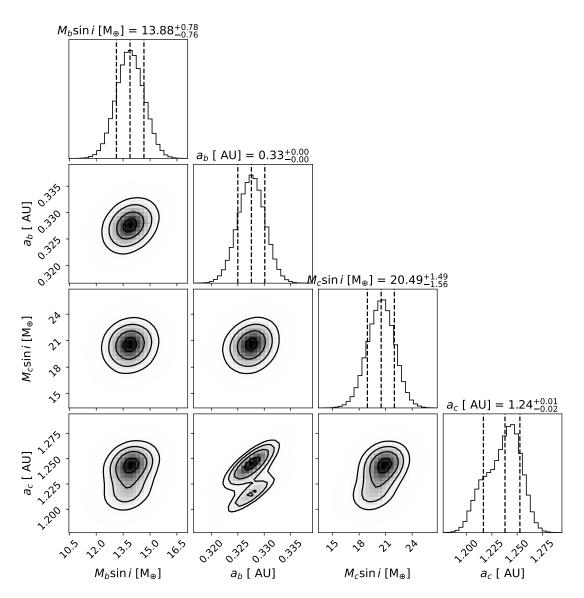


Fig. 3.— Posterior distributions for all derived parameters.