TABLE 1
Model Comparison

Statistic	0 planets	**1 planets (adopted)**
$N_{\rm data}$ (number of measurements)	59	59
$N_{\rm free}$ (number of free parameters)	4	5
RMS (RMS of residuals in m s^{-1})	40.07	33.35
χ^2 (assuming no jitter)	71235.75	47957.23
χ^2_ν (assuming no jitter)	1295.2	888.1
$\ln \mathcal{L}$ (natural log of the likelihood)	-423.43	-359.08
BIC (Bayesian information criterion)	854.95	727.24

TABLE 2
MCMC Posteriors

Parameter	Credible Interval	Maximum Likelihood	Units
Modified MCMC Step Parameters			
$\sqrt{e}\cos\omega_b$	-0.012 $^{+0.066}_{-0.065}$	-0.028	
$\sqrt{e}\sin\omega_b$	0.032 $^{+0.06}_{-0.067}$	0.078	
Orbital Parameters			
P_b	4.2308 $^{+2.5e-05}_{-2.4e-05}$	4.230801	days
$T\mathrm{conj_b}$	2073.366 $^{+0.078}_{-0.08}$	2073.366	JD
e_b	0.007 $^{+0.0076}_{-0.0049}$	0.0068	
ω_b	2.3 $^{+2.1}_{-1.4}$	1.9	radians
K_b	55.84 $\pm$0.46	55.85	m s^{-1}
Other Parameters			
γ_j	-6.5 $\pm$0.49	-6.52	m s$-$1
$\dot{\gamma}$	-0.00086 $\pm$0.00031	-0.00087	m s^{-1} day^{-1}
$\ddot{\gamma}$	-1.3e-07 $^{+2.8e-07}_{-2.9e-07}$	-1.3e-07	m s^{-1} day^{-2}
σ_j	2.19 $^{+0.31}_{-0.26}$	2.0	m s^{-1}

160000 links saved
Reference epoch for γ,$\dot{\gamma}$,$\ddot{\gamma}$: 15822.4

TABLE 3
Summary of Priors

e_b constrained to be < 0.99

K constrained to be > 0

Gaussian prior on $T\mathrm{conj_b}$: 2072.79438 ± 300

Gaussian prior on P_b: 4.23078166873 ± 1

Bounded prior: $0.0 < \sigma_\mathrm{j} < 15.0$

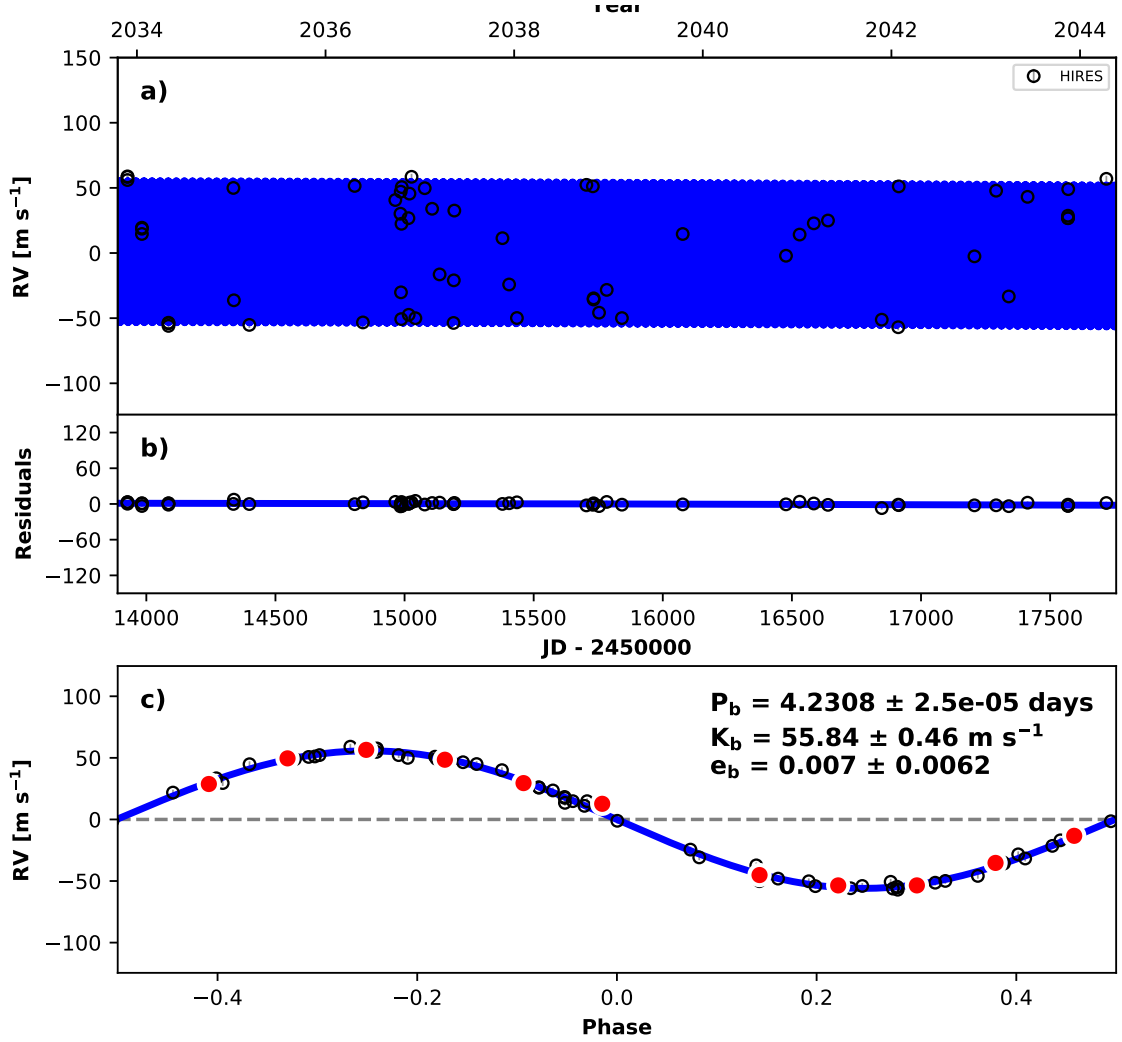

FIG. 1.— Best-fit 1-planet Keplerian orbital model for HD217014. The maximum likelihood model is plotted while the orbital parameters listed in Table 2 are the median values of the posterior distributions. The thin blue line is the best fit 1-planet model. We add in quadrature the RV jitter term(s) listed in Table 2 with the measurement uncertainties for all RVs. **b)** Residuals to the best fit 1-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.

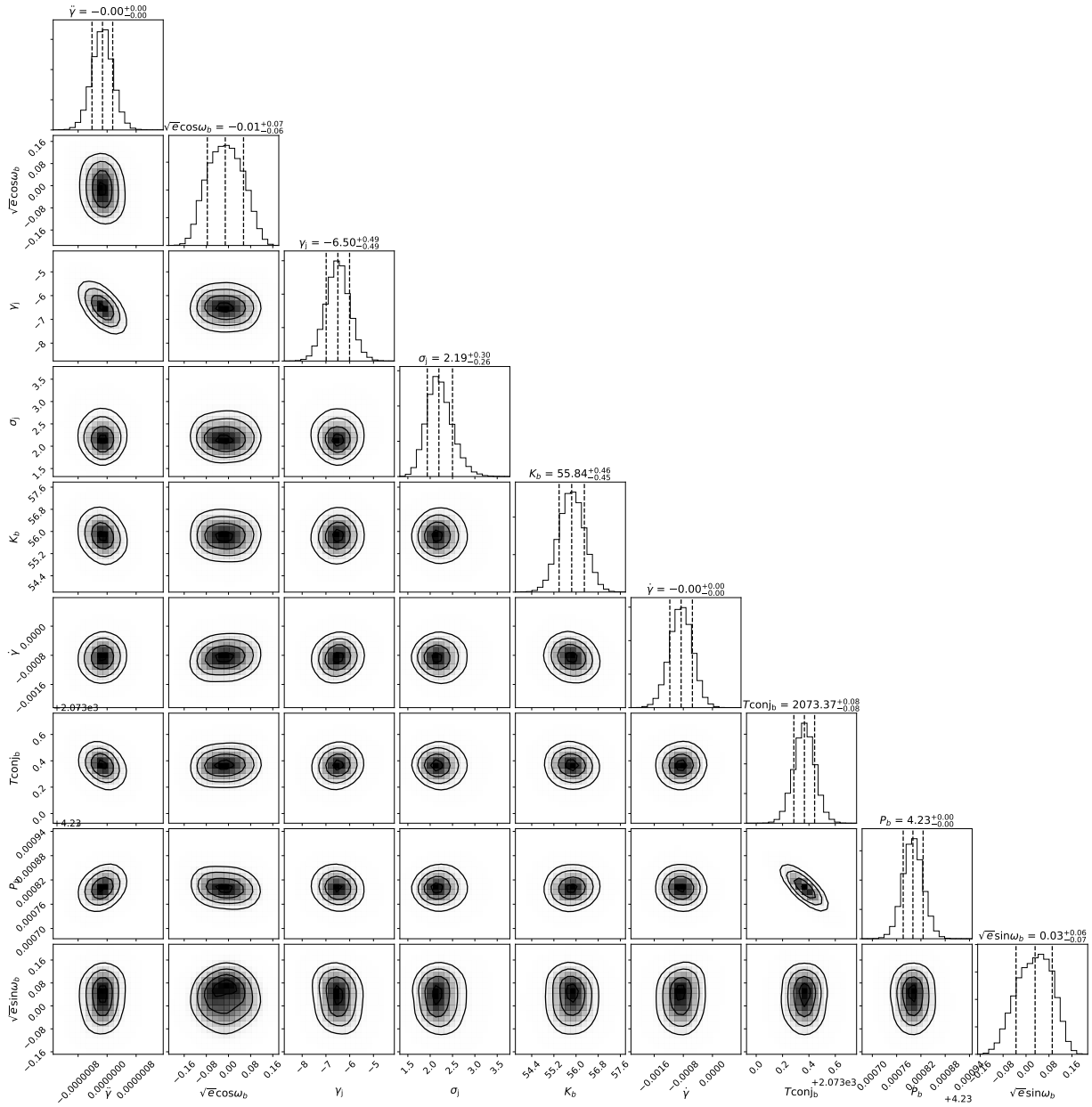

FIG. 2.— Posterior distributions for all free parameters.