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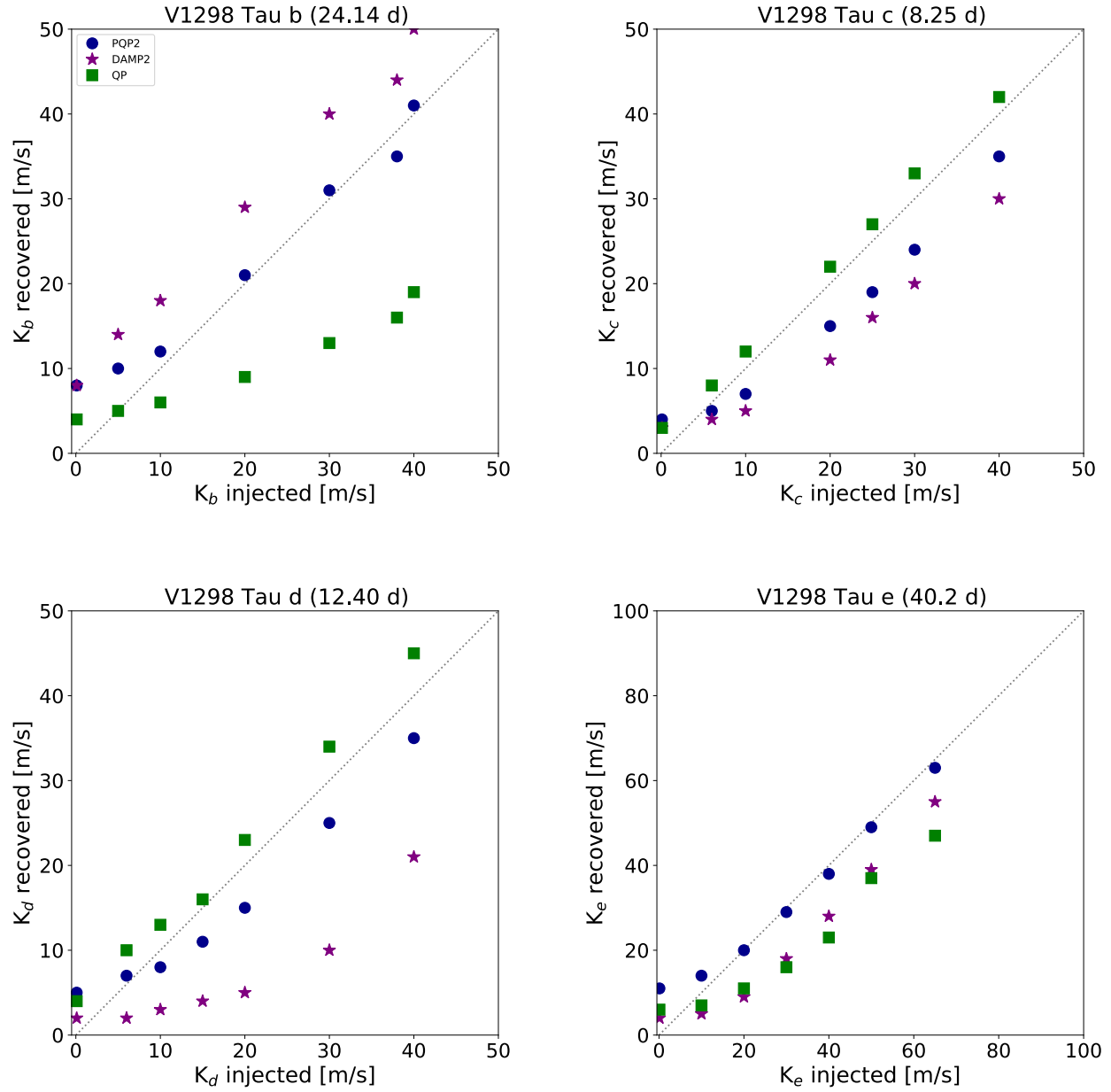


Figure 8: **Accuracy of the recovered planetary amplitudes of the different methods.** Recovered planetary amplitude against injected planetary amplitude in the simulated datasets for the four planets in the system

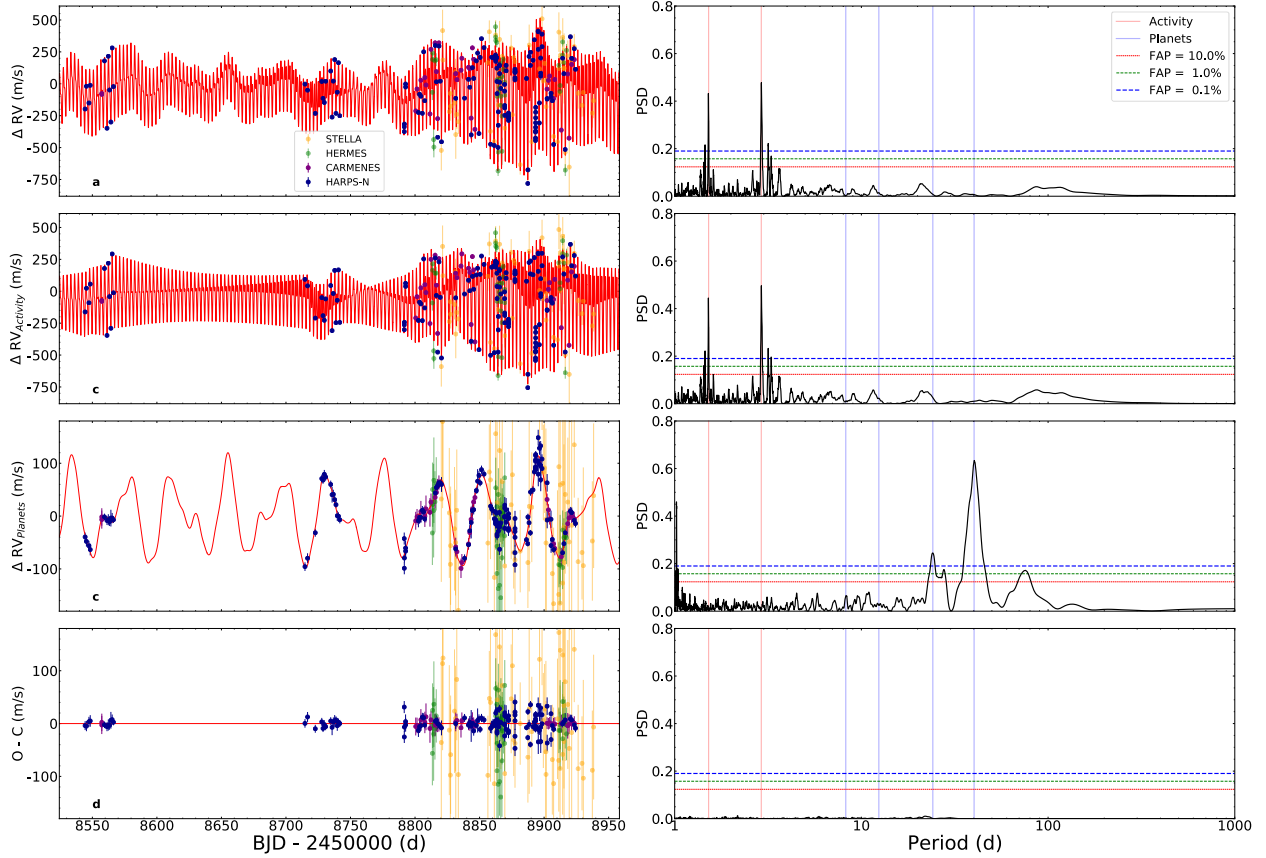


Figure 9: **RV time series with the best model fit of V1298 Tau and their periodograms.** *a*: Full time series with the best fit model combining stellar activity and planetary signals. The stellar activity model represented is a weighted average of the models used for the different spectral ranges. *b*: Activity induced RV after subtracting the planetary signal. *c*: Planetary RV component, after subtracting the stellar induced signal. *d*: Residuals after the fit. 1σ error bars (internal RV uncertainties) of the measurements are shown. The right panel of each figure shows the periodogram of the data with their associated levels of false alarm probability. The positions of the activity, and planetary, signals are indicated with red and blue vertical lines, respectively.

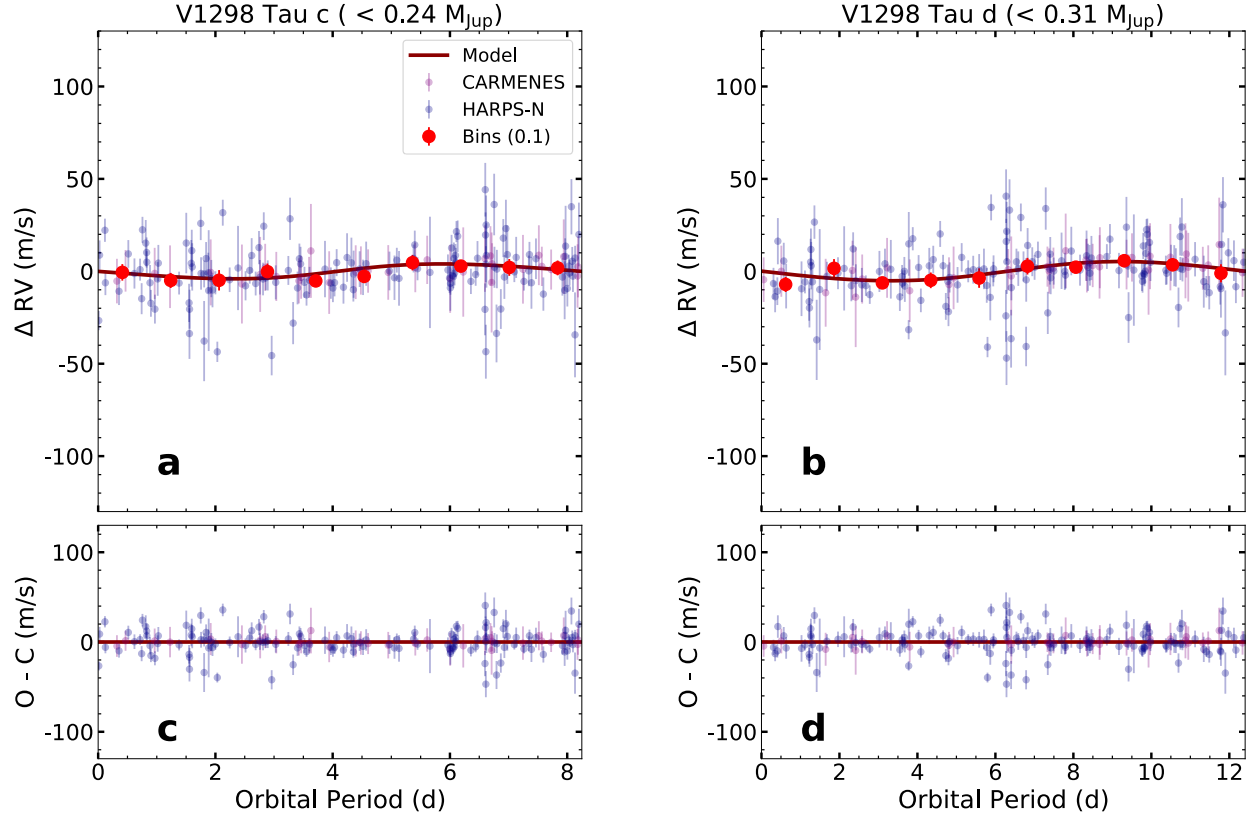


Figure 10: **Phase-folded plots of the RV signals for the two planets of the V1298 Tau planetary system for which we could not confirm the RV signals.** *a*: Phase-folded representation of the best-fitting Keplerian orbit (red line) for V1298 Tau c. *b*: Same for V1298 Tau d. *c* and *d*: Residuals after the fit for both cases. For a better visualisation, only HARPS and CARMENES data have been included. In all cases, 1σ error bars (internal RV uncertainties) of the measurements are shown.

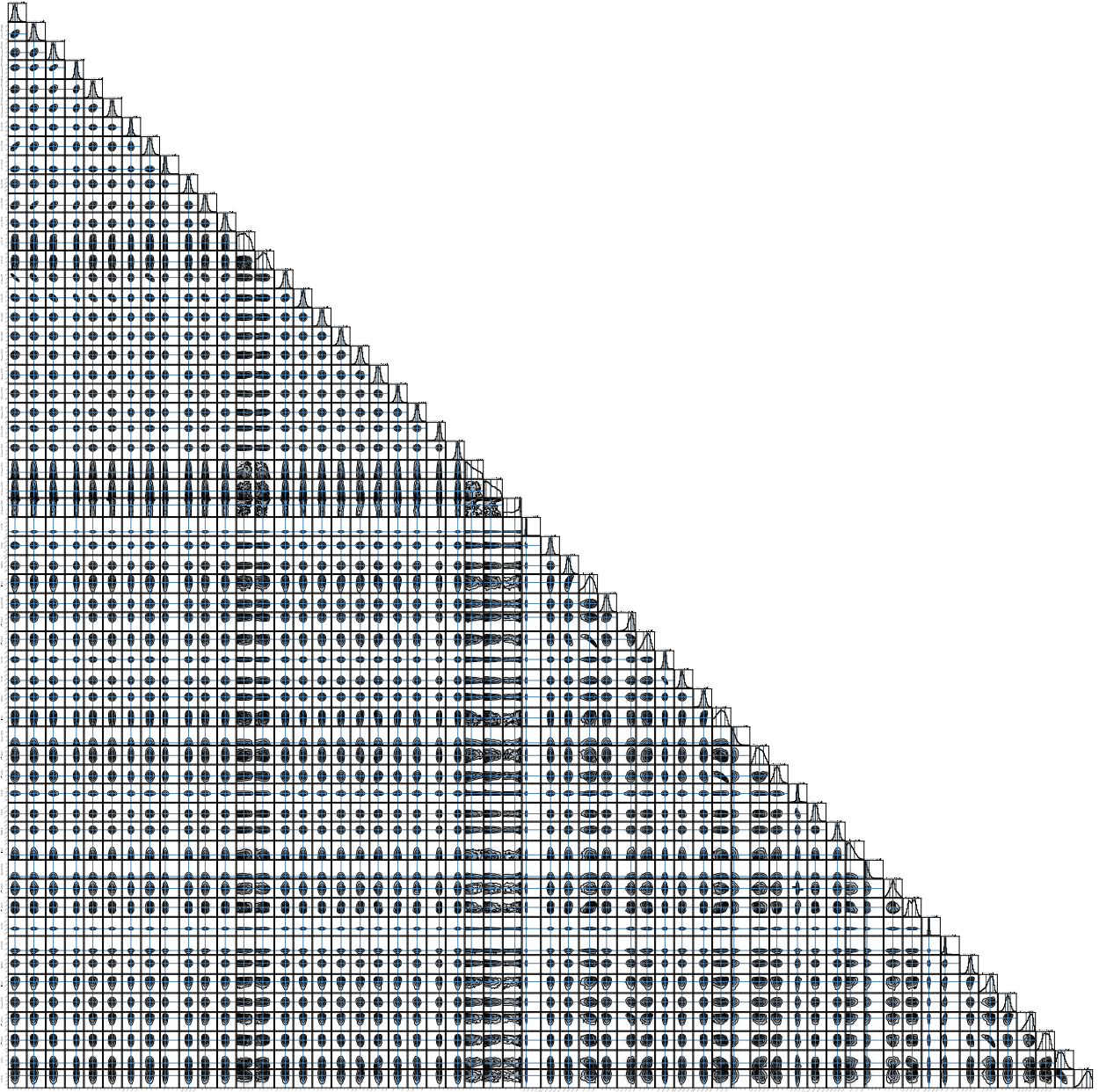


Figure 11: **Corner plot of the parameters of the best model fit (PQP2).** Posterior distributions of all the parameters sampled for the best model fit along with the correlation maps between them.

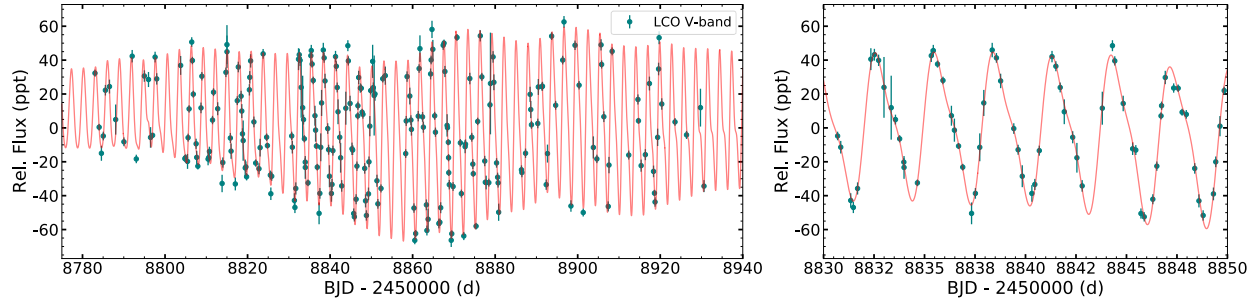


Figure 12: **LCOGT V-band photometry.** *a*: Time series of the LCOGT V-band photometry with the best fit obtained from the global analysis. *b*: Zoom to a well-sampled section. 1σ error bars (internal uncertainties) of the measurements are shown.

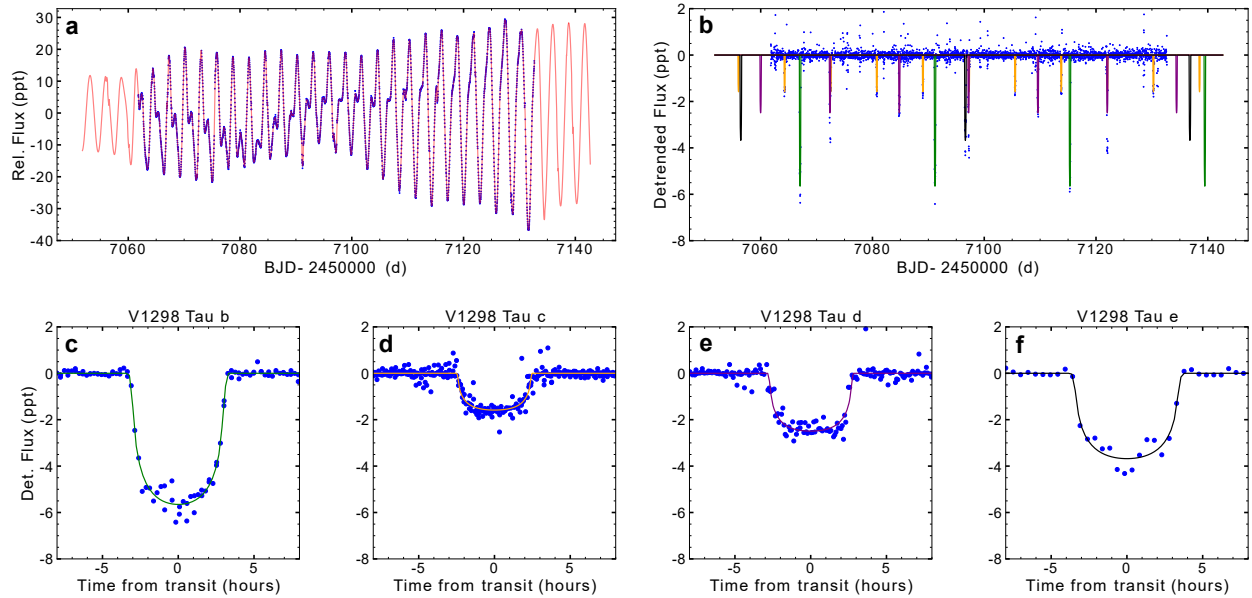


Figure 13: **K2 photometry.** Time series of the K2 photometry with the best fit obtained from the global analysis. *a*: K2 data with the full fit. *b*: Data detrended from stellar activity with the best fit to the transits. *c, d, e and f*: Phase-folded plots of the transits of the four planets.