

KIC 012158513

Q1-17 DR25 TCE Parameters

| TCE | Run Type | KOI? | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | R_{\star} (R_{\odot}) | T_{\star} (K) | R_p (R_{\oplus}) | S_p (S_{\oplus}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 012158513-01 | OBS | No | 525.111771 | 327.701011 | 578.2 | 12.072 | 9.0 | 8.8 | 0.94 | 6146 | 2.41 | 0.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 012158513-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

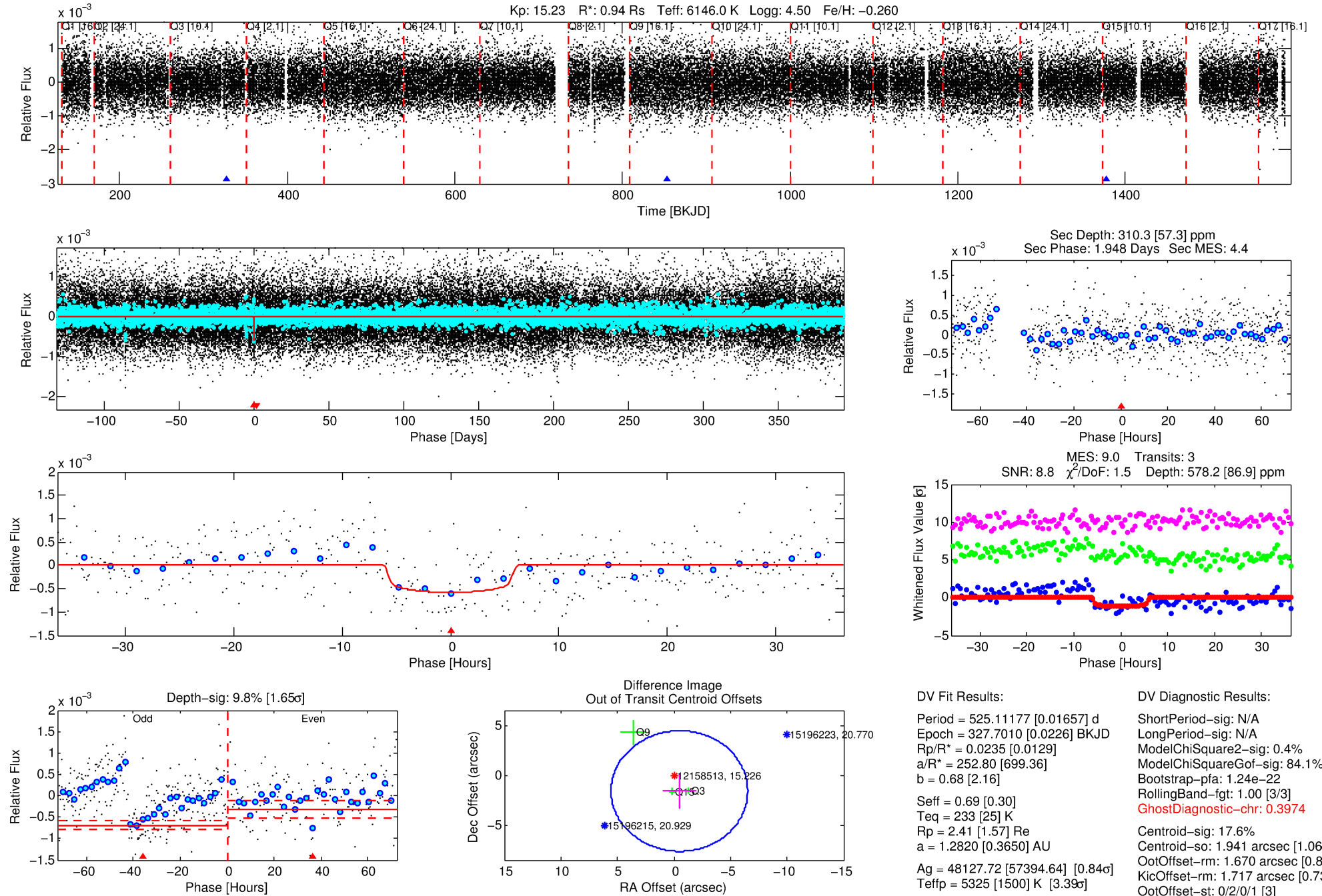
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012158513-01

No Significant Match Found

DV One-Page Summary

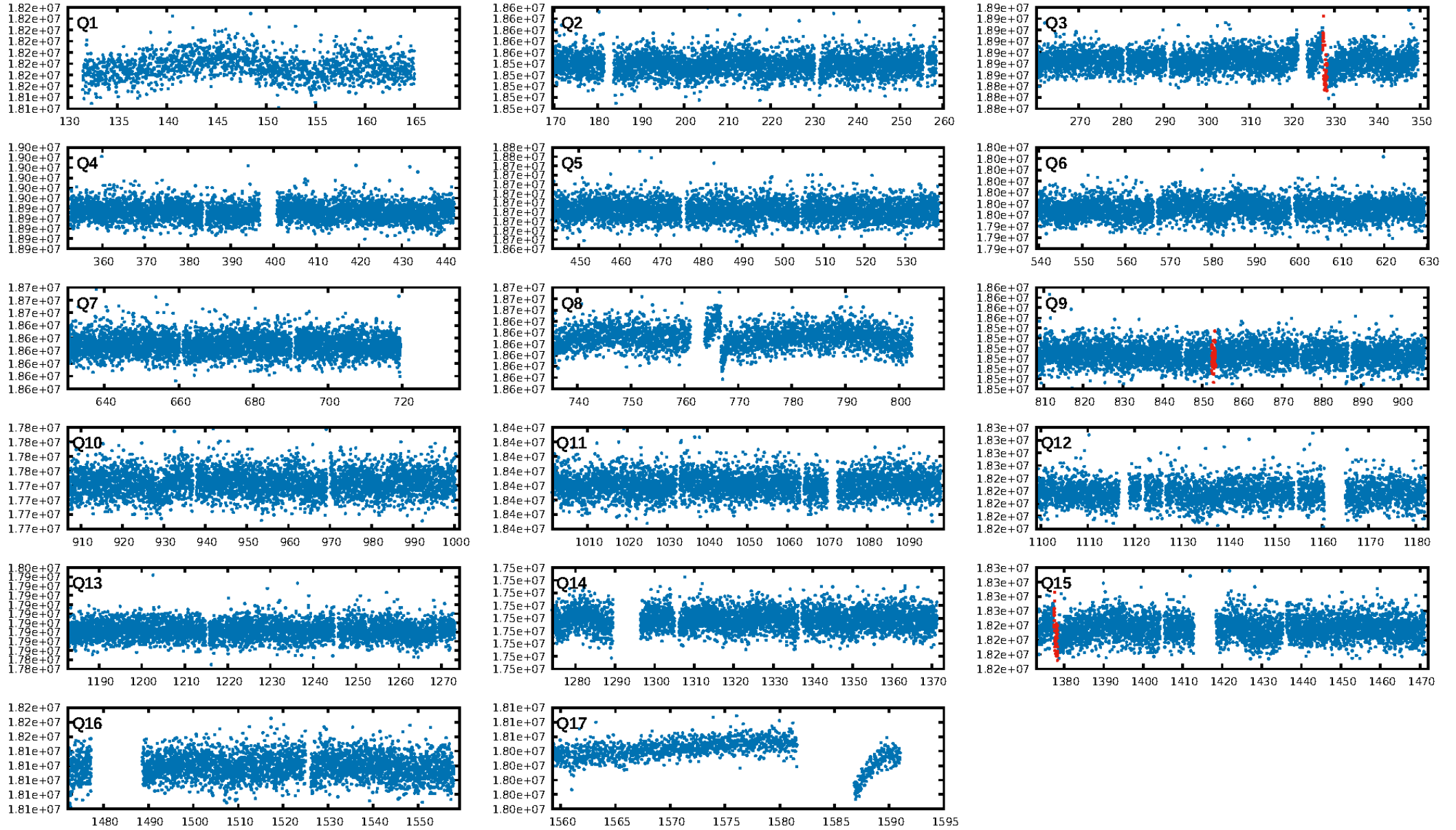
KIC: 12158513 Candidate: 1 of 1 Period: 525.112 d



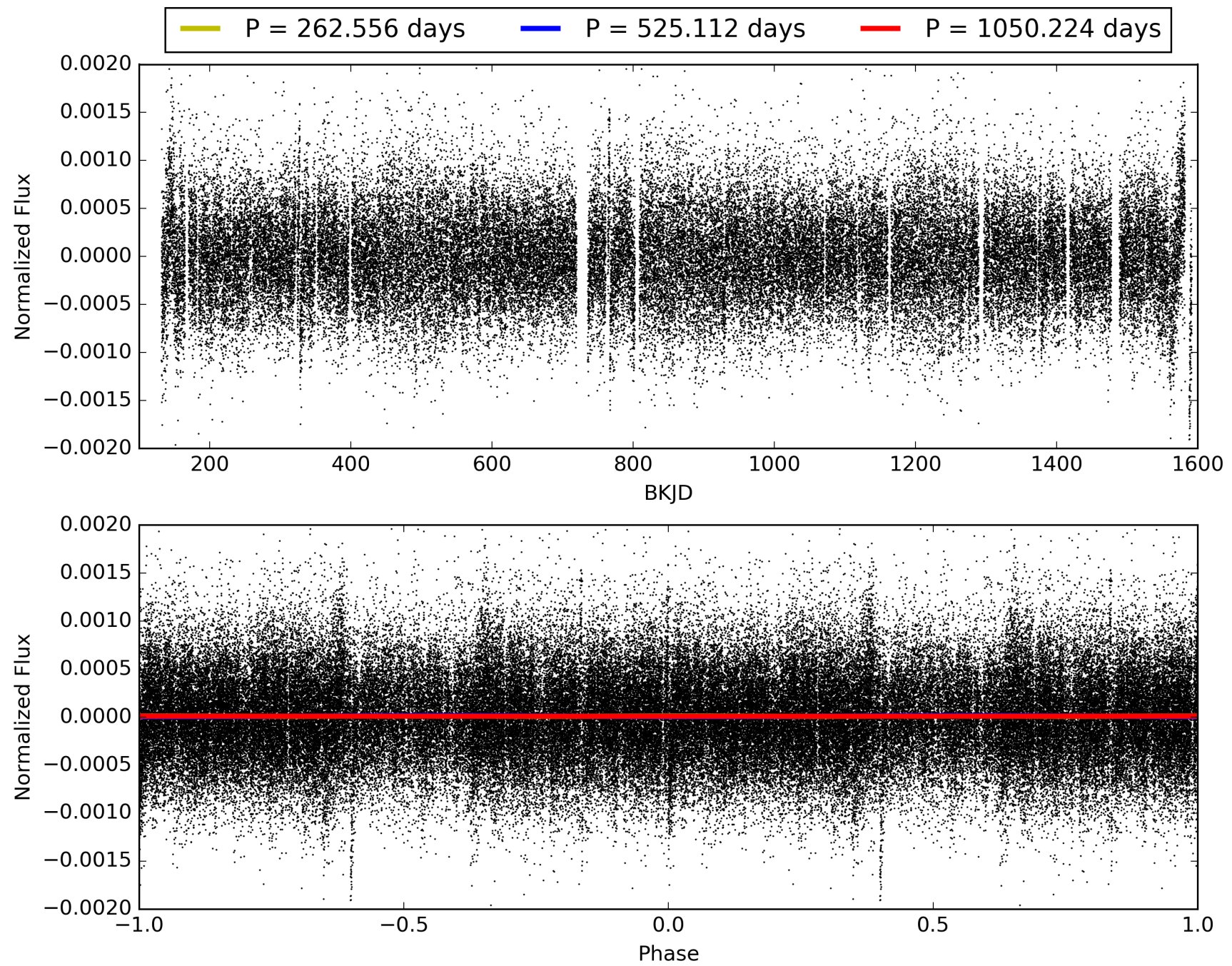
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:48:42 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012158513-01, PDC Light Curves

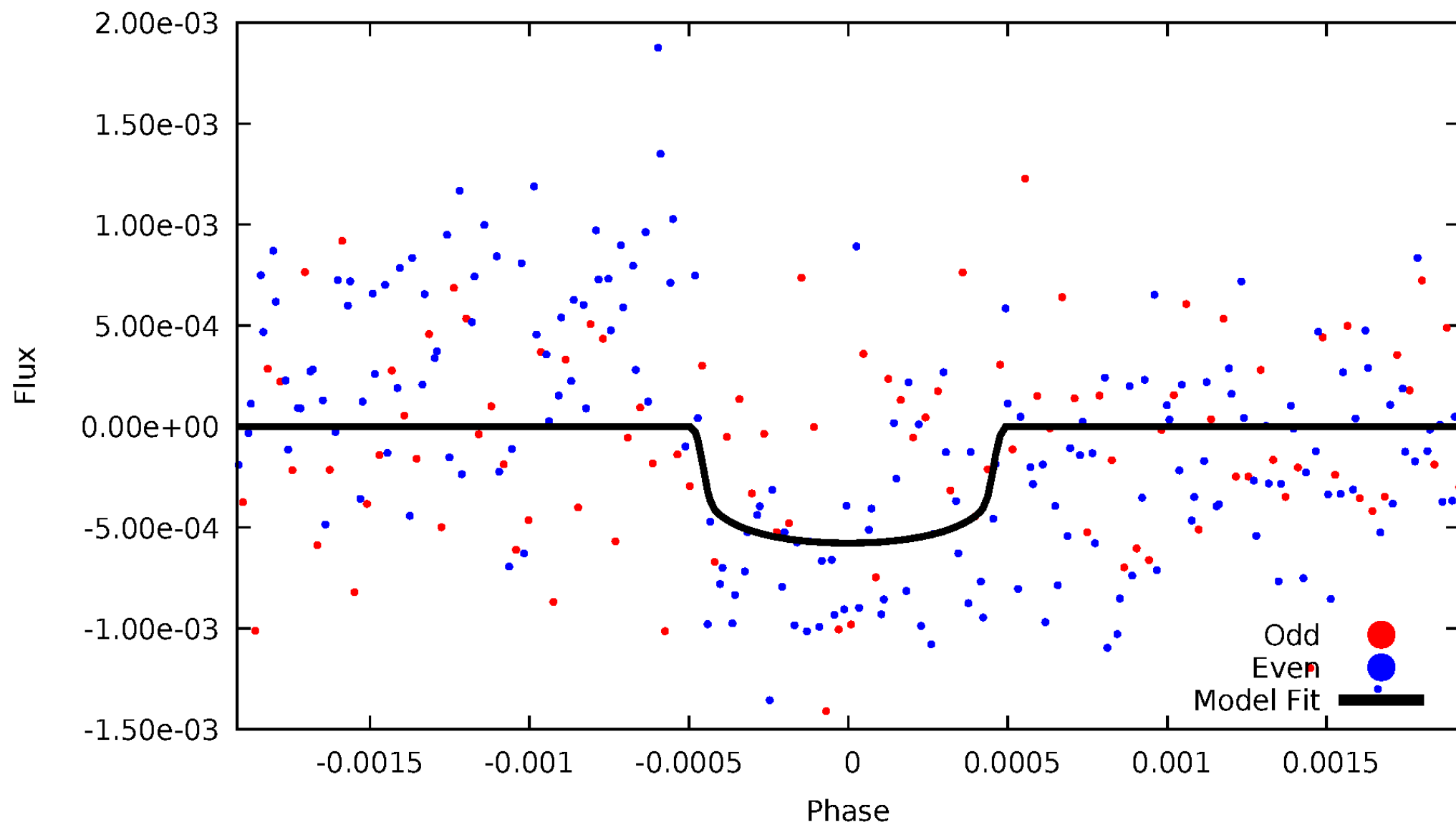


TCE 012158513-01



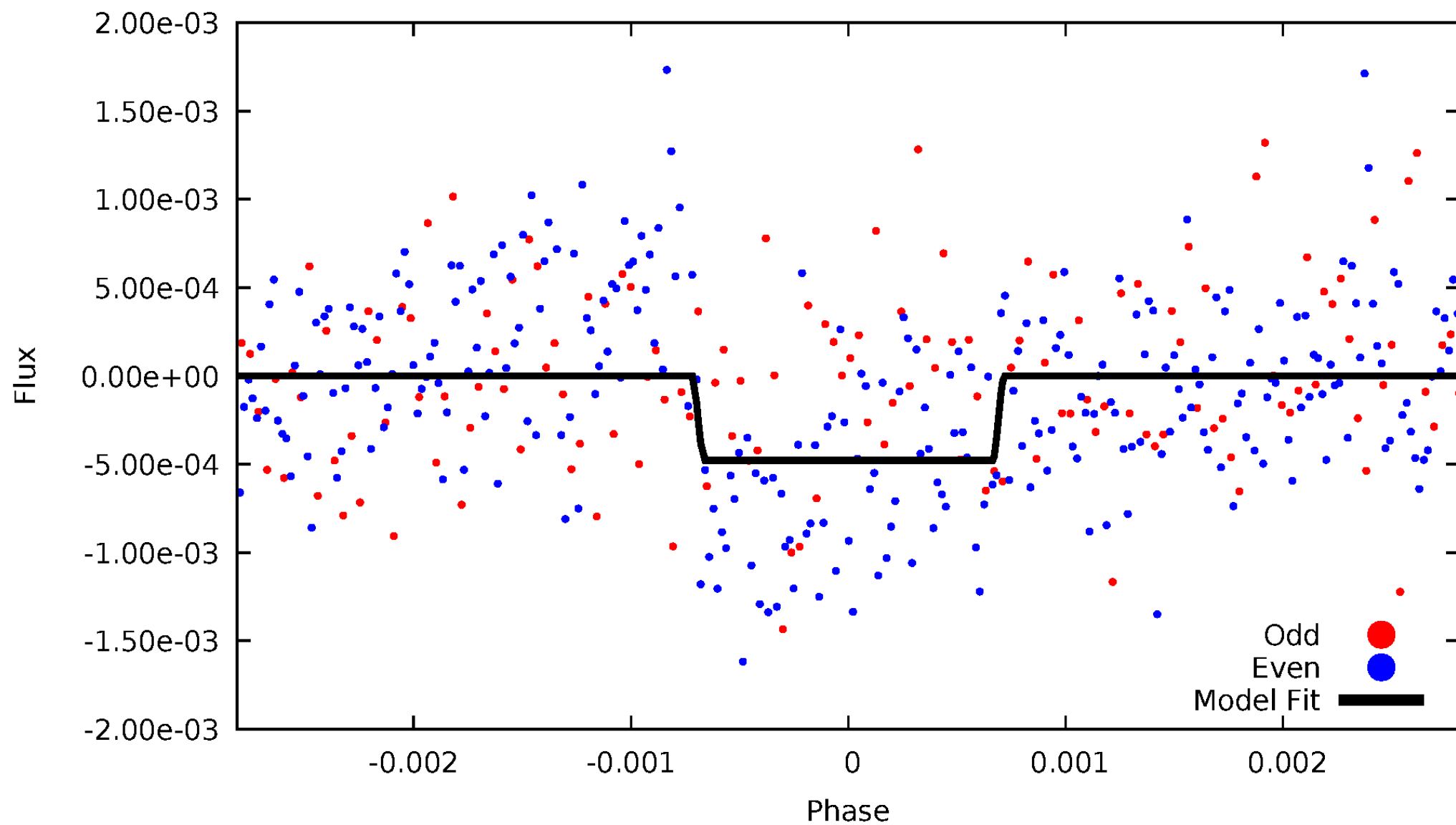
DV Odd/Even

TCE 012158513-01

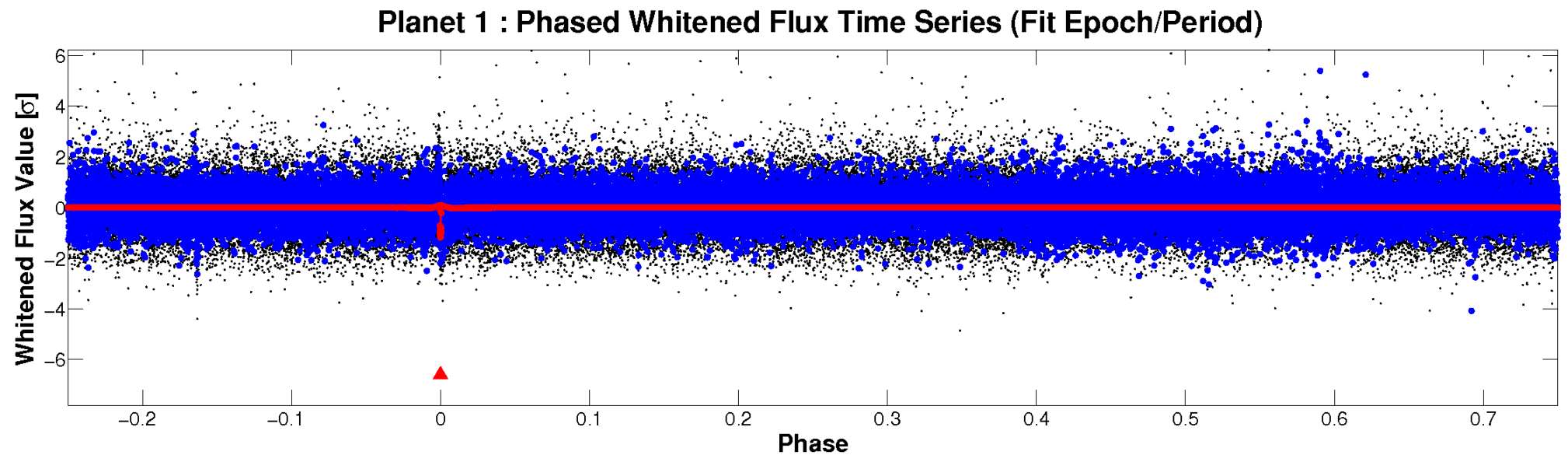
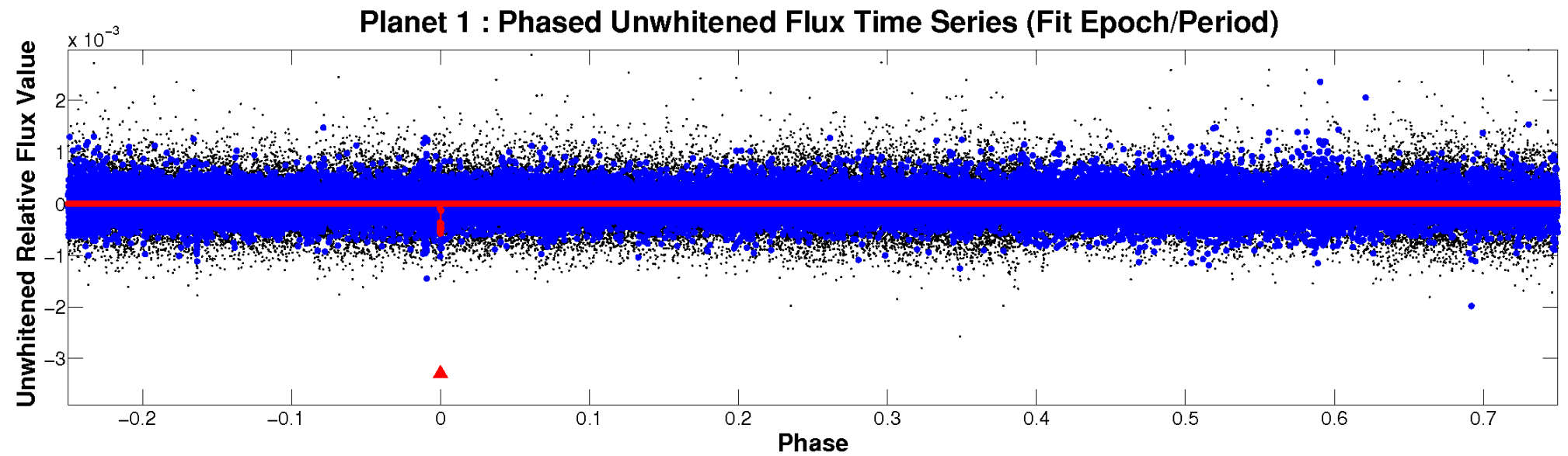


ALT Odd/Even

TCE 012158513-01

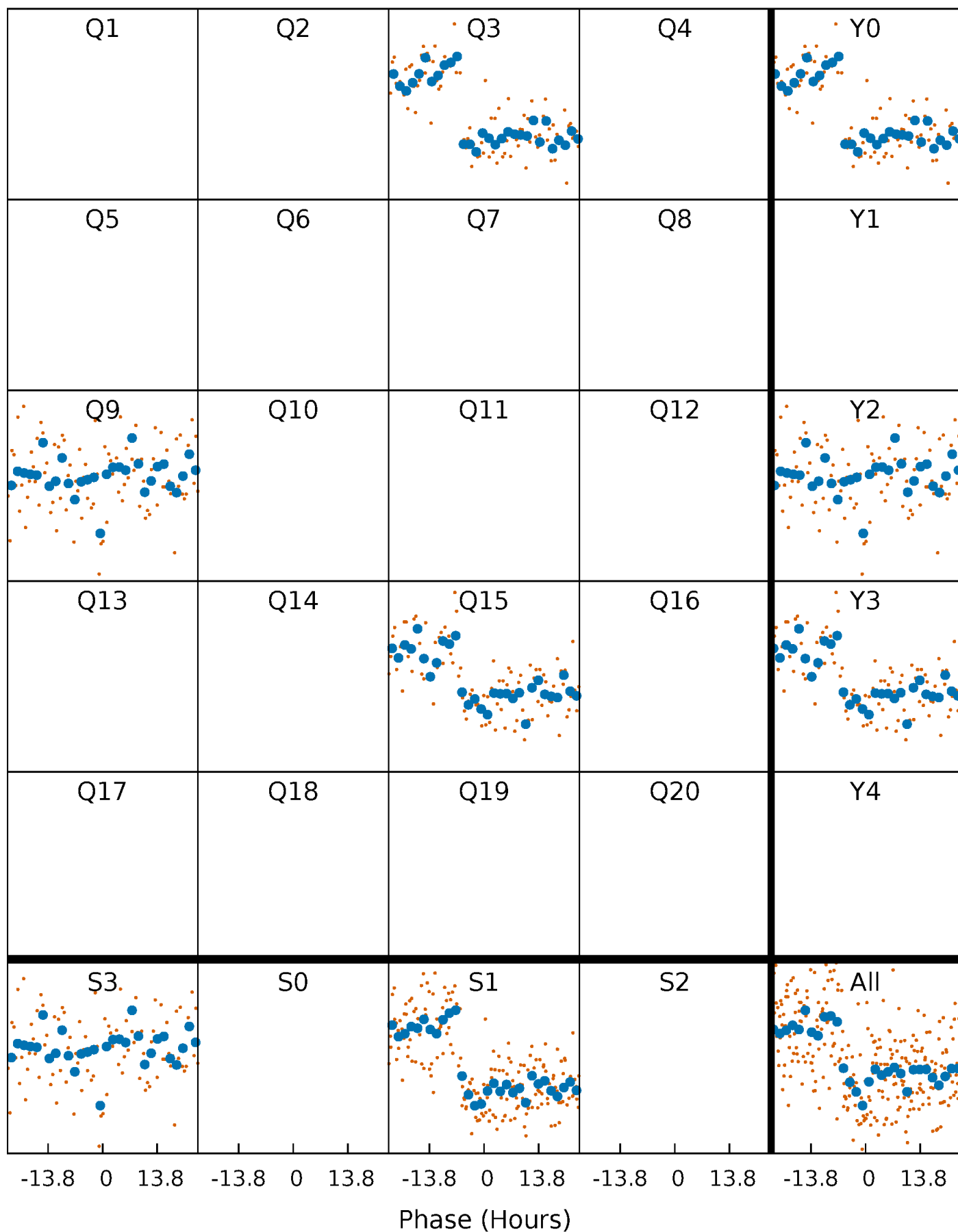


Non-Whitened Vs. Whitened Light Curve



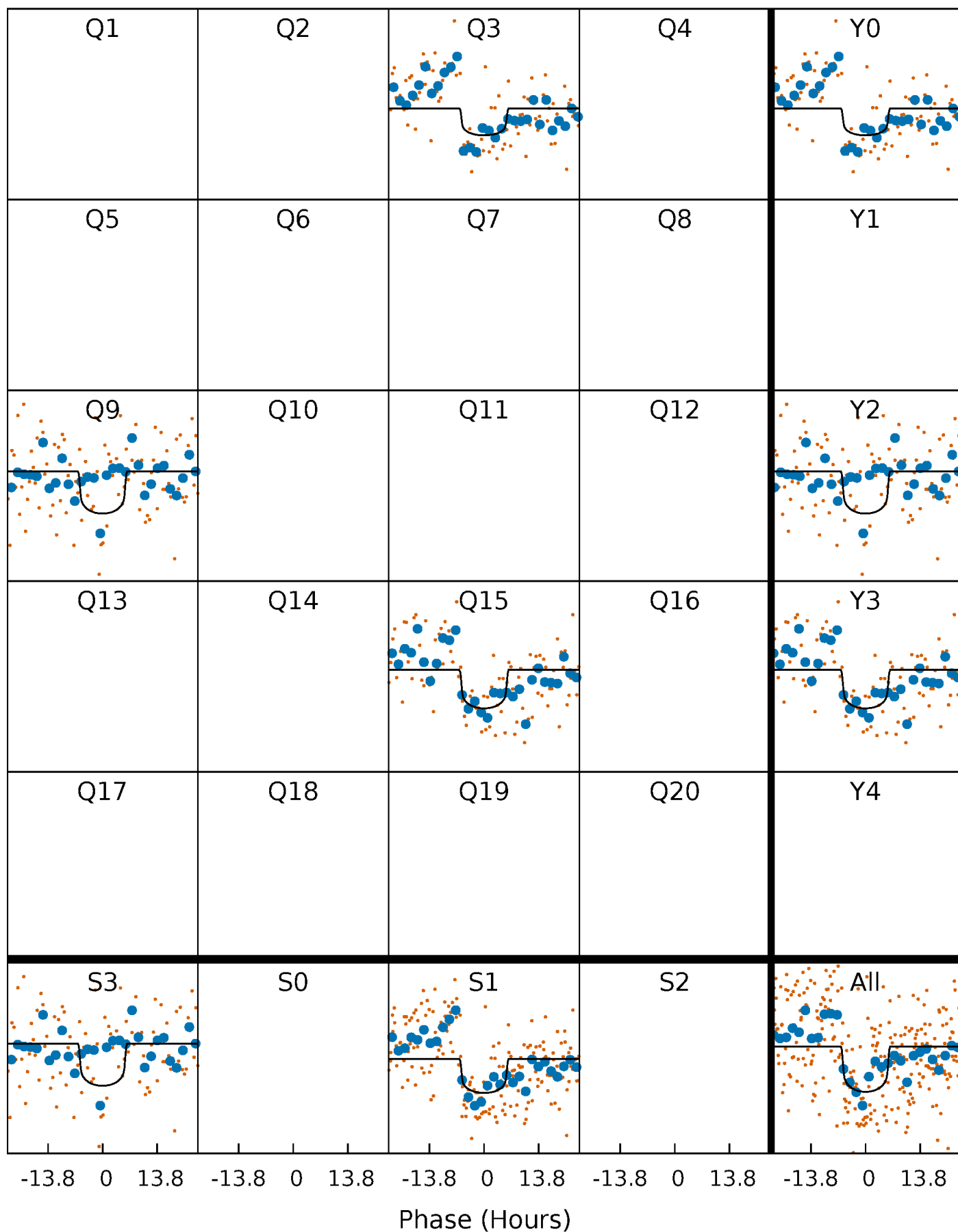
PDC Quarter-Phased Transit Curves

TCE 012158513-01 P=525.111771 Days $T_0=327.701011$ (BKJD)



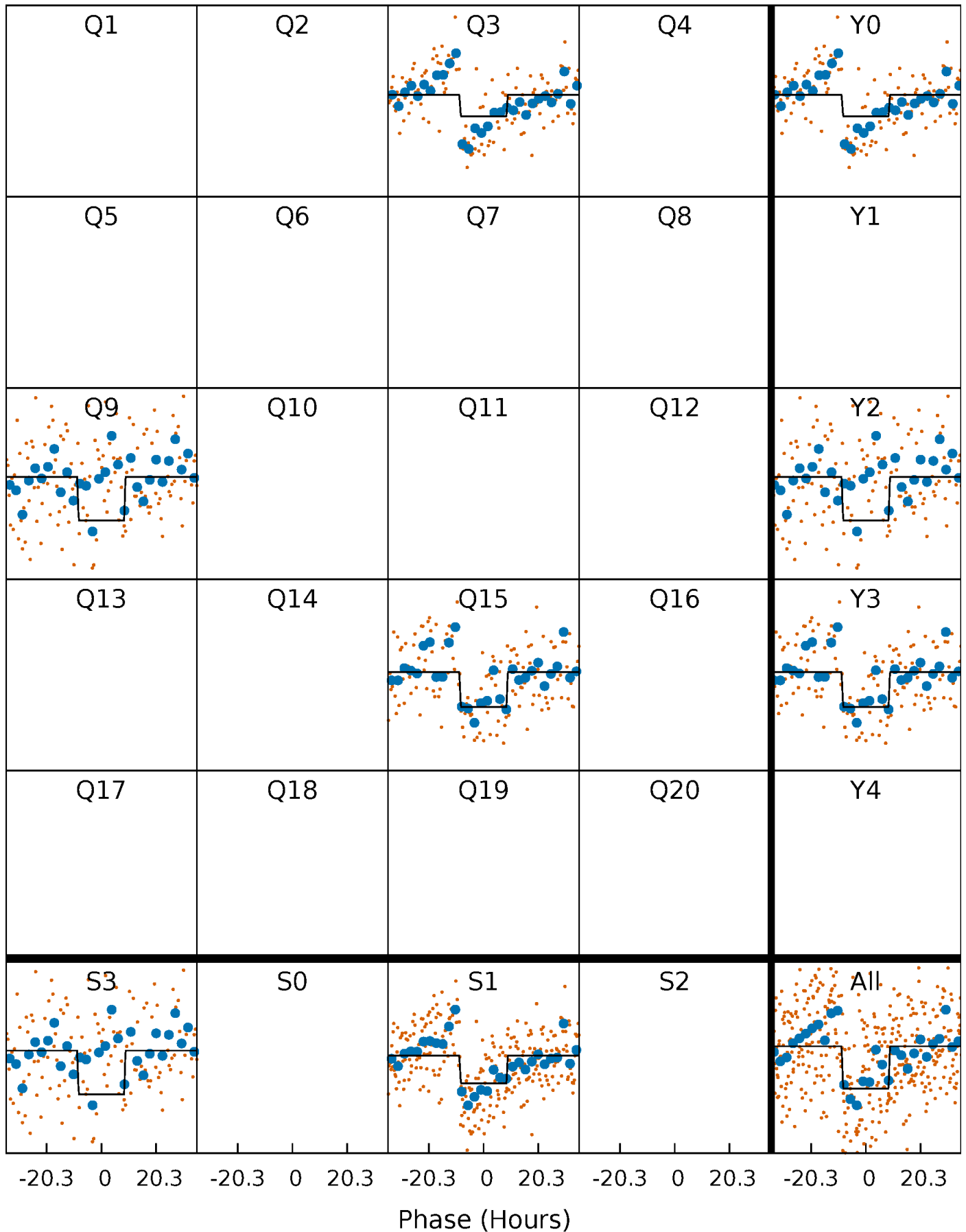
DV Quarter-Phased Transit Curves

TCE 012158513-01 P=525.111771 Days $T_0=327.701011$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

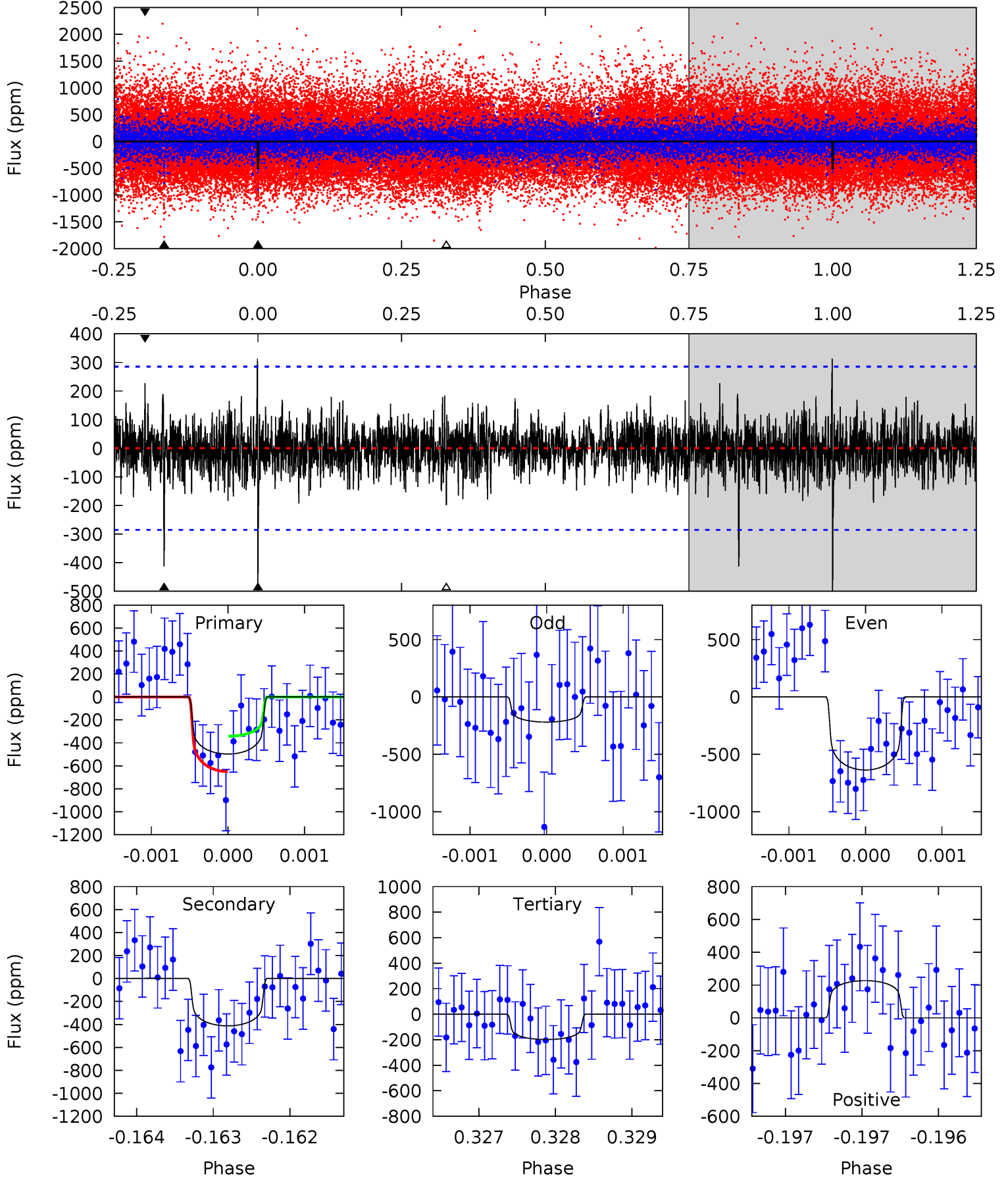
TCE 012158513-01 P=525.108436 Days $T_0=327.826333$ (BKJD)



DV Model-Shift Uniqueness Test

012158513-01, P = 525.111771 Days, E = 327.701011 Days

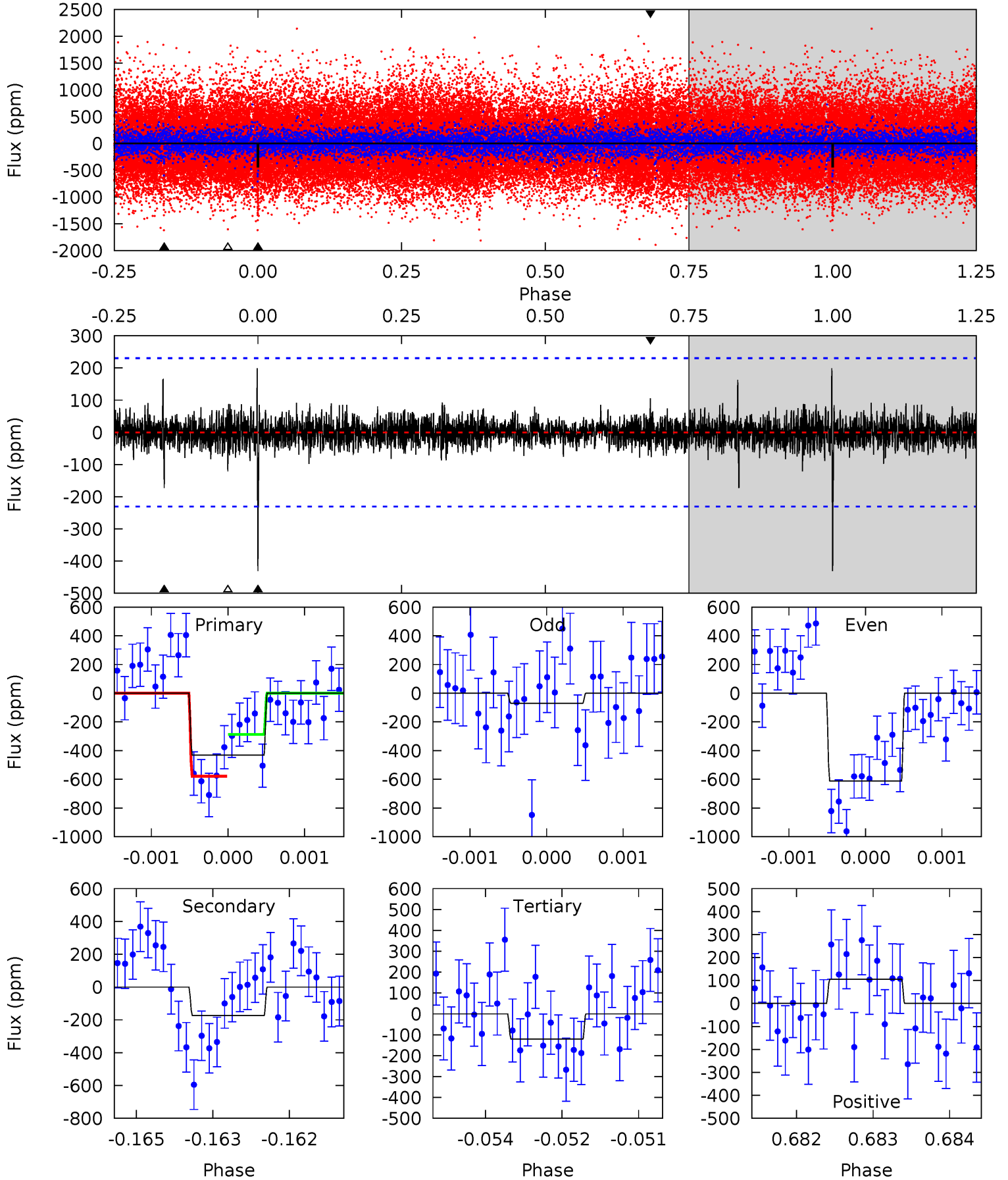
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.52 | 7.89 | 3.80 | 4.34 | 5.46 | 3.30 | 1.09 | 5.72 | 5.17 | 4.09 | 3.55 | 3.81 | 0.85 | 0.39 | 2.95 |



Alt Model-Shift Uniqueness Test

012158513-01, P = 525.108436 Days, E = 327.826333 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.1 | 4.04 | 2.83 | 2.48 | 5.39 | 3.19 | 0.65 | 7.26 | 7.61 | 1.22 | 1.57 | 6.00 | 0.94 | 0.32 | 3.41 |



Stellar Parameters For KIC 012158513

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6146^{+164}_{-201} | $4.497^{+0.042}_{-0.224}$ | $-0.260^{+0.250}_{-0.300}$ | $0.943^{+0.321}_{-0.100}$ | $1.020^{+0.138}_{-0.138}$ | $1.713^{+0.378}_{-0.935}$ |
| | +3%/-3% | +1%/-5% | +96%/-115% | +34%/-11% | +14%/-14% | +22%/-55% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012158513-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|----------------------------|
| DV | -412 ± 52 | $2.60^{+1.35}_{-1.26}$ | 333^{+24}_{-16} | 5622^{+2623}_{-926} | $53500^{+155880}_{-30263}$ |
| Alt. | -173 ± 43 | $2.54^{+1.48}_{-1.50}$ | 333^{+26}_{-15} | 4744^{+2317}_{-756} | $22938^{+102826}_{-14017}$ |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

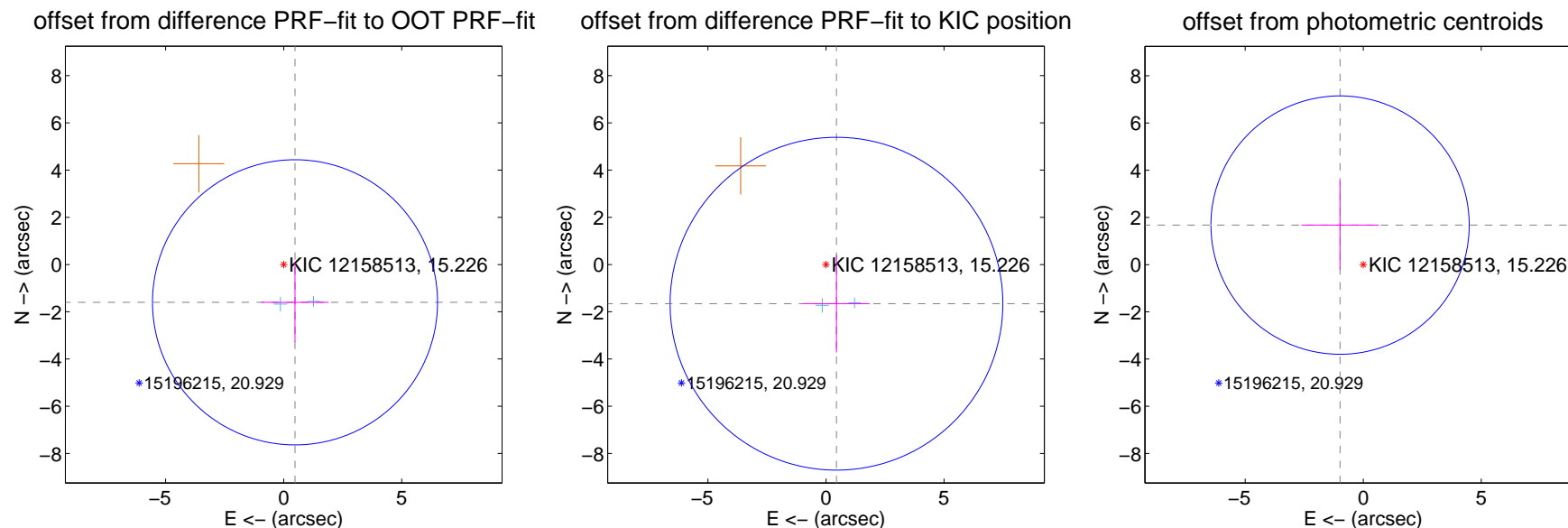
DV Centroid Data

Supplemental centroid analysis for 012158513-01. Kepler magnitude: 15.23. Transit SNR 8.78

There are 2 quarters with good PRF difference image offsets

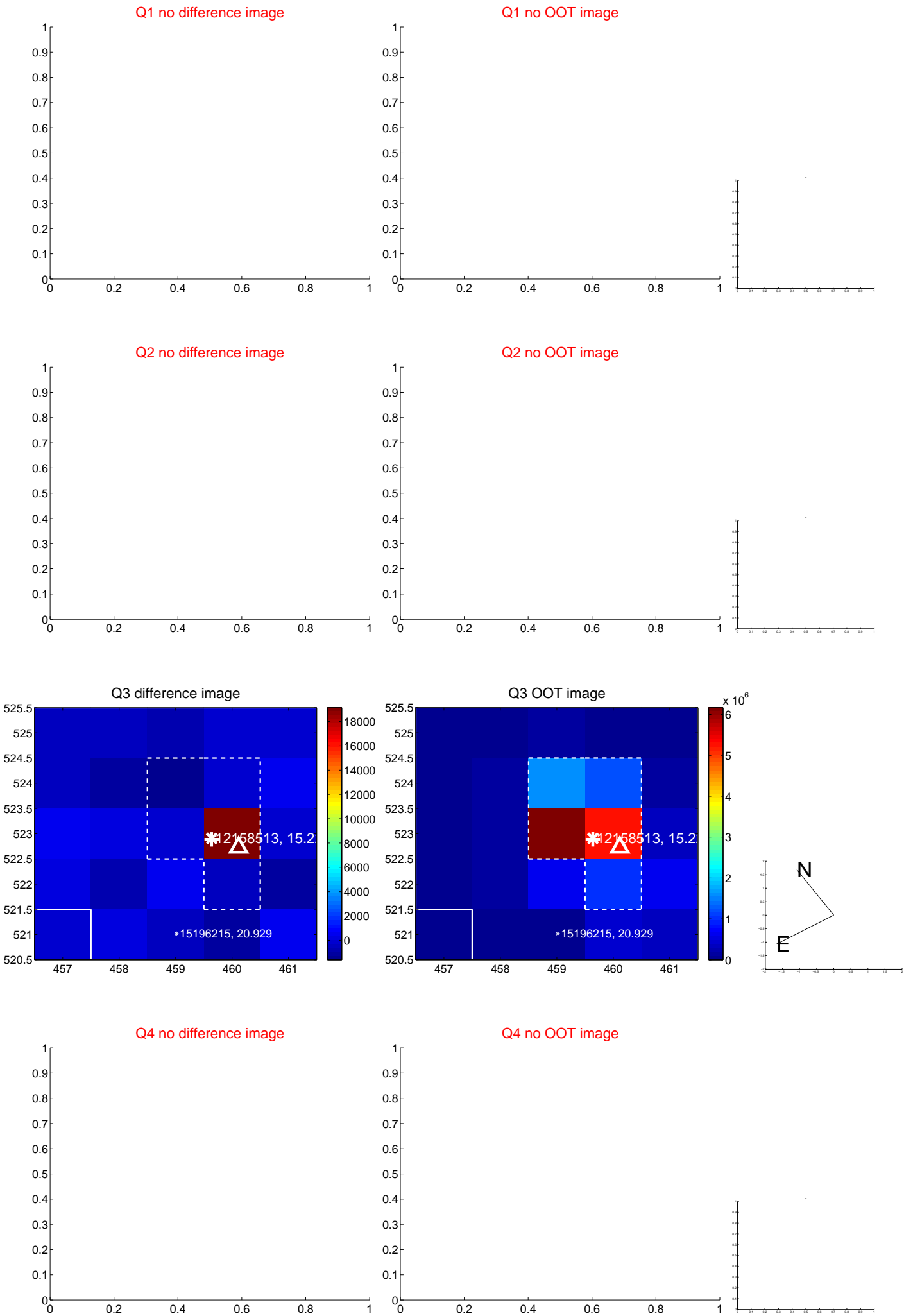
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.670 ± 2.013 | 0.83 | -0.480 ± 1.423 | -1.600 ± 1.686 |
| PRF-fit source offset from KIC position | 1.717 ± 2.349 | 0.73 | -0.444 ± 1.411 | -1.659 ± 2.065 |
| photometric centroid source offset | 1.94 ± 1.82 | 1.06 | 0.98 ± 1.64 | 1.67 ± 1.88 |



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

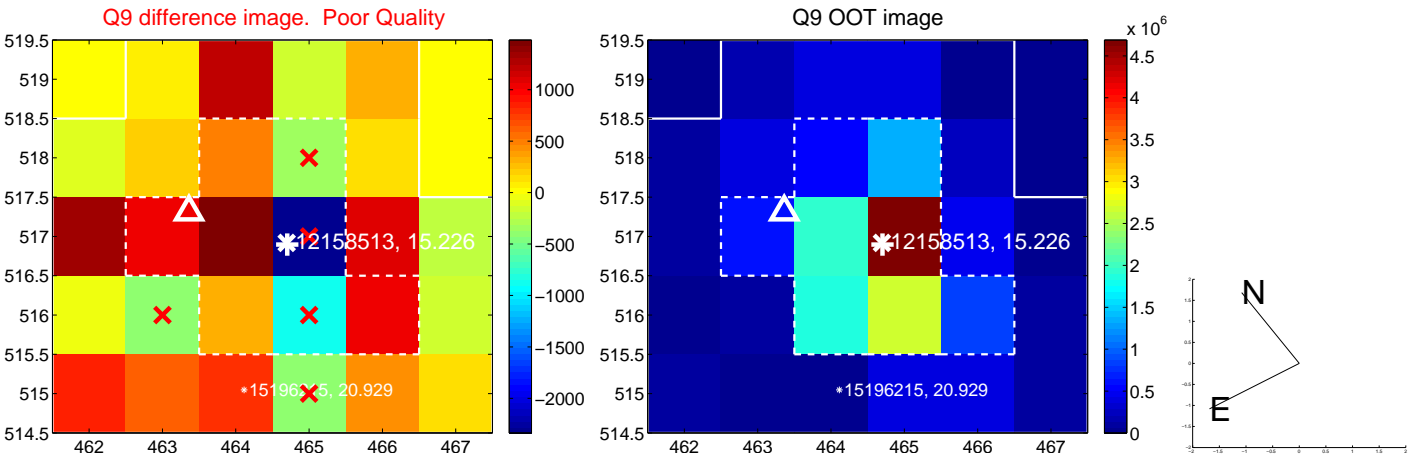
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



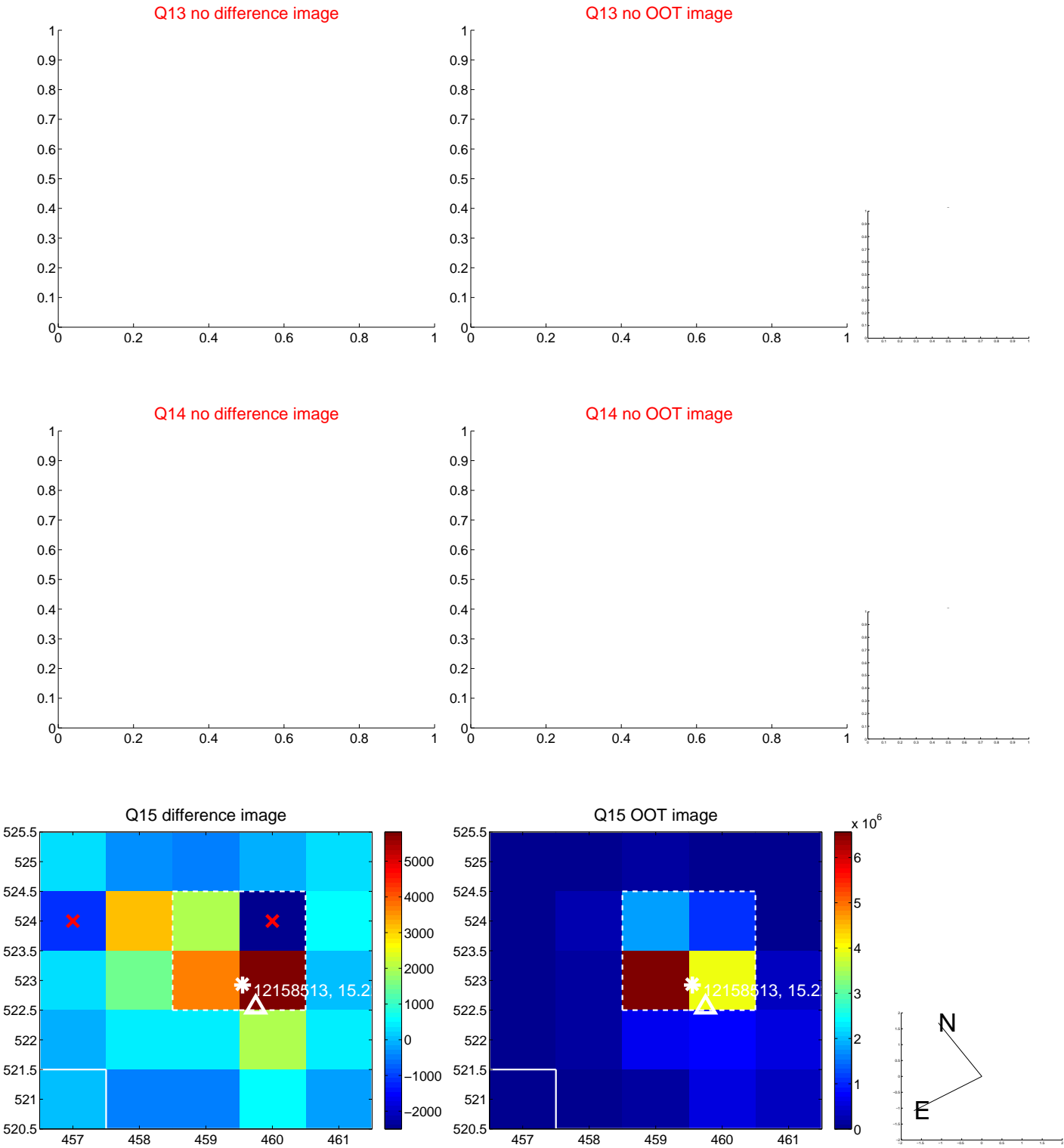
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



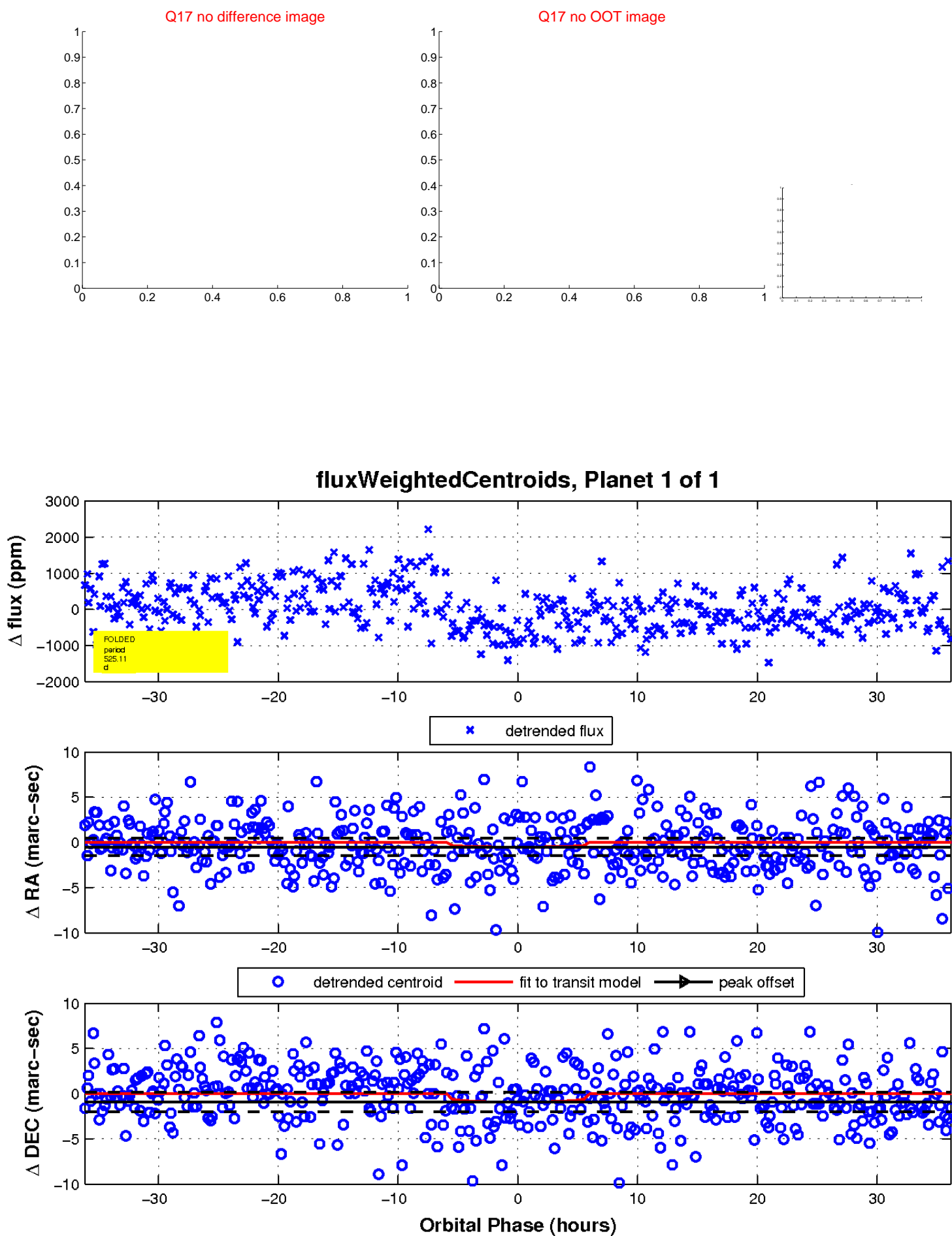
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

